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NOVEMBER 2025

Arsenal of Policy

Defense Industrial Base Wargame Final Report

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DGR-2025-U-043140-Final

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Abstract

The Office of the Assistant Secretary of Defense for Industrial Base Policy asked CNA to design and execute a wargame to explore opportunities to support the US defense industrial base focused on munitions supply chains during peacetime. CNA designed and executed two workshops and a culminating wargame that brought together government and industry representatives to examine existing policy recommendations and refine their potential implementation, requirements, reactions, and effects. This report details the pregame analysis of existing policy recommendations, wargame and workshop series design, the evolution of policy narratives throughout the series, and our analytical findings.

DISTRIBUTION A: Approved for public release: distribution unlimited. **11/13/2025**

This work was created in the performance of Federal Government Contract Number N00014-22-D-7001.

Cover image: USS *Barry* launches a Tomahawk Land Attack Missile for Exercise Pacific Vanguard. Photograph by Seaman Molly Crawford. Sept 12, 2020.

Approved by: **October 2025**

Christopher Ma, Research Program Director
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Foreword

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INDUSTRIAL BASE POLICY

Sponsor Foreword

The establishment of the Office of the Assistant Secretary of Defense for Industrial Base Policy (OASD(IBP)) spurred new thinking on the Department of Defense engagement with the Defense Industrial Base (DIB) to increase demands in response to national emergencies. One idea was to adopt wargaming as a tool to better understand and test how to increase resilience, strengthen deterrence, and provide decision-makers new perspectives to address and mitigate challenges in the DIB and related supply chains. These discussions led to our inaugural wargame, *Arsenal of Policy*.

Arsenal of Policy started with the observation that there were hundreds of studies making recommendations on ways to improve DIB capability, but few considered the tradeoffs, barriers, and impacts of implementing these ideas. Starting with this body of literature on proposed DIB solutions and guided by the priorities laid out in the National Defense Industrial Strategy (NDIS), the team selected four potential policy recommendations to explore throughout the wargame series. Rather than using a supply chain approach that focuses on material flows, the emphasis was placed on the policies themselves: What problems do they address; what impacts could they have; and how would you recognize achieving the desired outcomes?

Initially, the wargame's endstate focused on policy and resource options to improve DIB capacity and capability. The challenge with this approach, though, is that capacity or capabilities are not necessarily policy issues. Accordingly, *the focus evolved to identifying policy solutions to existing barriers or challenges that could become future chokepoints should the DIB system come under stress.* This change in endstate over time was an important perspective for the DIB Wargame Team and a credit to the designer's ability to flex and adapt as our understanding evolved.

As the DIB is made up overwhelmingly of private sector companies, industry representation was a key consideration for the DIB Wargame Team. Meaningful participation from a wide range of organizations, both in size and their function in the supply chain, was critical to ensure any potential recommendations were vetted by those impacted by policy as well as those creating or implementing policy. These objectives of participant engagement and contribution during the wargame were met beyond expectations. Specifically, the wargame fostered a shared understanding of the issues facing the DIB, while also providing a forum that highlighted the diversity of viewpoints that need to be reconciled when addressing broad-spectrum challenges. Industry representatives were joined by the Office of the Under Secretary of Defense for Acquisition and Sustainment and Service components, as well as interagency representatives from the Department of Homeland Security and the Department of Commerce. Combined, the participants provided excellent perspective to the team and left the event having interacted with

new people with different agendas, perspectives, and concerns – newfound understandings they are able to take back to their organizations.

The outcomes of the game produced immediate results. OASD(IBP) is already executing concrete actions derived from the outcomes from *Arsenal of Policy*. The DIB Wargaming Team has chosen to initiate two projects, in collaboration with other organizations in OUSD(A&S) to address two of the four policy recommendations considered: How to better aggregate risk on adversarial capital investment in the DIB and how to recruit new workforce to the Organic Industrial Base (OIB).

The *Arsenal of Policy* wargame was a great success and demonstrated the value of this approach to bring forward concrete actions to address the challenges we face every day in DIB engagements. We are grateful to our colleagues and collaborators at the Center for Naval Analyses for shepherding this vision to its successful conclusion and to the Wargaming Incentive Fund for supporting the event. Ensuring that the DIB is prepared to meet the challenges of a national emergency needs to be a whole-of-government effort in close coordination with industry. *Arsenal of Policy* is a powerful step in the direction of a more resilient DIB, but there is much more to be done.

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Acting Assistant Secretary of Defense
for Industrial Base Policy

Executive Summary

The Office of the Assistant Secretary of Defense for Industrial Base Policy (OASD IBP) asked CNA to develop a wargame to explore opportunities to strengthen, improve, and expand the US defense industrial base (DIB). In response, CNA conducted the Arsenal of Policy series from November 2024 to January 2025. It consisted of two facilitated workshops and a culminating wargame that brought together government and industry representatives to discuss opportunities and build a shared understanding. Recognizing the multitude of recommendations on how to address identified weaknesses in the DIB, the Arsenal of Policy series focused on exploring and assessing existing recommendations.

Four recommendations were selected from a larger list compiled in support of this effort. Those recommendations are "integrate policies and mechanisms to expand the domestic DIB through strengthening and advocating for incentives for small businesses, new DIB entrants, and nontraditional vendors" **(expanding the DIB)**, "invest in the Organic Industrial Base's (OIB's) facilities, staffing, and systems" **(OIB)**, "develop intellectual property (IP) licensing and control policies to…promote the effective integration of multiple suppliers' intellectual properties and infrastructures" **(IP)**, and "strengthen detection and enforcement against adversarial ownership, influence, and intelligence gathering" **(adversarial capital)**. The series sought to identify viable implementation actions, benefits, and trade-offs, as well as potential second-order effects, of these four recommendations.

The series refined these broad recommendations into more specific policies linked to DIB challenges, incorporating stakeholders' perspectives on the likely impacts of those refined policies at each stage. The intermediate workshops (one with government, one with industry) built an internally coherent set of policies by linking underlying challenges to targeted policy actions aimed at distinct stakeholders for each of the four selected recommendations. The culminating wargame identified the anticipated impacts of these developed policies and plotted the policies, as well as any necessary supporting actions, onto a timeline.

Key insights

Although the wargame was scoped to munitions supply chains and many examples in this report are specific to munitions, most of the findings are applicable across the DIB.

- Expanding the capacity of the munitions industrial base may require a series of policy changes and government actions. Because of the scale and the complexity of the challenges facing the DIB, the four policy recommendations explored in this wargame (implemented either alone or in concert) are not complete solutions that will solve the problem of industrial base capacity or capability.

- The **policy changes that may have the largest effect are actions that provide a more consistent demand signal and increase or ensure access to raw materials**. Participants returned to these two challenges repeatedly during the series. These are also some of the changes that will be the most challenging for government to implement. In the absence of a stable demand signal, industry stakeholders felt consistent communication between the public and private sectors could provide the information and stability industry needs to begin investments and expansions necessary to meet munitions requirements during war or high-intensity combat.
- Participants agreed that **the policies developed and identified throughout the series could improve communication, remove bottlenecks, and accelerate processes**. Most of the policy actions identified are implementable in the short term and, therefore, can provide benefits in the short term as well. These policy actions are detailed in the Recommendations and Potential Actions section.
- Identifying priority policy actions across the diverse group of stakeholders was challenging. However, **both government and industry participants agreed that IP policy changes could be deprioritized**. Industry also believed that adversarial capital could be deprioritized, although government attendees disagreed.
- There are **existing programs taking a novel approach to challenges facing the DIB that could be used as pilots or models for future DIB-wide efforts**. They include creative acquisition practices at the Air Force, the Navy's Accelerated Training in Defense Manufacturing program, and the Navy's "Build Submarines" advertising initiative.
- **Increased outreach and education is necessary for subtier suppliers and raw materials providers that are already a part of the DIB, as well as nontraditional vendors and small businesses** that could help expand the DIB. Defense prime contractors (companies that have a direct contract with the Department of Defense (DOD), also known as "primes") are generally in close communication with the US government. Although primes are familiar with the risks of investment by adversaries, the certification process for new production lines, and the grants and funding opportunities available to defense firms, other firms and vendors may not be.
- **Multiple government offices or agencies are duplicating certain tasks**. The Department of Treasury, Department of Commerce, and intelligence agencies collect very similar, if not identical, information on firms' funders and adversarial investment. Firms often must be certified multiple times for the same parts across different government buyers. This duplication wastes both government's and industry's limited resources.

- The hundreds of recommendations on how to strengthen the DIB make **prioritization a challenge**. CNA developed a method to narrow the recommendations and to evaluate them via the series that could be replicated with a different list of recommendations or a different scenario and focus.

Recommendations

Discussions during the series made it apparent that the DIB faces many challenges producing munitions in the amounts and within the timelines required, inhibiting readiness and deterrence. However, participants were able to identify and prioritize clear, actionable steps that will help position the DIB to increase munitions materiel capacity and capability. To support the DIB, OASD IBP should consider implementing the following feasible and risk-informed policy and resource options developed from postgame analysis:[1]

- To **expand the DIB** and increase the number of firms that can produce key munitions, DOD should consider increasing communication about opportunities and grants to firms further down the supply chain and to new suppliers, as well as increasing education on requirements and the certification processes. DOD should also consider expanding the number of vendors that primes can mentor to support these communication goals.
- To remove delays that can result in the loss of promising applicants and to expedite hiring authorities if a production surge is required, DOD should consider requesting that the Office of Personnel Management (OPM) publish an updated Direct Hiring Authority memo for **OIB** positions. This memo should identify priority areas for hiring and outline an implementation plan for how current gaps will be filled.
- To expand the small applicant pool for **OIB** positions, DOD should study past recruitment efforts and increase marketing and education efforts to the general population about the importance of **OIB** careers.
- To ensure that DIB supply chains are resilient to adversarial influence, DOD could benefit from encouraging the intelligence community to add assessments on aggregate risk into existing assessments on **adversarial capital.**

[1] Given that attendees deprioritized IP, this list only includes policy actions related to the other three recommendations. Policy actions linked to IP can be found in the "Recommendations and Potential Actions" section.

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Contents

Introduction

The Office of the Assistant Secretary of Defense for Industrial Base Policy (OASD IBP) requested that CNA develop and execute a wargame that explored ways to strengthen the defense industrial base (DIB). Numerous reports, articles, and opinion pieces have highlighted the challenges facing the DIB. OASD IBP's goal for this wargame was to build upon this existing body of scholarship and identify specific policy recommendations that the office could take for action in the short term and preconflict to enhance DIB readiness.

CNA worked with OASD IBP to develop a wargame and two workshops that assembled a diverse group of stakeholders, increased knowledge and understanding across participants and OASD IBP, and identified actionable, implementable solutions. The Arsenal of Policy series (the wargame and workshops) brought together representatives from across the Department of Defense (DOD), the interagency, and private industry to discuss the factors currently limiting industrial base capacity and brainstorm solutions. This set of goals shaped the wargame's objectives, design, and analysis.

This report describes the pregame analysis that identified the four policy recommendations that were the basis of discussion in the Arsenal of Policy series. It provides an overview of the design underpinning the workshops and wargame, how the three events built on each other, and how the design solicited relevant information and outputs. It also describes the evolution of the policy recommendations across the series. The report concludes with a description of the key themes identified throughout the series and recommended actions for each of the four policy areas. The appendixes include detailed descriptions of the information and learning gleaned from each of the workshops, a reconstruction of the wargame, and in-depth analysis of the policies' impacts, as identified by participants in the wargame's impact worksheets.

Desired end state and wargame objectives

The Arsenal of Policy series began with the following desired end state: "identify feasible risk-informed policy and resource options to improve DIB capacity and capability." Along with this end state, OASD IBP and CNA identified the following objectives:

- Determine viable implementation actions, benefits, trade-offs, and second-order effects upon DIB:

    - Identify authority, resource, and capability gaps for immediate application and potential future legislation and policy.
    - Develop draft measures of performance and measures of effectiveness for recommendations.
- Build shared understanding of risks and barriers to action by identifying current interagency efforts that identify and counter risk.
- Educate participants on the diversity of viewpoints across US agencies, offices, and private industry, arriving at a common understanding to address broad-spectrum challenges.

Between an ambitious initial goal and the multitude of challenges impacting the DIB, participants did not identify the policies that were the focus of the wargame as actions that would increase DIB capacity or capability. Instead, participants identified challenges that fell outside of OASD IBP's purview as fundamental to improving DIB capacity and capability. These included shortages of raw materials and the absence of a consistent demand signal. Although the selected policies were thought to be insufficient on their own to increase DIB capacity and capability, their implementation could address challenges and improve current dynamics.

This report identifies how and why the policy options of focus did not achieve the desired end state, along with the ways these same options did strengthen and support the DIB.

Pre-game Analysis

The 2023 National Defense Industrial Strategy (NDIS) outlined a path toward progress for the DIB that aggressively sought innovative, next-generation capabilities while continuing to upgrade and produce, in significant volumes, conventional weapons systems already in the force.[2] To achieve these goals, the NDIS identified four critical priority areas: Resilient Supply Chains, Workforce Readiness, Flexible Acquisition, and Economic Deterrence.[3] This strategy and these priorities served as the initial analytic focus of the game.

> *"It would be strategic negligence to continue to allow the atrophy and to not rebuild the resiliency of the US DIB in an era of great power competition." —NDIA Vital Signs 2024*

With the NDIS identifying USG priorities, the National Defense Industrial Association (NDIA) 2024 *Vital Signs* report provided insight into the most pressing issues facing the DIB. It focused on key areas where partnership between government and industry could facilitate change in supply chains in support of current national defense objectives. NDIA surveyed both government and industry stakeholders and identified the following areas of alignment: (1) identifying, recruiting, and retaining talent or other workforce issues; (2) managing complex and protracted procurement processes; and (3) handling the burden and risk of compliance with government contracting requirements.[4] This background informed the recommendation selection process and game design.

Following the conclusion of the wargame, the team reviewed the 2025 NDIA *Vital Signs* report to determine whether the outcomes and areas of discussion across the Arsenal of Policy series mirrored the current perspectives of industry and government as captured in the most recent surveys. The 2025 edition notes that the future operating environment will challenge policy-makers to evaluate the ability of the US military and US DIB to support simultaneous, modern conflicts in different regions.[5] It also highlights the challenges of balancing two competing requirements: (1) expanding the US competitive advantage by developing advanced wartime

[2] Department of Defense, *National Defense Industrial Strategy,* 2023.

[3] Department of Defense, *National Defense Industrial Strategy,* 2023.

[4] National Defense Industrial Association, *Vital Signs 2024: The Health and Readiness of the Defense Industrial Base,* Apr. 2024.

[5] National Defense Industrial Association, *Vital Signs 2025: The Health and Readiness of the Defense Industrial Base,* Feb. 2025.

capabilities, and (2) ensuring sufficient production capacity for existing technologies.[6] Both of these themes emerged during the facilitated activities of the series and were considered when crafting the recommended actions included in this report.

The research team also reviewed several studies that CNA had conducted in recent years, including reports on munitions production, economic statecraft, critical minerals, and a previous supply chain wargame, CAMOLAND, and consulted CNA subject matter experts.[7] Each of these reports and conversations provided information on the challenges facing the, as well as context on the current operating environment for which the DIB must produce.

Policy selection

Using the NDIS as the framing, the CNA team began a systematic identification of policy recommendations, reviewing numerous reports that sought to examine successes, gaps, and areas of improvement for the DIB, many of which were recommended by OASD IBP. The sources included the 2022 Munitions Industry Production Analysis (MIPA), Precision-Guided Missile Industrial Capacity Assessment (PGM/ICA), NDIA *Vital Signs* report (2024 and 2025), and a white paper by Systems Planning & Analysis (SPA), *Defense Industrial Base Resilience: Analysis of Key Finding and Recommendations*.[8] The main source of recommendations was the systematic review conducted by SPA. At the request of OASD IBP, SPA conducted a thorough review of existing reports that were (1) DIB-focused, (2) came from credible sources, and (3) originated in documents authored in 2020 or later.[9] SPA identified and categorized 446 policy recommendations.[10]

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[6] National Defense Industrial Association, *Vital Signs 2025: The Health and Readiness of the Defense Industrial Base,* Feb. 2025.

[7] Citations include: Charles Cartier, Catherine Lea, and Eugene Saad, *CAMOLAND Clothing and Textile Industrial Base Wargame Report*, CNA, DGR-2024-U-038084-1Rev, July 2024; Christopher Cairns, John L. Mahoney, and April Herlevi, *Economic Means for Security Ends: PRC Laws, Policies, and Tools for Technological Advancement,* CNA, DIM-2023-U-035823-Final, June 2023; United States Institute of Peace, *Critical Minerals in Africa: Strengthening Security, Supporting Development, and Reducing Conflict amid Geopolitical Competition*, Apr. 2024; and Cho et al., *Identifying Barriers to Munitions Production Capacity,* Feb. 2024. Additional subject matter expert consultations were conducted periodically from October 2024 through December 2024.

[8] The MIPA and PGM/ICA reports have limited distribution, so they will not be discussed in detail in this report because of its intended distribution.

[9] Source credibility was defined as documents that were produced by the federal government, established think tanks, and trade organizations. The year 2020 was chosen by SPA using the assumption that newer industrial base analysis included issues illuminated by the COVID-19 pandemic.

[10] Systems Planning & Analysis, *Defense Industrial Base Resilience: Analysis of Key Findings and Recommendations,* July 16, 2024.

In total, 459 recommendations were considered in light of their potential to mitigate the fundamental risks outlined in the 2023 NDIS. The most frequently identified risks included (1) identifying, recruiting, and retaining talent or other workforce issues; (2) managing complex and protracted procurement processes; and (3) handling the burden and risk of compliance with government contracting requirements.

Once recommendations had been compiled from the source material, the goal became narrowing the list to a smaller subset that could be reviewed by OASD IBP. Using a "stoplight" method, each recommendation was categorized and color coded so that the data could be found easily if the team needed to rereview the set of policies.

In the first phase of the review, policies that were too broad were coded in red, which included policies that were not specific to supply chains, called for the writing of a strategy, focused solely on adding additional funding, or failed to highlight an actionable step. The team also coded policies in red if they focused on ally and partner engagement, specific pieces of technology, singular clauses of legislation, or wartime scenarios, which were out of scope for the wargame series. This first review ended with roughly one-third of the compiled policies eliminated.

In the next phase of review the team coded in yellow any policies that, although actionable and specific, did not match the intended end state of the series. This second review removed roughly one-third of the remaining recommendations.

With the remaining one-third of policy recommendations, the team coded in blue policies that were well-positioned and actionable, but not relevant to the scenario for the Series.

These three phases of review identified the 15 policy recommendations (see Table 1) that were discussed with OASD IBP as potential options for the wargame series. The sources listed in the table are the original source material from which SPA pulled the recommendation. The themes are also derived from the SPA report and were included to ensure variety in the types of recommendations selected.

Table 1. Fifteen recommendations from the SPA report presented to the OASD IBP

Policy Recommendation	Source	Theme
Accelerate workforce development efforts to grow domestic science, technology, engineering, mathematics (STEM), and critical trade skills.	*Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States*	Personnel
Design and implement a single, authoritative data collection and reporting system to address and solve information gaps.	*Department of Navy Munitions: One Year Later*	Oversight, Information Sharing

Policy Recommendation	Source	Theme
Consider measures to diversify the domestic DIB, including increased oversight of mergers, changes to intellectual property (IP) provisions in defense contracting, and strengthening incentives for small businesses and new DIB entrants.	*Defense Primer: US Defense Industrial Base*	Contracting, Oversight, Sourcing
Build a Wartime Acquisition Response Plan to update explosive standards and establish minimum requirements for wartime.	*Department of Navy Munitions: One Year Later*	Operational Utility, Acquisitions, Production/Testing
Perform modelling of expenditure rates of critical munitions. Calculate their production restart or production increase times.	*Empty Bins in a Wartime Environment*	Operational Utility, Production/Testing
Create a strategic munitions reserve by buying 1-2 lots of long-lead subcomponents for critical munitions. Using the authorities of the Defense Production Act could help increase the supply of critical and strategic materials and increase response time of the industrial base.	*Empty Bins in a Wartime Environment*	Acquisitions, Resilience, Sourcing
Sign multiyear contracts for munitions that maximize production rates and stabilize the supply chain.	*Empty Bins in a Wartime Environment*	Contracting, Resilience, Production/Testing
Create infrastructure access agreements with cores to cost-effectively fund credible prototyping.	*Feedback on DOD Commons Section of CHIPS Act*	Production/Testing, Information Sharing, Technology
Create infrastructure to enable IP sharing and controls, including developing a clear IP policy for all Hubs.	*Feedback on DOD Commons Section of CHIPS Act*	Information Sharing, Oversight, Policy (DOD)
Support DOD efforts for contested deployment, focused on preserving, recovering, and sustaining critical infrastructure that supports DOD deployment, key domestic DOD facilities.	*How FEMA Could Lose America's Next Great War*	Operational Utility
Industry should partner with government and academia to incorporate new innovative rare earth extraction and processing methods that have been shown to be more environmentally friendly and economical.	*Hypersonics Supply Chains: Securing the Path to the Future*	Production/Testing, Climate, Sourcing

Policy Recommendation	Source	Theme
Reform the contracting process. Curtail the use of 'lowest price technically acceptable' (LPTA) contracts, shorten the awards process, broaden the use of lot buys and multi-year procurements, and de-layer duplicative and costly audit processes.	*Reinvigorating the Manufacturing and Defense Industrial Base*	Contracting, Policy (USG)
Reassess total munition requirements to determine if service planning is preparing for high-intensity combat in one or more than one theater.	*Empty Bins in a Wartime Environment*	Operational Utility, Acquisitions, Strategy
The DOD should invest in the Organic Industrial Base (OIB)'s Government-Owned Government Operated (GOGO) and Government-Owned Contractor Operated (GOCO) facilities that provide maintenance and manufacturing sustainment to aircraft, which ensures a ready and controlled source of know-how and resources during economic downturns.	*Fiscal Year 2021 Industrial Capabilities Report to Congress*	Production/Testing, Personnel, Resilience
Program offices should collect a complete list of raw materials, parts, and subcomponents and associated suppliers needed to produce an item, such as a bill of materials or an illustrated parts breakdown. These could also require contractors to provide a list of items that can critically affect the reliability of contract end items.	*Managing Risk in Globalized Supply Chains*	Resilience, Sourcing

Source: Systems Planning & Analysis. *Defense Industrial Base Resilience: Analysis of Key Findings and Recommendations.* July 16, 2024.

After a few rounds of review and discussion, the following four recommendations were selected to be explored in the workshops and wargame. Three were chosen from the analysis described above, and one (adversarial capital) was an emergent requirement identified by OASD IBP.

1. **Expanding the DIB.** Systematically integrate policies and mechanisms to expand the domestic DIB to scale capacity and capability through strengthening and advocating for incentives for small businesses, new DIB entrants, and nontraditional vendors.
2. **OIB.** Invest in the OIB's facilities, staffing, and systems to scale manufacturing within their established mandates.

3. **IP.** Develop IP licensing and control policies to establish mechanisms that promote the effective integration of multiple suppliers' IP and infrastructures.
4. **Adversarial capital.** Strengthen detection and enforcement against adversarial ownership, influence, and intelligence gathering by commercial entities controlled or influenced by adversarial nations—safeguarding critical infrastructure, defense industrial assets, and vital technologies.

These policy recommendations served as the basis of activities for the Arsenal of Policy series and evolved over time through multiple facilitated conversations with government and industry experts. Throughout this report, the policies are referred to by their shorthand of expanding the DIB, OIB, IP, and adversarial capital.

Scenario and scoping

Given the size of the DIB and the magnitude and multiplicity of challenges it faces, CNA used a scenario, scoping guidelines, and baseline assumptions to constrain and direct wargame participants' discussion.

OASD IBP was explicit that this should be a prewar scenario, given how dramatically authorities change during wartime. This direction also helped to ensure that recommendations emerging from the wargame can be implemented now, rather than during a future conflict.

Scenario: Rather than introducing significant changes or creating new dynamics, the scenario and wargame was very close to reality and focused on current issues. Choosing a scenario familiar to participants also enabled them to use their preexisting knowledge of the current state of the DIB in discussions. Outlining the scenario to participants was an opportunity to articulate the current challenges facing the DIB and ensure a baseline of shared knowledge and understanding. Participants were given the following information:

- **Competition continues.** In November 2025, the People's Republic of China continues to be a peer competitor engaging in escalatory behavior, with economic policies interrupting US supply chains.
- **The US remains an essential counterbalance.** Ongoing conflicts in US European Command's area of responsibility (AOR) and intermittent flare-ups in US Central Command's AOR are expected to continue, demanding US resources and draining existing stockpiles.
- **The DIB is fragile.** The US DIB is struggling to meet production targets, and its ability to increase production rapidly is limited.

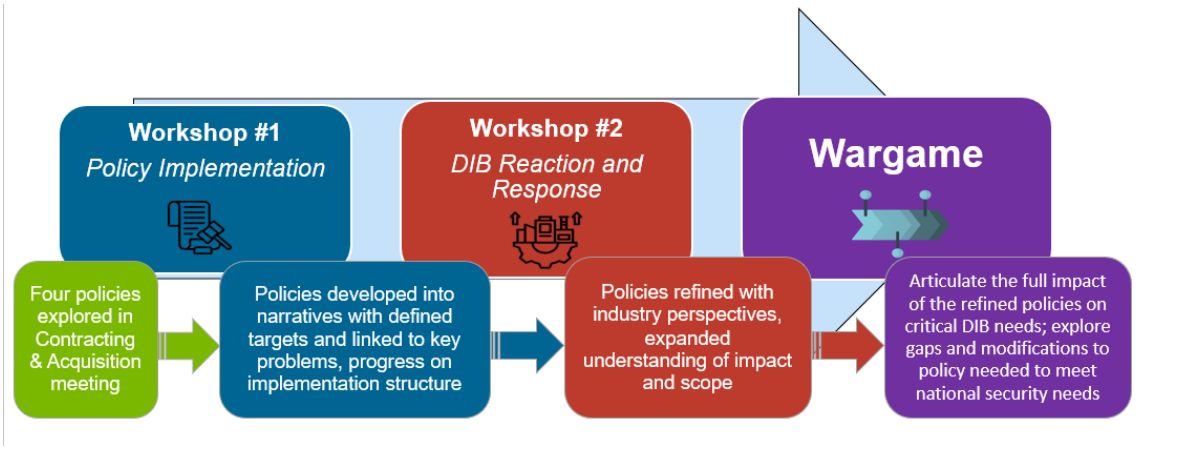
Scoping. Participants were advised to focus on munitions, specifically precision-guided munitions and missiles. Facilitators did not provide more specifics on individual munitions but

instead invited participants to discuss munitions they thought were of interest or munitions they had knowledge of. DOD efforts, non-DOD efforts, and efforts that required legislative changes were all in scope for conversation. Participants were encouraged to think both in the short- (<2 years), medium- (5 years), and longer term (10+ years) timeframes. Foreign production, outbound overseas investment, export restrictions, and non-munitions production were all out of scope. Also out of scope were policies that require wartime authorities, discussions on solving contested deployment challenges, protection of critical infrastructure, and cyberdefense.

Arsenal of Policy Series Design

The goal of the Arsenal of Policy series was to refine broad policy recommendations into structured policies linked to key DIB needs and to incorporate key stakeholder perspectives on the likely impacts of those refined policies. To that end, the intermediate workshops (one with government and one with industry) worked to build an internally coherent set of policies by linking concrete underlying challenges to targeted policy actions aimed at distinct stakeholders for each of the four selected policy recommendations. Participants worked outward from key challenges, through factors underlying the identified challenge, to the stakeholders involved, and, finally, to brainstorming policy actions. In this manner, the participants helped build out policies designed to solve specific challenges and, in turn, provided useful perspectives on the impacts of the policy on underlying problems. The series was iterative, with the workshops building on themselves and leading to the capstone wargame (Figure 1).

Figure 1. Arsenal of Policy series design



Source: CNA

Pre-Workshop

Leading up to the workshops, OASD IBP facilitated a brainstorming exercise to define desired outcomes and solicit preliminary feedback, primarily from contracting and acquisition experts, on the chosen policy recommendations. To ascertain government workshop attendees' reactions, OASD IBP also drafted a description and desired outcome for each policy.

Workshop 1—Interagency Insights

The first workshop focused on adding further detail to each of the four policy recommendations and bringing in interagency perspectives. Participants included key DOD stakeholders, service representatives, and attendees from the Departments of Homeland Security, Energy, Treasury, and Commerce. Workshop exercises focused on building a policy narrative, combining challenges that needed to be solved and factors that needed to change with stakeholders to target and policy actions required.

To facilitate this, participants were split into smaller groups based on their expertise. Each group received a policy recommendation with a description and the actions identified in the OASD IBP-hosted pre-workshop (Figure 2).

Figure 2. Example of a policy recommendation used in the government workshop

Topic	Policy Description	Desired Outcome	Suggested IBP Actions
OIB	The DOD should invest in the OIB's facilities, staffing, and systems to scale manufacturing within their established mandates.	OIB investment to provide sufficient property, plant, equipment, systems, and staffing to scale manufacturing	• **Action 1.** Develop and standardize metrics to monitor and assess OIB investment effectiveness at DOD-level, not just at servicelevel, in order to achieve better oversight of investment and asset management • **Action 2.** Replace minimum investment level guidance (e.g., 8% Rule) with need-based investment requirements, based on forecasted needs of DOD, using service, commercial, other stakeholders input, match capital investment with strategic need in order to allow the sharing of tooling across manufacturers for increased production flexibility (e.g., 3D printing technology)

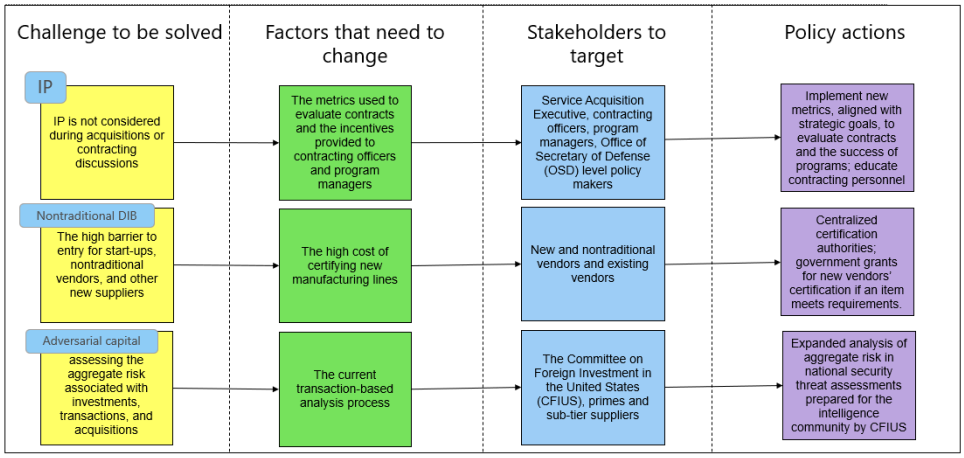
Source: CNA

Participants then proceeded through a series of design thinking activities. First, they discussed prepopulated challenges underlying the policy area of focus, reacting to the challenges and adding any additional areas of concern. Then, participants discussed the factors that underly those challenges. Participants brainstormed individually, shared specific ideas with a few other attendees, and then discussed with their whole small group, placing top factors on a common map (Figure 3) and connecting those factors to the previously discussed problems.

Next, participants considered the question, "What stakeholders should [future] policies target to affect the factors and problems previously identified?" They repeated the previous cycle of individual brainstorming and group discussion. Stakeholders were then also connected to relevant previous challenges and factors by participants.

Finally, participants repeated the brainstorming cycle with policy actions that would target the identified factor and stakeholder that would be involved. The complete lines of logic were deemed *policy narrative*, a term used throughout the remainder of this report (See Figure 3).

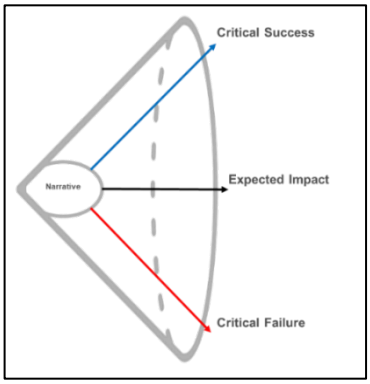
Figure 3. Examples of policy narratives developed at the government workshop



Source: CNA.

Once participants had completed this exercise for a policy recommendation, they discussed their expectations of how impactful a narrative would be using the concept of a "cone of possibility." First, participants discussed their expectations about what would change for stakeholders and how this would affect the DIB. Next, they discussed what a "critical success" would look like for their policy actions and worked to imagine what the impact on the DIB would be of this better-than-expected result. Finally, they discussed what factors could hinder the effectiveness of the envisioned policy action and result in a critical failure. For example, if the challenges identified arose during further implementation, how would participants revise expectations of the policy impacts previously articulated? Sticky notes were used to track participants' expectations of impact and placed next to the matching area of the cone (see Figure 4).

Figure 4. Cone of possibility used in both workshops



Source: CNA.

Finally, participants were asked to consider where the authorities to actualize the policy actions brainstormed existed, either within the DOD, interagency, or neither.

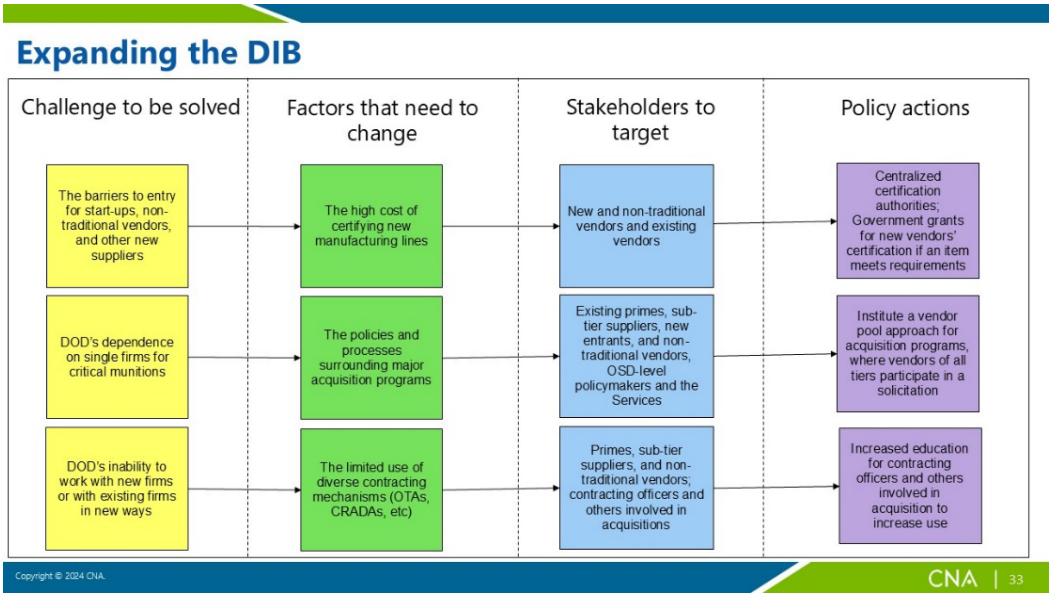
Workshop 2—Industrial Base Perspectives

Workshop 2 brought together industry representatives to "red team" the policy narratives created by the interagency group in Workshop 1. Attendees included prime and subprime contractors, subtier suppliers, raw material providers, and industry organizations, such as

consortia. Attendees were split randomly into two smaller groups, with the goal of ensuring that groups had a diversity of perspectives. Participants identified missing elements in the policy narratives, defined benefits and risks of the narratives, and described what successful and unsuccessful implementation might look like for each policy.

Participants started by reviewing the narratives produced at the government workshop, which had been consolidated and summarized by the CNA team (see Figure 5). Participants added comments to the factor and stakeholder columns, highlighting additional factors underlying the phenomenology of the challenge and other stakeholders that the interagency had not considered.

Figure 5. Example of a completed map from Workshop 1 for the expanding the DIB policy



Source: CNA.

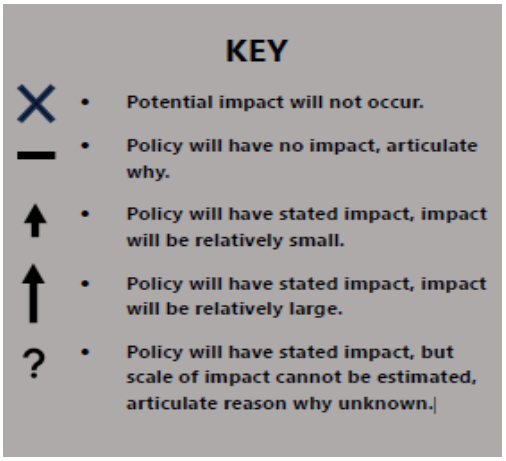
After a group discussion of the suggested additions, participants examined the policy actions from Workshop 1 and brainstormed characteristics that a future policy would require to be effective ("positives") and those that would have a negative impact on implementation, their firm, or the strength pf the DIB ("negatives"). Groups sorted these collective characteristics and then discussed key takeaways.

Finally, participants engaged in an impact discussion and activity parallel to Workshop 1, using the cone of possibility to consider what it would look like if all positives were implemented (critical success), what it would look like if all negatives were experienced (critical failure), and, as currently written, what kinds of impacts are expected (expected impact).

Wargame

The wargame brought together participants from the government and industry workshops to work through two final components: an impact assessment and a timeline forecasting session. As in Workshop 1, participants were split into smaller groups based on their expertise, with industry and interagency participants divided across the groups.

Figure 6. Scale used in impact worksheet activity



Source: CNA.

CNA reviewed all outputs and discussion from the workshops and compiled a list of approximately 10 potential impacts for each policy (see Appendix A). At the wargame, participants were instructed to review the policy narrative and then evaluate each potential impact using a five-option scale (see Figure 6). For example, someone could note that an impact statement asserting "The munitions market has sufficient opportunities for growth to motivate new businesses to enter the market once barriers to entry are reduced" will have its stated impact and the policy narrative will have a relatively large impact on the DIB by easing certification requirements. Participants were also asked how this impact might manifest and any possible trade-offs (Figure 7). This individual activity created a rich data source and allowed the CNA team to capture differences in perspectives across stakeholders.

After working through the worksheet individually, participants shared their perspectives with small groups and discussed why they had assigned scores to potential impacts. Groups then shared three areas of impact with the wider group and discussed areas of disagreement both within groups and between groups. This activity was repeated in the afternoon so that participants provided perspectives on two of the four policy areas of focus.

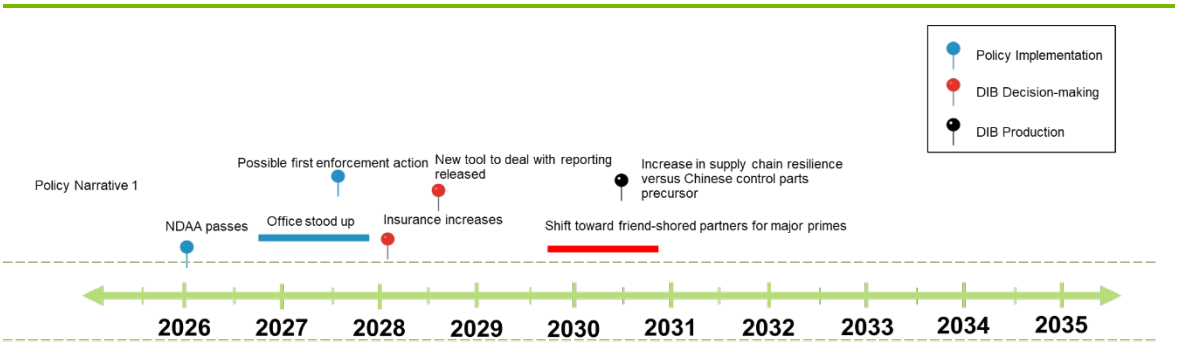
Figure 7. Example of an impact statement from the impact worksheet activity

Potential Impacts	**Impact Scale**	**Tradeoffs** *(Narrative of Impact & Tradeoff)*
1. This policy eases certification requirements and reduces policy related barriers for new businesses to enter the DIB.	X – ↑ ↑ ?	

Source: CNA.

The second day focused on a timeline exercise. For the first part of the activity, participants discussed implementation. Examining the narratives from Workshop 2, the groups described what steps would need to occur (and in what order) to achieve the proposed policy narrative, such as changes in legislation, new guidance issuance, or baseline assessments of current capabilities. The goal of this exercise was to see if the requirements needed for policy implementation would lead to changes in industry decision-making and, ultimately, changes in munitions production. As participants discussed and identified intermediate implementation steps, these steps were plotted onto a physical timeline with color-coded pins to visually display the time between policy change and effect on the industrial base (see Figure 8). Groups shared their timelines with one another in a plenary session before turning to the scenario and policy bundling portion.

Figure 8. Example of the timeline activity instructions provided to participants



Source: CNA.
Note: NDAA stands for the National Defense Authorization Act.

Participants then considered whether their timelines would change if all the policies and actions discussed were implemented in tandem, rather than in a piecemeal manner. After making those adjustments on their timelines, facilitators introduced a final inject, or "disruption." Although the start date was at the facilitators' discretion based on the implementation timelines participants had developed, all participants were briefed on the same scenario. The disruption sought to get as close to conflict as possible without entering wartime, which leads to significant changes in authorities, to stress test participants' decisions and identify any gaps. The disruption scenario participants were briefed on was the following:

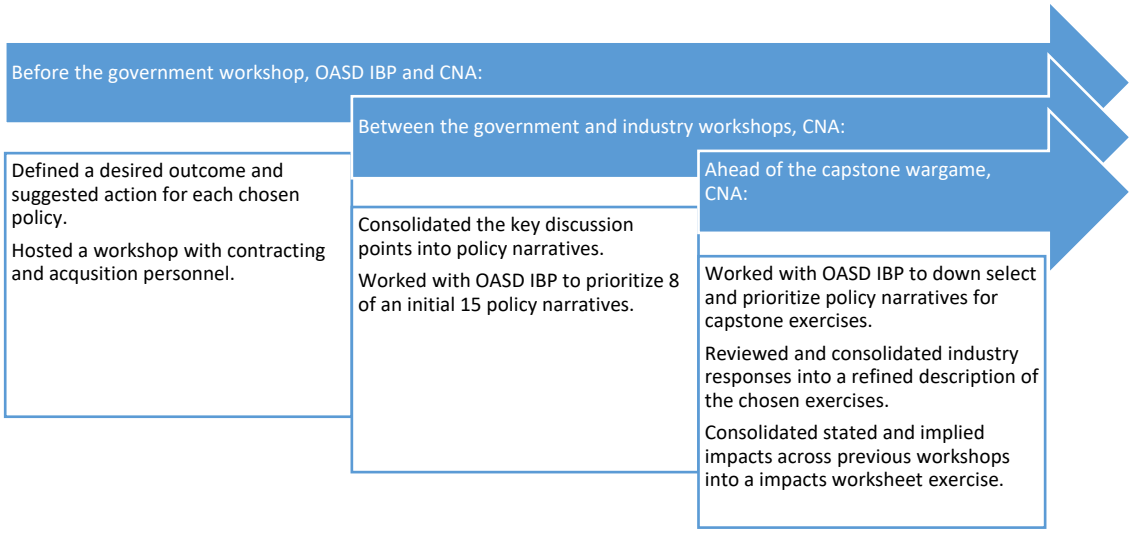
- Disruptions to industrial base activities by domestic actors and adversaries and an increase in the number and severity of natural disasters have notably affected the ability of the DIB to meet national demands, affecting both force readiness and the US deterrence posture.

- An adversary has publicly stated that it will take military action against the US or a close ally within a year.
- US political leaders in the executive and legislative branches take this threat seriously and are preparing to ramp up mobilization across multiple defense sectors and prepare for sudden large-scale surges in missile and munitions production.
- The Secretary of Defense has directed defense agencies, military services, and other procurement organizations to develop industrial mobilization plans, including procurement planning, prioritization of products, assessment and stockpiling of raw material, and final product needs.
- The Secretary of Defense has tasked forces to reconsider plans considering the long preparation time.
- This initiative, branded as a deterrence effort, enjoys bipartisan support in Congress, and appropriations are expected as the nature of the threat clarifies.
- DOD leadership has instructed offices responsible for managing parts of the DIB to be prepared to receive funds and act promptly on plans in place.

Participants then adjusted their timelines, considering if the new circumstances led to different impacts or implementation timeframes, what other additions to the policy might be necessary, and the effectiveness of the policy action.

The wargame concluded with a discussion of prioritization and a plenary hotwash to reflect on the workshop series. Figure 9 is an overview of the analytic process throughout the series execution. Table 2 lists key terms used in the report, along with their definitions.

Figure 9. Analysis that occurred throughout the design and execution process



Source: CNA.

Table 2. Summary of wargame and report terminology

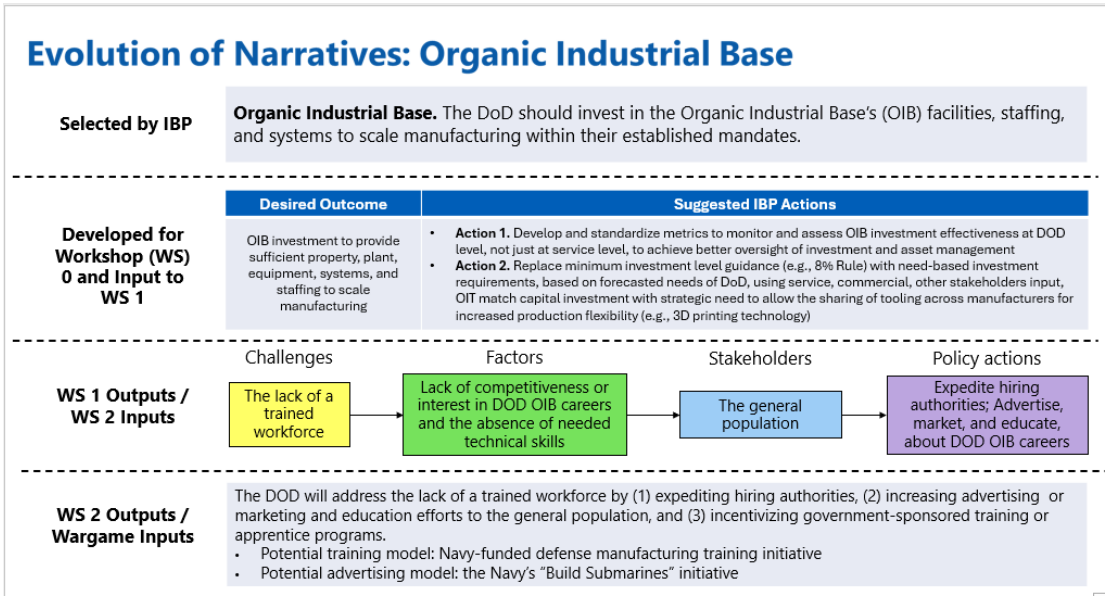
Term	Explanation
Existing recommendations	One of the four recommendations selected from the compiled list of recommendations in the SPA report and other resources
Policy narratives (also narratives)	Initially produced at the government workshop, the policy narratives expand upon the existing recommendations. They combine key challenges and factors, with potential stakeholders and policy actions required
Synthesized policy narratives	These combine and summarize insights from each of the first two workshops
Policy actions (also actions or suggested actions)	Actions and changes identified and suggested by workshop or wargame attendees
Synthesized policies	Initial policy actions developed at the government workshop, expanded upon in the industry workshop, and reacted to at the wargame
Recommendations	Recommendations developed by CNA's original analysis

Source: CNA.

Evolution of Narratives

This section describes how the initial policy recommendations transformed from a single, general sentence to a complex and specific set of recommended actions over the Arsenal of Policy series. It outlines the progression of the narrative for each of the four policies—expanding the DIB, OIB, IP, and adversarial capital—across the series. Figure 10 provides an example of one policy narrative (OIB), showing how the initial recommendation transformed using specific inputs from each of the workshops.

Figure 10. Example of the evolution of the OIB narrative and policy across the series



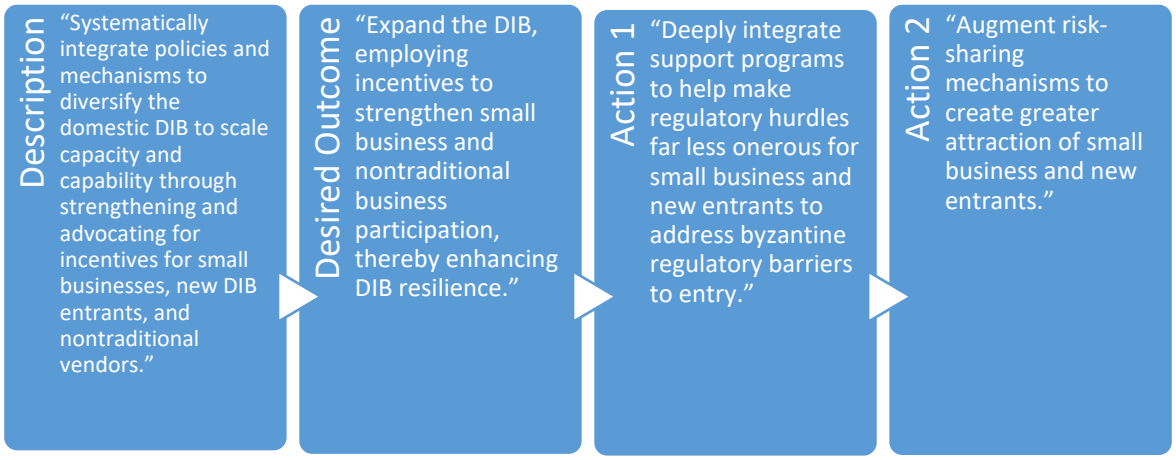
Source: CNA.

Expanding the DIB

OASD IBP's desired outcomes and suggested actions

The expanding the DIB policy began with a policy recommendation from the SPA report, with OASD defining a desired outcome and suggesting some potential policy actions (Figure 11).

Figure 11. Expanding the DIB desired outcomes and suggested actions

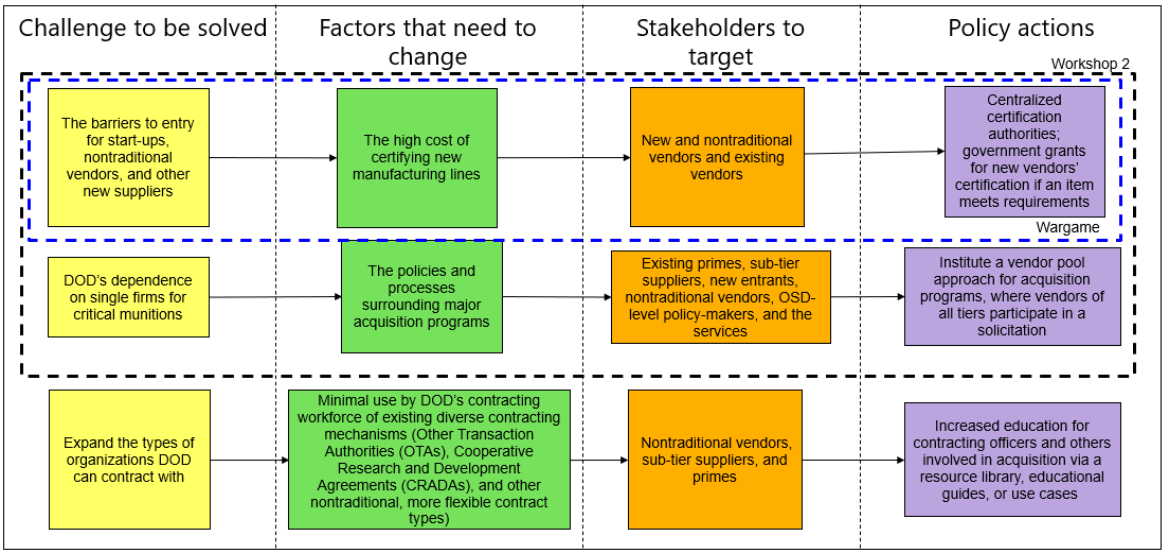


Source: CNA.

Narratives from government workshop

The broad narratives developed by government participants on expanding the DIB are illustrated in Figure 12. DOD and interagency participants identified challenges related to barriers to entry for startups, nontraditional vendors, and other new suppliers; DOD's dependence on single firms for critical munitions; and DOD's inability to work with new firms or existing firms in new ways. Factors underlying these challenges included the high cost of certifying new manufacturing lines, the limited use of diverse contracting mechanisms, and acquisition processes and programs. Participants recommended the centralization of certification authorities and the provision of government grants to support certification of new lines. Additional recommendations included using a vendor pool approach for acquisition programs, something already used by the Air Force, and increased education for contracting officers involved in acquisition. Of these, the first two narratives (dashed black box in Figure 12) were selected for further consideration in the industry workshop.

Figure 12. Expanding the DIB challenges, factors, stakeholders, and policy actions identified in the government workshop



Source: CNA.

Industry response to government workshop narratives

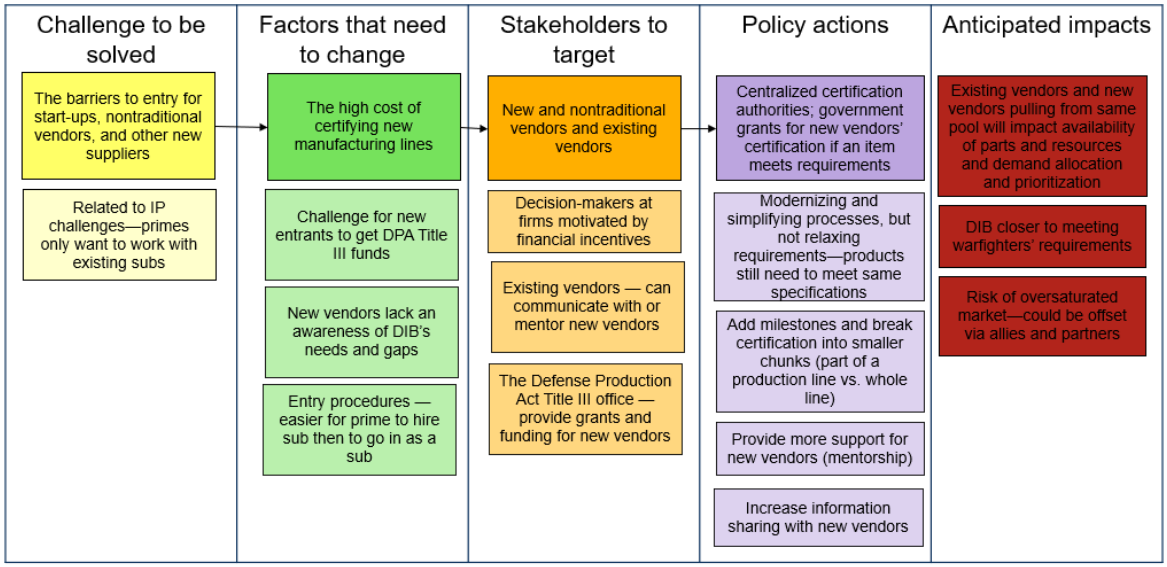
In the industry workshop, participants identified additional challenges, factors, stakeholders, and policy actions (reflected as faded boxes in Figure 13 and Figure 14) related to each narrative. They also identified potential impacts of the policy actions.

Expanding the DIB Narrative 1

Industry participants noted the difference between qualification and certification, defining *certification* as associated with the paperwork of a line that has passed inspection and been qualified and instead preferring to focus on *qualification*. Industry noted that government needs to help plan for how to handle obstacles if or when new vendors encounter them (e.g., failing an article test). They suggested that government should explore flexibility with new vendors, perhaps building an article test failure or other error into the qualification process, and indicated mentor-protégé relationships between established DIB firms and new vendors could be beneficial. Participants agreed that standards need to be modernized, not relaxed. They thought centralizing certification authorities may be beneficial to clarify the processes for new vendors but worried centralization could further slow the process. Participants flagged that new suppliers often do not understand what a product is being used for (i.e., what drives demand), making it hard to gauge how to position funds and supply to meet needs. Finally, the classification of some key DOD documents relevant to industry can limit nontraditional firms

that might lack cleared personnel from supporting the DIB, requires the private sector to have more cleared personnel, and can hamper industry responsiveness.

Figure 13. Industry response to government workshop policy Narrative 1 on expanding the DIB

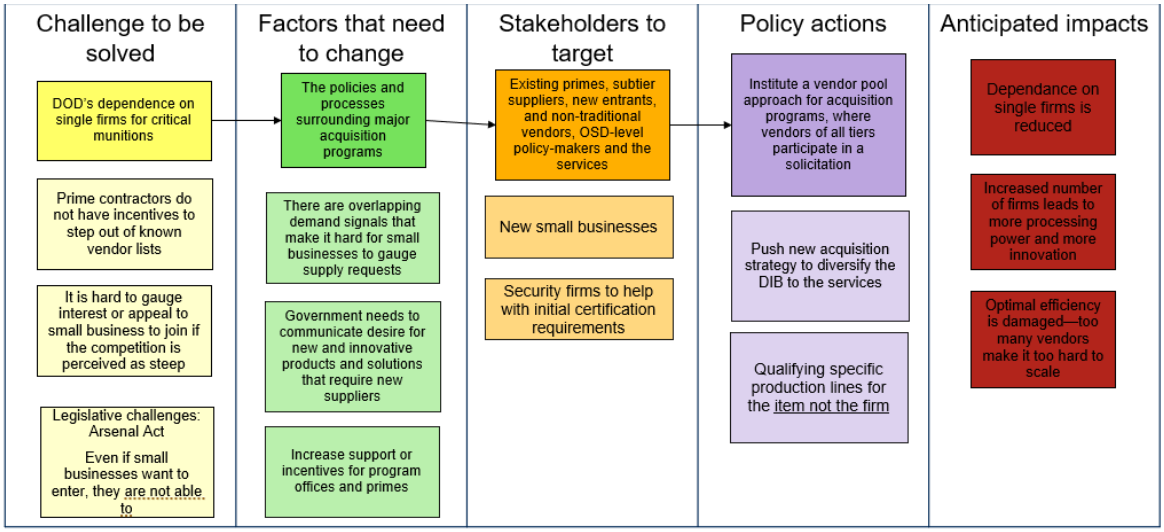


Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Expanding the DIB Narrative 2

Industry perceived a culture of risk aversion from contracting officers when considering bringing on new vendors to produce munitions or other products. This contributed to the reliance on one, or just a handful, of suppliers. Additional barriers include the Arsenal Act, which prioritizes using government-owned arsenals for manufacturing supplies, onerous security requirements, and complicated qualification processes. Industry participants also highlighted the difficulty in making a business case to company leadership to produce munitions because of the highly variable demand. Government's increased communication about needs, product interests, DIB expansion goals, and innovative solutions could help a firm demonstrate demand to leadership or entice new firms or suppliers. Participants indicated that primes are not motivated to step outside of their existing vendor pools to give new businesses opportunities. If the government wants to be proactive and engage farther up the supply chain, industry noted that it could play a role in setting up increased interaction among supplier tiers throughout a program's life cycle to help manage or mitigate these barriers.

Figure 14. Industry response to government workshop policy Narrative 2 on Expanding the DIB



Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Synthesized expanding the DIB policy selected for the wargame

The synthesized policy narrative developed for the wargame was the following:

Policy: DOD will (1) centralize certification authorities and (2) provide government grants for new vendor certification to both new and existing vendors to reduce high-cost barriers of certifying new manufacturing lines if an item meets requirements. These actions include the following:

- Add milestones and break certification into smaller chunks.
- Provide more support for new vendors by increasing information sharing and mentorship.

Primary challenges

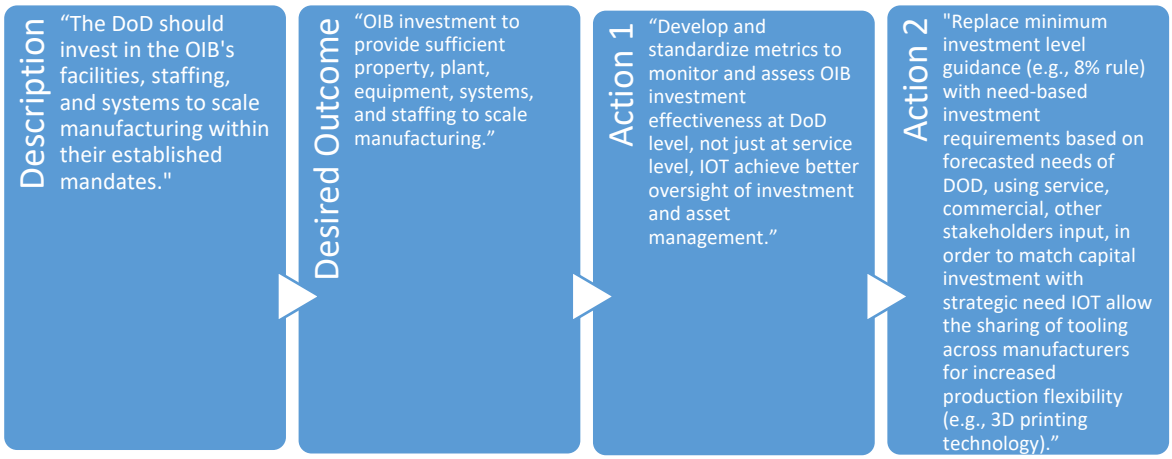
- High barriers to entry for startups, nontraditional vendors, and other new suppliers
- Modernizing, but not relaxing, standards
- A lack of clarity about government goals and product uses
- Primes' preference for working with existing subprimes

Organic Industrial Base

OASD IBP's desired outcomes and suggested actions

The OIB policy began with a policy recommendation from the SPA report, with OASD defining a desired outcome and suggesting some potential policy actions (Figure 15).

Figure 15. OIB desired outcomes and suggested actions

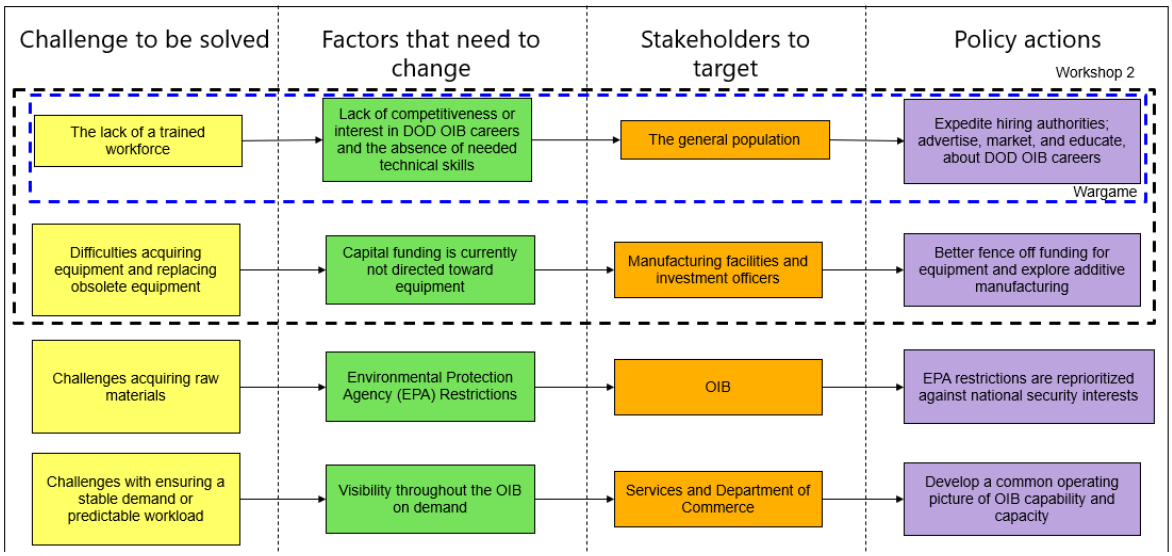


Source: CNA.

Narratives from government workshop

The narratives developed by DOD and interagency participants are illustrated in Figure 16. Identified challenges included the absence of a trained workforce, difficulties acquiring and replacing equipment, supply chain obstacles to acquiring necessary raw materials, and an inconsistent or unpredictable workload. Participants indicated that the general population lacked both interest in OIB careers and the necessary skills to fill those positions and noted the OIB's lack of competitiveness compared with other industries. Proposed policy actions that might help mitigate these challenges included expediting hiring authorities and better advertising OIB careers. Policy narratives related to OIB staffing and equipment narratives (dashed black box in Figure 16) were selected for further consideration in the industry workshop.

Figure 16. OIB challenges, factors, stakeholders, and policy actions identified in the government workshop



Source: CNA.

Industry response to government workshop narratives

In the industry workshop, participants identified additional challenges, factors, stakeholders, and policy actions (reflected as faded boxes in Figure 17 and Figure 18) related to each narrative. They also identified potential impacts of the policy actions.

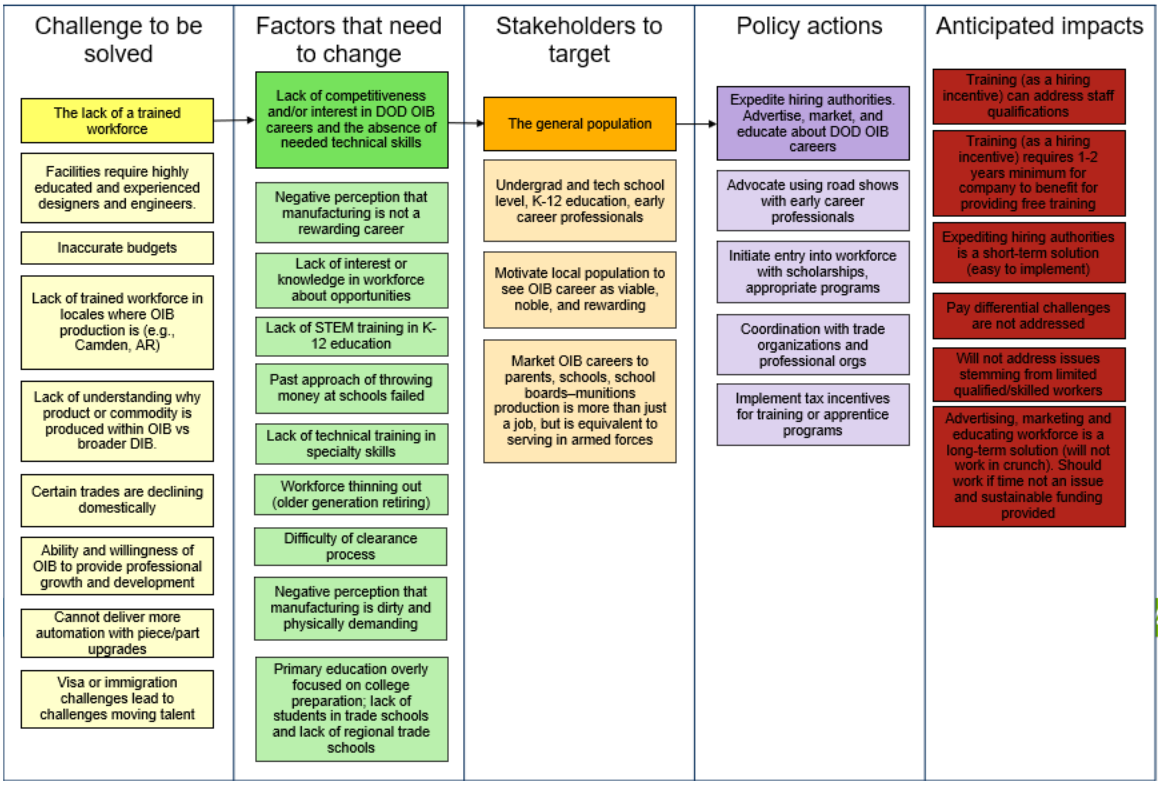
OIB Narrative 1

Industry wondered whether policy changes would be effective at addressing the root problem, which they felt was a lack of interested or trained individuals. Bias against government work, military work, munitions work, or factory work could all simultaneously discourage interest in a career in a munitions factory in the OIB, which is further by remote plant locations. Participants indicated that finding people who had interest, expertise, work ethic, and the ability to pass a drug test resulted in a limited pool of potential employees. Industry noted that the pay differential needed to be addressed and pointed out that expediting hiring authorities is beneficial only if there is a pool of people to hire from.

Acknowledging these fundamental challenges, discussion turned to recruitment and advertisement options, focusing on specific successful examples. The Navy's "Build Submarines" initiative was one example, along with the Navy-funded Accelerated Training for Defense Manufacturing program, which sought to expand the pool of qualified staff. Pending

an assessment of how effective these examples were, participants indicated these could be useful models to review for potential broader adoption.

Figure 17. Industry response to government workshop policy Narrative 1 (lack of a trained workforce) on OIB

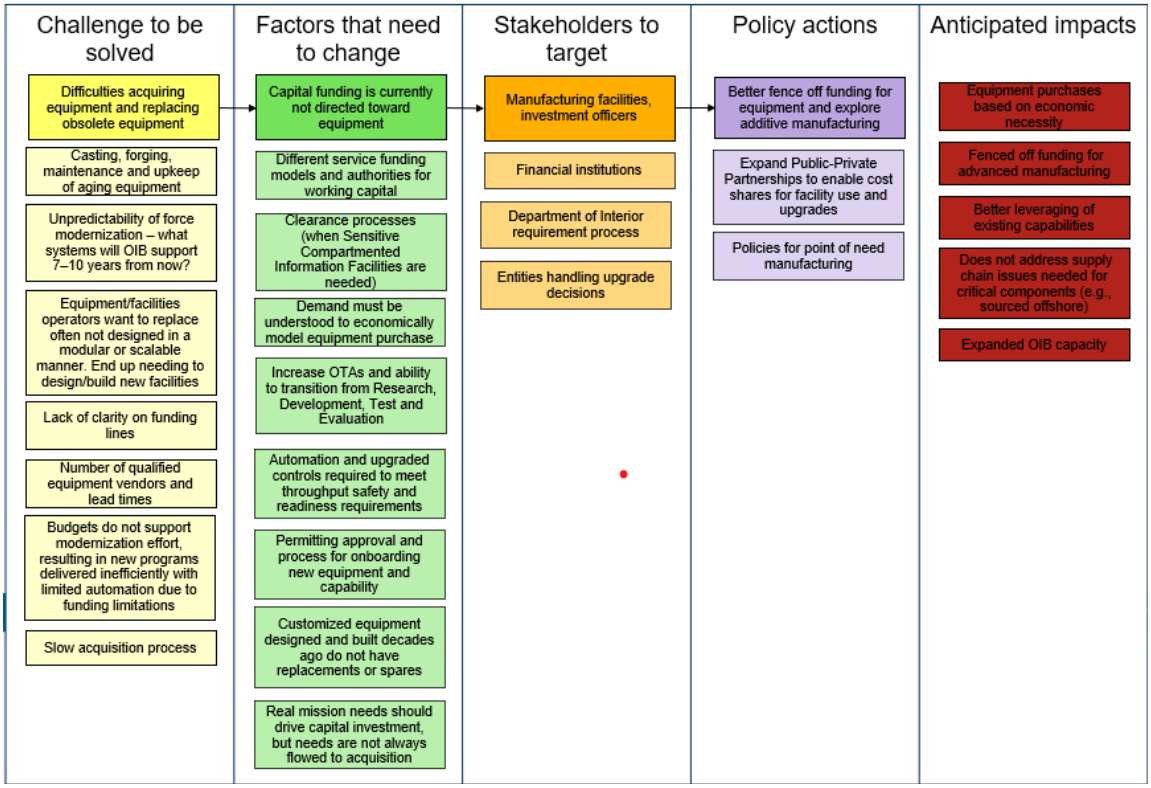


Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

OIB Narrative 2

Industry participants struggled to stay focused on the challenges associated with equipment purchasing and management. Participants did, however, indicate that replacing equipment was often a large undertaking that required significant investment. Obsolete equipment cannot be replaced piecemeal because the systems and spare parts are also outdated. Instead, discussion touched on broader issues, such as unpredictable workload and inconsistent demand. Industry noted a lack of visibility into "the big picture" and the challenges prioritizing conflicting demands between services and foreign nations. Participants also discussed the lack of knowledge about capacity in DIB-adjacent sectors, citing the surveys prior to World War II when thousands of businesses were asked what they could contribute to mobilization.

Figure 18. Industry response to government workshop policy Narrative 2 on replacing equipment within the OIB



Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Synthesized OIB policy selected for the wargame

Given industry's limited discussion of and interest in the issue of obsolete equipment, OASD IBP and CNA selected and presented the policy for the wargame associated with the OIB staffing narrative.

Policy: The DOD will address the lack of a trained workforce by (1) expediting hiring authorities and (2) increasing advertising or marketing and education efforts for the general population. These actions include the following:

- Encourage government-sponsored training or apprentice programs (e.g., tax incentives).
- Fund a defense manufacturing training initiative as a potential model.

- Adopt advertising models similar to the Navy's "Build Submarines" initiative.

Primary challenges

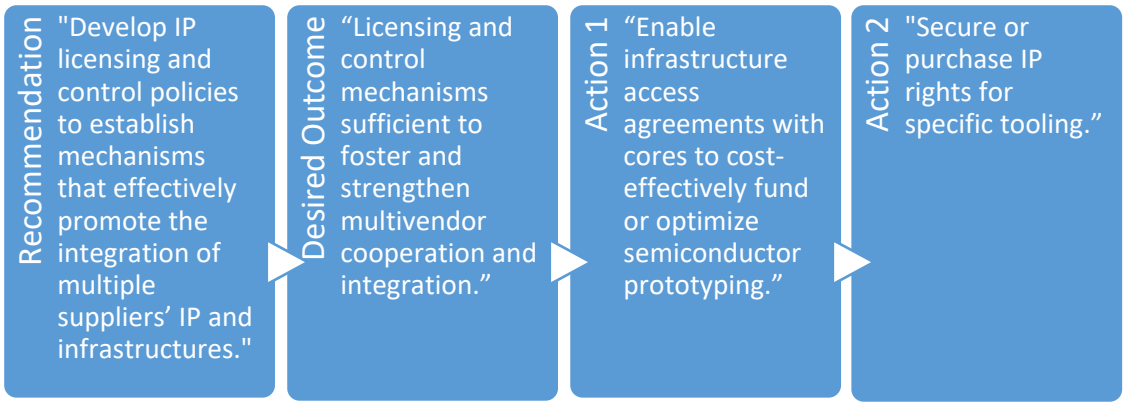
- Lack of a trained workforce
- Loss of promising applicants because of hiring delays
- Small pool of potential new hires interested in OIB weapons-manufacturing jobs
- Manufacturing sites' locations in low population areas
- Negative sentiments associated with working for the military, in manufacturing, or for the government

Intellectual property

OASD IBP's desired outcomes and suggested actions

The IP policy began with a policy recommendation from the SPA report, with OASD defining a desired outcome and suggesting some potential policy actions (Figure 19).

Figure 19. IP desired outcomes and suggested actions



Source: CNA.

Narratives from government workshop

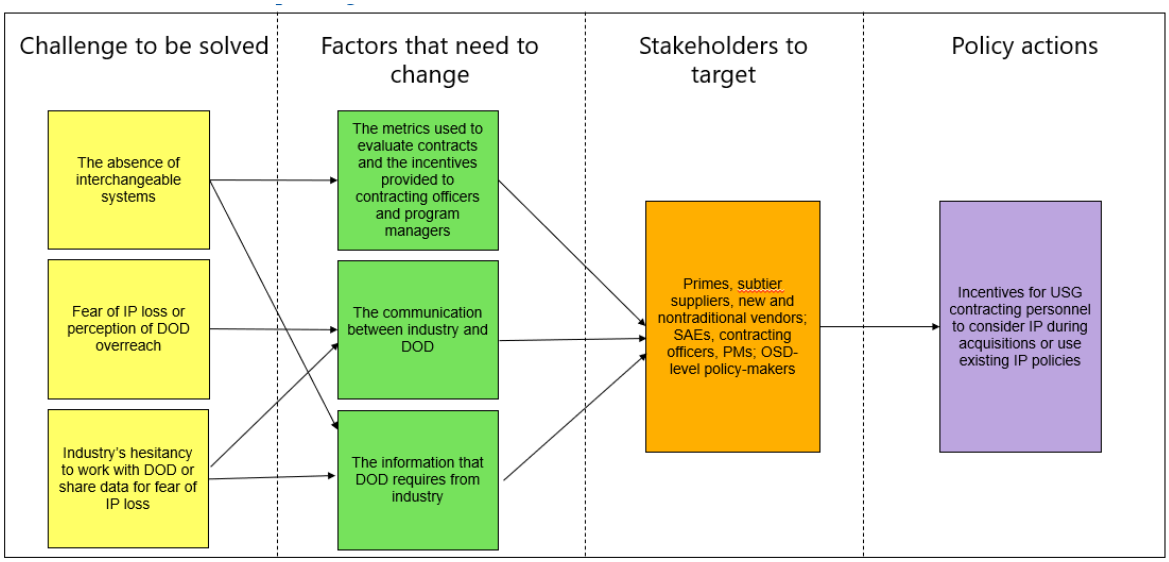
Government and interagency participants identified challenges related to the absence of interchangeable systems, which can be difficult to integrate after they have been adopted into programs of record. Participants also attributed difficulties in improving interchangeable

systems to a perception of reluctance from industry to share IP information out of fear of IP loss and DOD overreach.

Participants indicated that communication and information flow between DOD and industry could be improved and that how contacts are implemented could be changed. Specifically, metrics evaluating contracts should be used to motivate contracting officers and program managers (PMs) to consider integration between systems. In addition, contracting officers and PMs may need to use different incentives to mitigate perceived industry concerns. The resulting policy action to motivate USG contracting personnel to consider IP during acquisitions represented a change in direction from the policy actions initially proposed.

When these narratives were presented to OASD IBP, they requested that the four narratives be combined given the overlapping concerns and similar stakeholders. They also selected the policy action focused on changing incentives to USG contracting personnel for future analysis. This combined IP narrative is summarized in Figure 20.

Figure 20. IP challenges, factors, stakeholders and policy actions identified in the government workshop



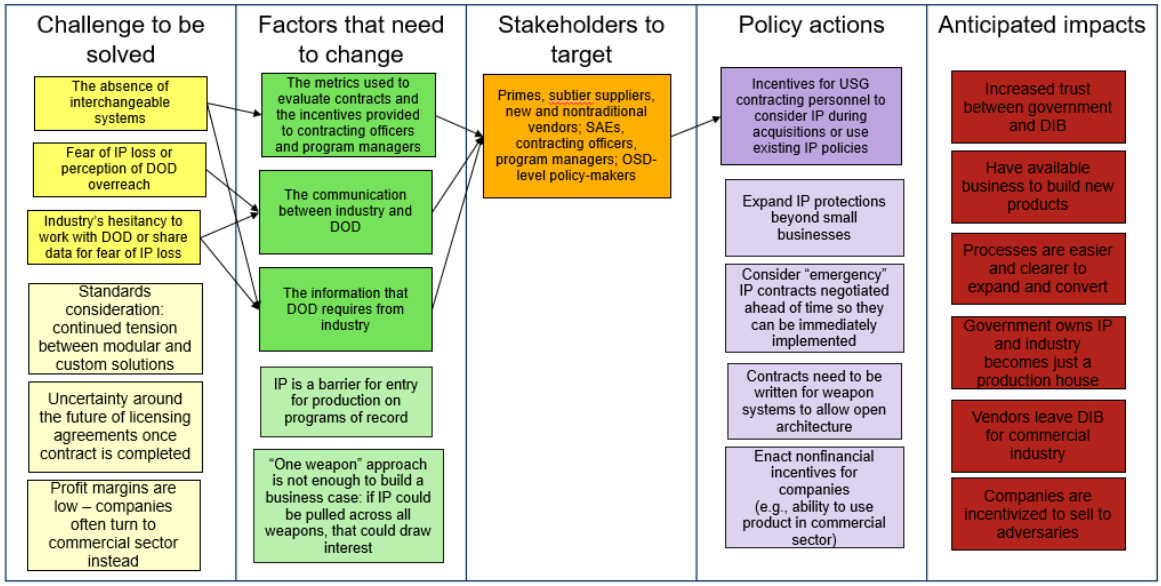
Source: CNA.

Industry response to government workshop narratives

In the industry workshop, participants identified additional challenges, factors, stakeholders, and policy actions (reflected as faded boxes in Figure 21) related to the IP narrative. They also identified potential impacts of the policy actions.

Industry highlighted a tension between modular (defined in the workshop as "possible to integrate within a larger system of systems") and custom solutions. Industry indicated that IP should not be a barrier to entry for production of programs of record. Participants suggested additional policy actions, including negotiating emergency IP contracts ahead of time so they can be implemented immediately if needed and writing contracts that allow for open architecture. During discussion, participants also indicated that IP concerns are typically settled early on in contracting discussions and that alternatives to traditional IP arrangements are typically not considered at this stage.

Figure 21. Industry response to government workshop policy narrative



Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Industry representatives indicated that complete contracts do not guarantee future licensing agreements and that low profit margins can push companies away from DOD and toward the private sector. IP is a critical asset, and vendors use IP to reinvest in their companies. Participants indicated that nonfinancial incentives, such as allowing companies to use relevant IP to produce for the commercial sector, would help to address the low profit margins. Participants noted that getting IP policy wrong could potentially motivate industry to sell to adversaries, disincentivize innovation or creativity, and lead to vendors leaving the DIB for the commercial industry. Finally, participants indicated that if success looks like new businesses joining the DIB (through expansion or conversion), challenges with IP agreements will not affect the production scale problem (associated with the wargame endstate).

Synthesized IP policy selected for the wargame

Consolidating insights from the first and second workshops resulted in the following IP policy, which was presented to participants at the wargame:

Policy: DOD will (1) modify metrics used to evaluate contracts and incentives provided to contracting officers and PMs to improve how contracting personnel use existing IP polices and consider IP during acquisitions and (2) improve communication with industry. These actions include the following:

- Negotiate incentives for emergency IP contracts ahead of time.
- Encourage open architecture to improve interoperability.
- Allow nonfinancial incentives for companies (such as reduced restrictions to selling products in the commercial sector).
- Encourage contracting alternatives, such as Cooperative Research and Development Agreements.

Primary challenges

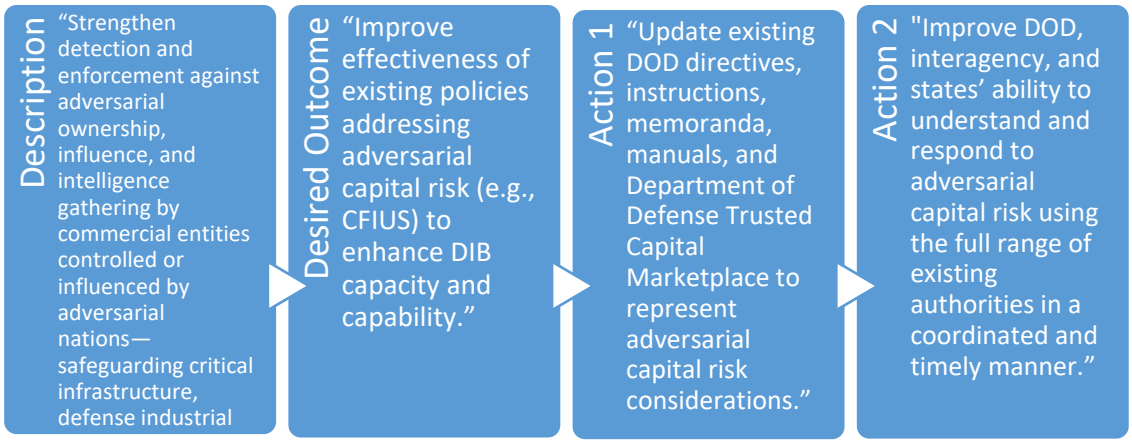
- Industry concerns about sharing or losing IP, post-contract licensing, and DOD overreach
- Absence of interchangeable systems within the DIB
- Difficulty balancing modular and custom solutions

Adversarial capital

OASD IBP's desired outcomes and suggested actions

The adversarial capital policy represented an emerging requirement for OASD IBP, which defined a desired outcome and suggested some potential policy actions (Figure 22).

Figure 22. Adversarial capital desired outcomes and suggested actions



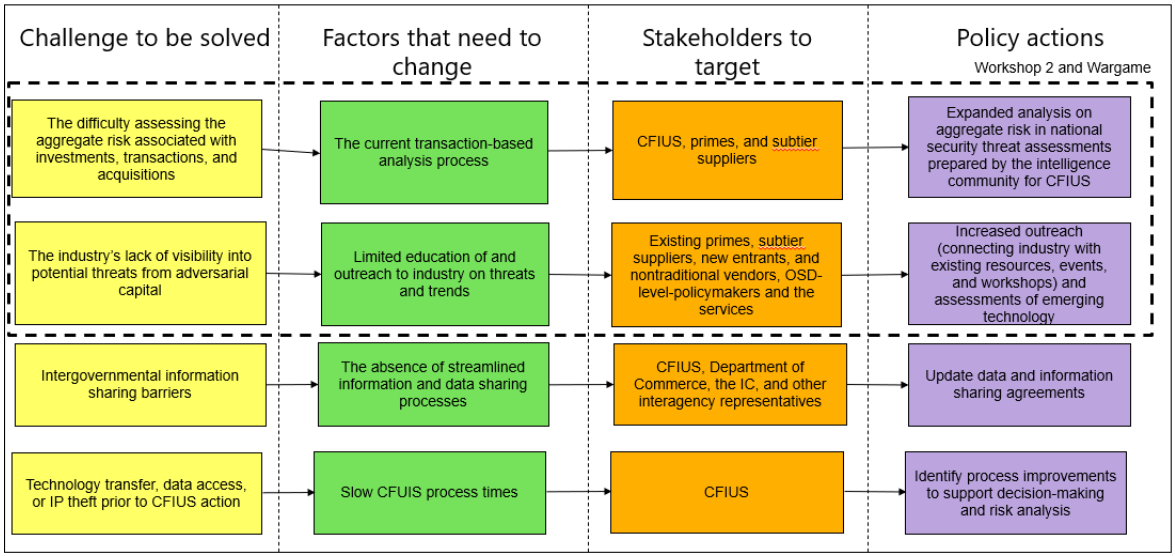
Source: CNA.

Narratives from government workshop

DOD and interagency participants identified the following challenges related to adversarial capital: the difficulty in assessing risk associated with investments, transactions, and acquisitions; lack of industry visibility into potential threats; intergovernmental barriers to information sharing; and inadequate Committee on Foreign Investment in the United States (CFIUS) tools to prevent unauthorized technology transfer, data access, or IP theft prior to formal transactions. Although CFIUS can undo transactions or force divestment, it cannot mitigate vulnerabilities pretransaction. For example, a foreign company can gain sensitive information from a US firm before CFIUS steps in.

Participants also pointed out that no entity tracks aggregate risk, which was defined as the risk posed from coordinated adversarial investment in a sector of the economy or supply chain. CFIUS, for example, uses transaction-based processes and while it would likely identify an attempted foreign purchase of a company that produces key US weapons systems, it might not notice the purchases of multiple companies that manufacture subcomponents of those weapons systems. Both threaten the security of US weapons systems production, but only one would be identified as a threat by existing US systems. Participants noted this was a major shortcoming of current efforts to track adversarial capital and suggested that the intelligence community (IC) take steps to assess it. The narratives developed by government and interagency participants are illustrated in Figure 23.

Figure 23. Adversarial capital challenges, factors, stakeholders, and policy actions identified in the government workshop



Source: CNA.

To improve industry's visibility into the threats posed by adversarial investment, participants suggested improving education and outreach, particularly to subtier and raw material suppliers that may not have as much engagement with USG stakeholders. The information that industry needs already exists, making the solution a matter of effectively connecting industry with existing resources, events, and workshops.

Participants also identified intergovernmental information sharing challenges. CFIUS, for example, has strict rules limiting what it can disclose publicly related to a transaction, but a company that is unhappy with an adjudication is free to publicly criticize CFIUS. In some cases, a local or state government working to increase business in its region may also criticize CFIUS. Although unlikely to be implemented successfully, participants noted that these tensions might be mitigated if a trusted agent were allowed to review assessments justifying the CFIUS decision.

Industry response to government workshop narratives

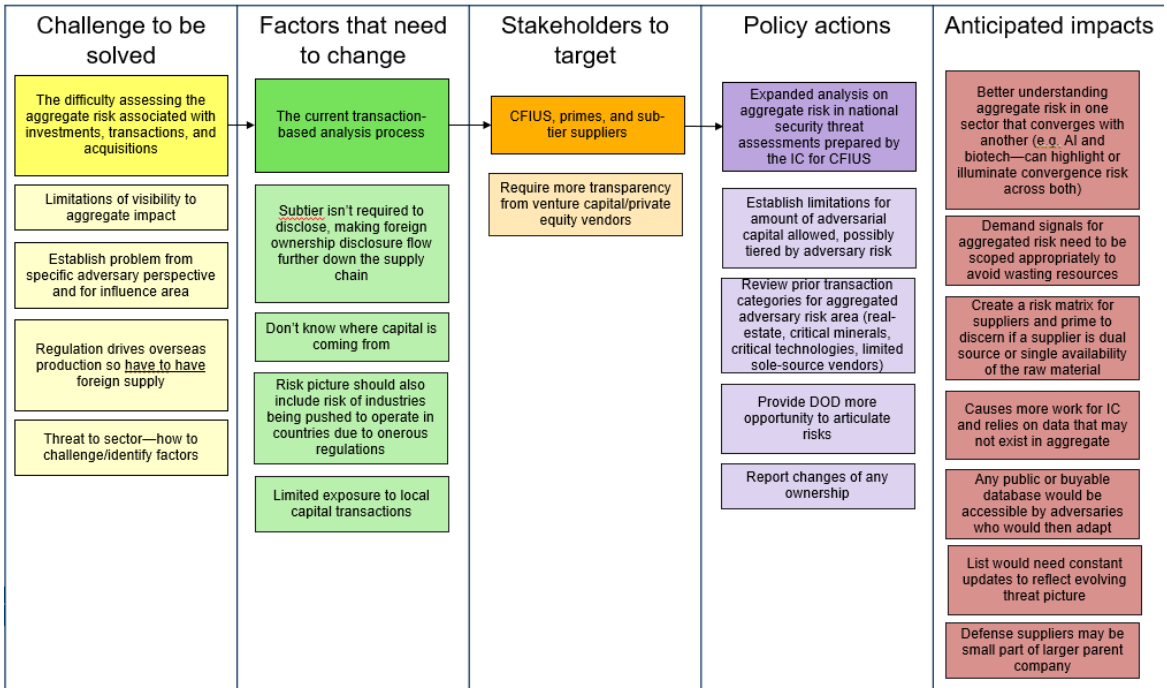
At the request of OASD IBP, industry reacted to the first two narratives in Figure 23 (inside the dashed box) given the limited time available.

In the industry workshop, participants identified additional challenges, factors, stakeholders, and policy actions (reflected as faded boxes in Figure 24 and Figure 25). They also identified potential impacts of the policy actions.

Aggregate risk narrative

Participants identified additional challenges, including the limited ability to choose alternatives for some sectors. Requiring foreign ownership disclosure upstream in the supply chain could increase transparency from subtier suppliers and venture capital and private equity firms. Participants indicated that thresholds need to be defined for allowable levels of adversarial capital (possibly changing by adversary) and other triggering metrics (e.g., a percentage change in ownership).

Figure 24. Industry response to government workshop first narrative on adversarial capital



Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Industry participants anticipated the policies would provide a better understanding of risks in aggregate and converging risks between sectors, but were concerned that these policies would be resource intensive for both government and industry. They discussed several levers that could be used either to get ahead of transactions or free up bandwidth, including truncating CFIUS processes for a list of trusted allies and partners, using non-CFIUS agencies to review foreign investments, and using and broadening the Office of the Director of National Intelligence's (ODNI's) risk assessments. Industry also suggested using a Foreign Ownership, Control or Influence (FOCI) review of contracts via the Defense Security Cooperation Agency

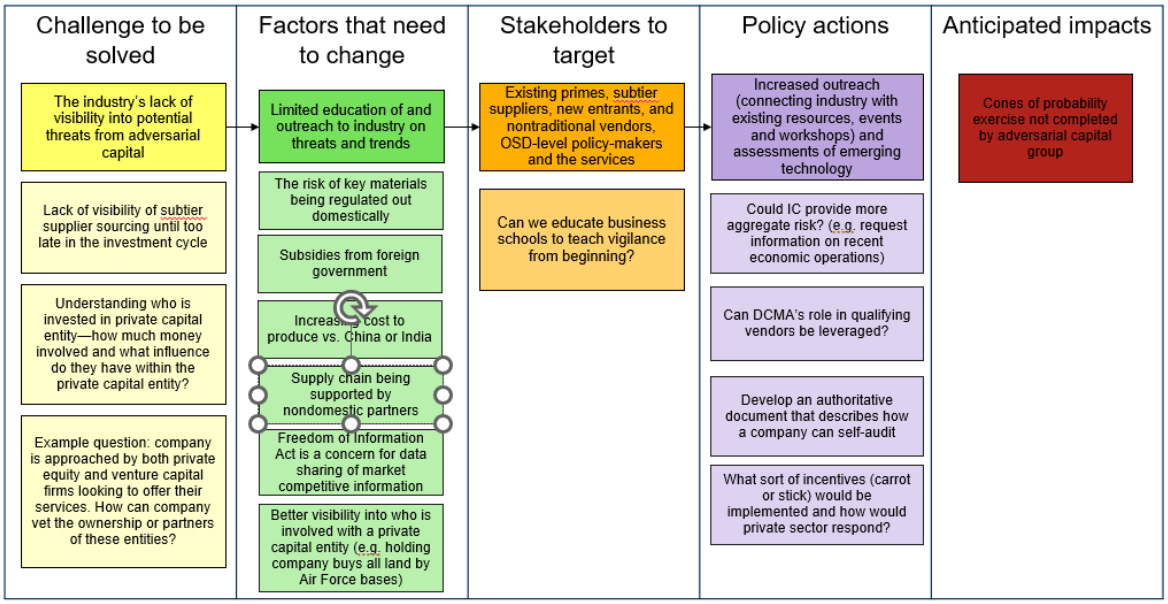
(DSCA) for cleared contractors, changing Defense Federal Acquisition Regulation Supplement (DFARS) language in contracts, modifying Joint Acquisition Protection and Exploitation Cell's (JAPEC's) Critical Tech List and regulations, and expanding educational resources.

Visibility on adversarial capital narrative

Industry was less concerned about a potential lack of visibility into adversarial investments and more concerned about additional requirements imposed by the original policy narrative. Participants struggled to think of specific examples where a lack of knowledge about adversarial capital caused issues and indicated that primes are sensitive to DOD and national security requirements and may not need additional outreach or education. Participants were concerned about primes having some implied responsibility for subprime investment, noting primes do not have information or visibility on subprime ownership.

Participants suggested the Defense Contract Management Agency (DCMA) as a potentially appropriate touchpoint because of its existing role in qualifying vendors. Currently, companies do not need to be recertified when ownership changes, but this process could be modified to require recertification upon certain triggering events related to adversarial capital. Participants acknowledged the importance of clearly defining problematic behavior and related triggering metrics, such as a change in foreign ownership or some percentage change in capital investments. To limit damage to the DIB and avoid imposing additional costs, participants proposed a soft-warning category (e.g., giving companies one year to address concerns before their line certifications are suspended).

Figure 25. Industry response to Workshop 1 policy second narrative on adversarial capital



Source: CNA.
Note: The top row represents inputs from the government policy narrative discussion. Boxes below the top row represent additional inputs from industry participants in Workshop 2.

Synthesized adversarial capital policy selected for the wargame

The synthesized policy narrative developed for the wargame was the following:

Policy: (1) The IC expands analysis to include aggregate risk in national security threat assessments prepared for CFIUS and (2) DOD uses DCMA to increase outreach to connect industry and the services with existing resources, events and workshops. These actions include the following:

- Truncate CFIUS processes for North Atlantic Treaty Organization (NATO) members and other close US allies in the Asia-Pacific
- Modify DCMA policies to require qualified vendors to recertify products based on specific triggering information, to include change in foreign ownership or some significant percent change in capital
- Leverage additional existing information sources to support CFIUS assessments and DCMA outreach
- Implement a one-year window for companies to recertify product lines to limit negative supply chain impacts

Primary challenges

- Difficulty assessing aggregate risks associated with investments, transactions, and acquisitions
- Ineffectiveness of additional regulation in repatriating supply chain components or sectors that are already overseas
- Difficulty defining problematic investments or behavior (frequency, risks, thresholds) tied to adversarial capital
- Limited CFIUS ability to mitigate information exchange vulnerabilities pretransaction or detect problematic behavior
- Industry's lack of visibility into potential threats from adversarial capital
- Time and production delays caused by industry efforts to gather information on adversarial capital
- Companies' inability to validate any vetting information received from suppliers
- Limited bandwidth within the IC

Key Themes

Throughout the Arsenal of Policy series, several themes surfaced repeatedly during facilitated discussions. Although the wargame was scoped to munitions supply chains, most of these themes are applicable across the industrial base.

A more stable or transparent demand signal was seen as key to motivating companies' participation in the DIB, encouraging investment from primes and smaller companies, and increasing DIB capacity. Industry participants shared that firms struggle to adapt to surges and that clearer signals and better visibility into long-term demand would make prioritization and investment decisions considerably easier. Participants called for better communication about projected needs, improved transparency in contracting, and increased early indicators (i.e., baseline orders or publicized priorities). Discussion also highlighted the value of the OIB in supporting production of materiel with low private sector demand or low profit margins. Participants noted that in the absence of a consistent demand signal, consistent communication between public and private partners might provide the information and stability industry needs to begin the investments and expansion necessary to meet munitions requirements during war or high-intensity combat.

Essentials of staff, equipment, facilities, and materials remain a challenge. Production capacity and capability for a given item are determined by a company's available staff, equipment, facility space, materials, and processes. This applies to prime vendors and every company moving upstream in the supply chain, including those concerned with raw materials. These concerns remained at the forefront of participants' minds. Industry, along with some USG participants, returned repeatedly to staffing challenges and limited access to raw materials. They indicated throughout the Arsenal of Policy series that policy changes were often falling short of directly addressing these root cause factors associated with DIB capacity and capability. This occurred despite facilitators' efforts to move beyond these discussions and explore the selected policy recommendations. Given the repeated identification of workforce as a major concern by participants and the ways in which personnel policies could positively affect both industry and the OIB, OASD IBP should consider prioritizing the workforce-focused policy recommendation and its related actions.

The wargame series developed a shared understanding of challenges, risks, and barriers to action. Significant discussion focused on the different ways the USG and industry approach risk. Industry highlighted that expanding production capacity and capability via investments, hiring, and expansion creates risk and noted that their leadership and shareholders have limits on the level of risk they are willing to absorb. Without a consistent demand signal, firms have to take on considerable risk when hiring, for example, either over-

hiring staff (risking having to let them go) or under-hiring staff (risking inability to meet production targets). The high cost associated with the qualification of new lines also creates risks if industry cannot gauge whether the government is going to continue a program in the future. If demand drops, the costs associated with maintaining equipment and ensuring facilities can exceed the revenue from the product.

Gaps in knowledge, authority, resource, and capability exist within the DIB. Discussions during the wargame illuminated several gaps in understanding of key issues. Although resourcing and capability gaps might be known generally to both government and industry, a nuanced understanding of these gaps and what causes them varies. During discussions on adversarial capital, for example, participants noted that although primes understand the risks of adversarial investment, subprimes and other firms in the supply chain often do not. Similarly, primes, but not other firms, understand the processes, roadblocks, and challenges of production-line qualification and sustaining equipment built to military specifications. Similarly, the USG might be aware of production delays, but industry suppliers understand how deeply those delays extend through the supply chain. Certain tasks are also being duplicated by multiple government offices or agencies; the Department of Treasury, Department of Commerce, and intelligence agencies collect very similar, if not identical, information on firms' funders and adversarial investment. Finally, firms often must be certified multiple times for the same parts across different government buyers, wasting government's and industry's limited resources.

Industry did not view IP as a priority, leading to a consensus across government and industry attendees that IP policy actions could be deprioritized. DOD and interagency participants spent much of the first workshop discussing industry's concerns about DOD overreach and IP loss. During the second workshop and the wargame, it emerged that IP was not as significant a concern for industry and conversations instead focused on the existing DOD mechanisms that provide protection for industry's IP. Government attendees were also exposed to the close linkages between IP and profits for industry. Due largely to industry's views, participants agreed that the IP policy actions could be deprioritized.

Industry felt adversarial capital policy could also be deprioritized, but government attendees remained firm on its importance. Industry felt adversarial capital did not have a close relationship with DIB capacity and capability and worried that some of the proposed policy actions created additional tasks or risks for their firms. Government attendees, however, were concerned about the levels of adversarial investment in specific firms, supply chains, and the DIB as a whole and remained firm on its importance.

Participants repeatedly discussed the importance of communication and collaboration—across the USG, between USG and industry, and between primes and subprimes. Communication is crucial to inform industry about the threats from adversarial

capital, inform industry of USG and DOD priorities, and ensure that the USG is aware of challenges facing the DIB. Communication and outreach could help to resolve some of the gaps in understanding highlighted earlier. Through the workshops and wargame, industry was able to understand what the government *believes* industry's challenges are and government was able to understand industry's concerns and priorities, identifying both areas of consensus and areas where interpretations or priorities differ.

Increased outreach and education are necessary for subtier suppliers and raw materials providers that are already a part of the DIB and for nontraditional vendors and small businesses that government hopes could be part of the solution of expanding the DIB. One of the biggest gaps was USG communication with subprimes, small suppliers, or producers that are not already considered part of the DIB. These producers may have extra production capacity or could benefit from DOD or USG programs but are currently unaware of needs and resources. Primes are generally in close communication with the USG and are familiar with the risks of investment by adversaries, the certification process for new production lines, and the grants and funding opportunities available to defense firms, while other firms and vendors may not be.

Current DOD, service, and interagency efforts are taking a novel approach to DIB challenges. Throughout the workshops and wargame, participants shared numerous examples of current, ongoing efforts that could be models for DIB-wide solutions. In discussions on hiring and staffing the OIB, multiple groups highlighted the Navy's Accelerated Training in Defense Manufacturing program. The program quickly trains candidates in essential manufacturing skills and trades to establish a steady and sustainable flow of qualified workers for Navy ship and submarine building and repair. Participants noted this model could potentially be adapted to the munitions supply chain. The Department of Navy "Build Submarines" initiative was also cited as an example of a creative advertising campaign to increase applicants. The workshops and wargame were able to identify that multiple agencies, including the Department of Treasury, Department of Commerce, Internal Revenue Service, Department of Homeland Security (DHS), and the IC all gather information related in some way to adversarial capital. Some of these resources could be used as tools to educate industry on risks and trends related to adversarial capital, while others could help government track adversarial investment across the DIB.

Recommendations and Potential Actions

Using the input gathered across the Arsenal of Policy series, CNA has identified the following policy actions. While there are many challenges and weaknesses within the DIB, participants successfully identified and prioritized clear, actionable steps to achieve progress. These recommended actions are categorized based on the timeframe in which they can be reasonably implemented, either 6 months, 12 months, or 2 years. If no action was identified within a given timeframe, it is noted in the following tables.

These policy actions are meant to provide some initial options for OASD IBP to make progress toward achieving the revised endstate of identifying feasible risk-informed policy and resource options to help strengthen and support the DIB. CNA recognizes that some of these actions might already be underway but deemed it important to include them given their identification by participants.

Expanding the DIB

Table 3. Expanding the DIB policy actions

Timeframe	Policy Action	Stakeholders
6 Months	Increase communication about opportunities, grants, requirements, and certification processes to Tier 2 suppliers and others further down the supply chain	OASD IBP, services, primes, subtier suppliers
	Release a joint memo from industry and government on best practices for implementing agile and flexible contracting mechanisms	OASD IBP, DOD Office of the General Counsel (OGC) IP Cadre, services
	Add language on common qualification and testing to new contracts	Primes, subtier suppliers, DOD contracting officers, PMs
	Expand the number of vendors primes can mentor to support these communication goals	OASD IBP, primes, subtier suppliers
12 Months	Create a new coordination office to help communicate with industry	OASD IBP
2 Years	Implement modernized industry standards (rather than government standards) where possible	Service Acquisition Executives (SAEs), contracting officers, PMs

Source: CNA.

Organic Industrial Base

Table 4. OIB policy actions

Timeframe	Policy Action	Stakeholders
6 Months	Advocate for the Office of Personnel Management (OPM) to publish an updated Direct Hiring Authority memo for OIB positions	DOD OPM, Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD A&S), SAEs
	Issue a data call focused on existing recruitment mechanisms and incentive strategies across the five most needed job series.	
12 Months	Assess key munitions shortages (e.g., compare current production capabilities against the Total Army Munitions Requirement) to identify where the OIB can supplement DIB production	OSD A&S, OASD IBP, SAEs
	Conduct a baseline status assessment of key OIB facilities and existing gaps	OASD IBP
	Develop a recruitment strategy informed by studying past regional recruitment efforts	OIB facilities leads, DOD OPM, Under Secretary of Defense for Personnel & Readiness
2 Years	*No actions identified*	*No stakeholders identified*

Source: CNA.

Intellectual property

Table 5. IP policy actions

Timeframe	Policy Action	Stakeholders
6 Months	Publish a joint memo between industry and government committing to communication and transparency	OASD A&S, OASD IBP, industry consortium, primes
	Conduct a baseline assessment of gaps and potential IP issues for priority programming	OASD IBP, DOD OGC IP cadre, services
12 Months	Develop a system to track IP provisions and variances across DIB contracts	DOD OGC IP Cadre, SAEs, contracting officers, PMs
	Add a Contract Line Item Number (CLIN) for surge production into new contracts	DOD OGC IP Cadre, SAEs, contracting officers, PMs
	Develop and include an IP strategy for new priority programs in the contract	DOD OGC IP cadre, OASD IBP

Timeframe	Policy Action	Stakeholders
2 Years	*No actions identified*	*No stakeholders identified*

Source: CNA

Adversarial capital

Table 6. Adversarial capital policy actions

Timeframe	Policy Action	Stakeholders
6 Months	*No actions identified*	*No stakeholders identified*
12 Months	The IC should add assessments on aggregate risk into existing assessments on adversarial capital	IC, DOD, Treasury, Commerce
	Identify existing intelligence gathering efforts and coordinate information sharing between agencies for supply chain risk management	IC, DOD, Treasury, Commerce
	Create an office that sits across multiple agencies and helps identify aggregate risk	IC, Department of State, DOD, Treasury, Commerce
	Explore using artificial intelligence or large language models to assess aggregate risk	IC, Treasury, CFIUS
2 Years	Create CFIUS exemptions for countries that have similar vetting processes of foreign investment	CFIUS, primes, and subtier suppliers, new entrants, and nontraditional vendors

Source: CNA.

Conclusions

Although the DIB faces many challenges, recent efforts to strengthen the industrial base have produced hundreds of recommendations without a clear prioritization scheme. That situation has made the implementation of policy difficult. This wargame series took a systematic approach to prioritizing, exploring, and evaluating existing recommendations to identify whether they would, in fact, strengthen the DIB.

The series began by narrowing more than 400 recommendations from existing research to a set of 15, ultimately selecting four to explore in this wargame series. This series could be replicated with a different set of four policies. The 12 other policies prioritized via the method but not selected for exploration would be a valuable place to start future analysis or wargaming efforts.

The recommendations were still too broad to be actionable at the start of the series. DOD representatives, key interagency stakeholders, and a cross section of industry, including private firms and the OIB, collaboratively developed these recommendations into clear policy actions that OASD IBP or other USG stakeholders could act on. They also identified the specific stakeholders, potential timeframes, and anticipated challenges associated with each policy.

Convening stakeholders from across industry and the interagency revealed differences in opinion. Some recommendations viewed as priorities for the DIB by government attendees, such as IP, were not considered as urgent by industry. The series led to increased understanding, new and improved relationships, and enhanced communication, all of which will benefit OASD IBP and other USG stakeholders as they seek to strengthen the DIB.

OASD IBP and CNA entered this wargame series with an ambitious goal of identifying policies that could improve DIB capacity and capability. The four recommendations and the policies constructed by stakeholders ultimately did not meet this anticipated need. Identifying that a specific policy may not be effective, urgently needed, or produce the anticipated results is an important discovery that likely would not have been made for these four policies without this series. More importantly, the challenges facing the DIB are sufficiently large, complex, and entrenched that no single recommendation, or even a combination of four, will increase DIB capacity and capability. The simultaneous prioritization of multiple lines of effort is required.

Appendix A: Additional Analysis

Because one of the initial objectives of this series was to identify the impacts of proposed policy actions, including benefits, second-order impacts, and unintended effects, we focused a significant portion of the series and analysis on trying to clearly articulate and capture impacts.

Method

After both workshops were completed, CNA analysts gathered responses from government and industry discussions to identify potential impacts associated with each of the policy narratives, focusing on participant responses to the cone of possibility exercise. Participant-identified impacts were supplemented with an impact associated with the wargame's initial desired endstate—"to improve DIB capacity and capability"—and an impact tied to each policy's desired outcome as initially defined by OASD IBP. Finally, the text of the policy narratives were reviewed for any implied impacts associated with the challenges, factors, stakeholders, and actions that were not already accounted for.

CNA analysts then synthesized, combined, and condensed this initial list of somewhat vague impact statements into 10 impact statements for each policy narrative. Analysts attempted to phrase the impacts as clearly positive or negative statements, rather than as neutral, to illicit reactions from attendees at the wargame. All impact statements were intended to reflect input by participants or OASD IBP, and no assessment of their likelihood or magnitude of impact was made by CNA.

CNA analysts presented this list of impacts to participants for review in the wargame via four impact worksheets, one for each of the policies. The impact worksheets instructed participants to circle a symbol corresponding to a category of impact magnitude and provide a short, written response explaining their reasoning.

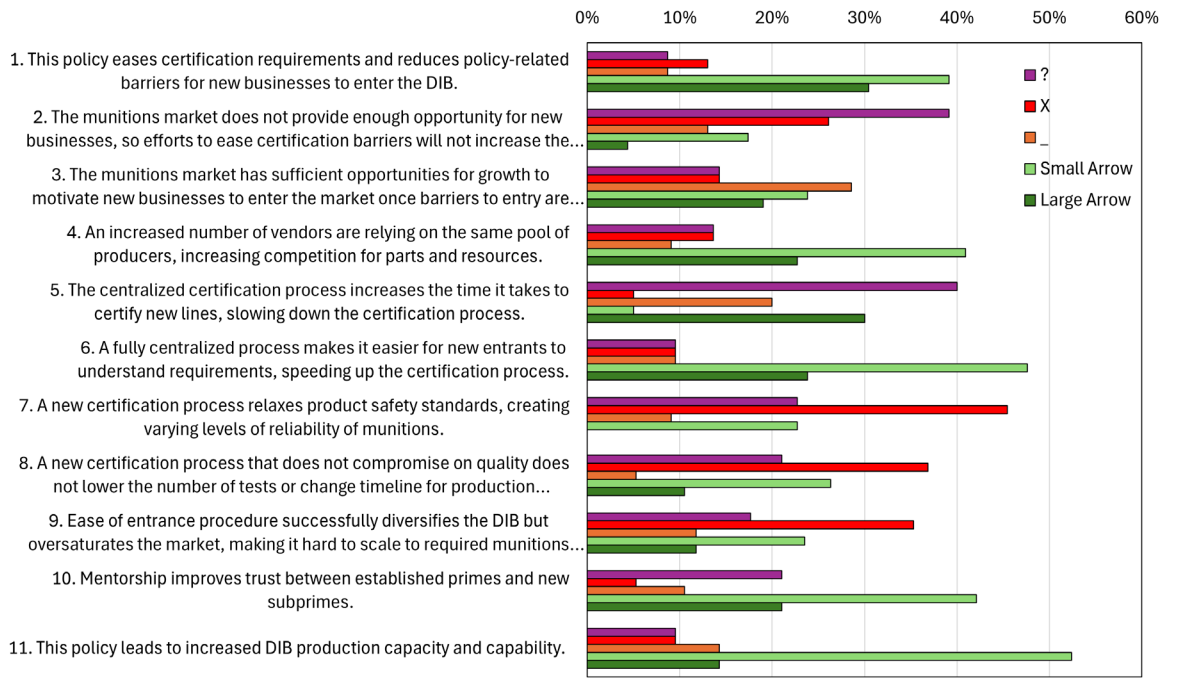
Figure 26. Key used for the impact activity

Source: CNA.

Responses

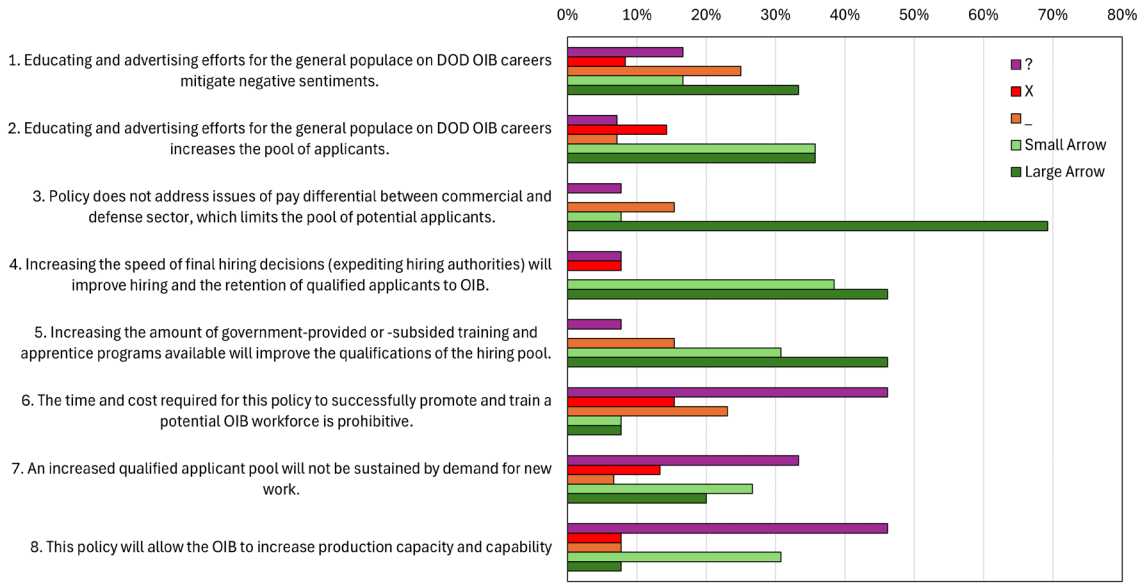
Figure 27, Figure 28, Figure 29, and Figure 30 display the impact statements and participants' responses for expanding the DIB, OIB, IP, and adversarial capital policies, respectively. Readers should be cautious when interpreting these responses as they represent subjective assessments by participants rather than an analytically informed assessment.

Figure 27. Expanding the DIB policy impact statement responses



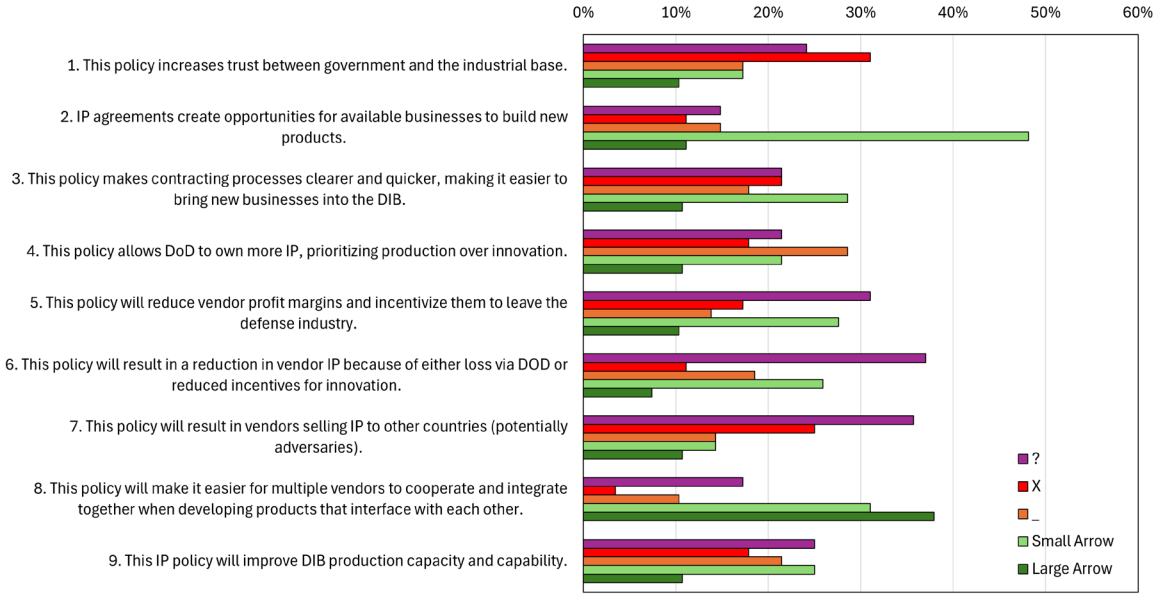
Source: CNA.

Figure 28. OIB policy impact statement responses



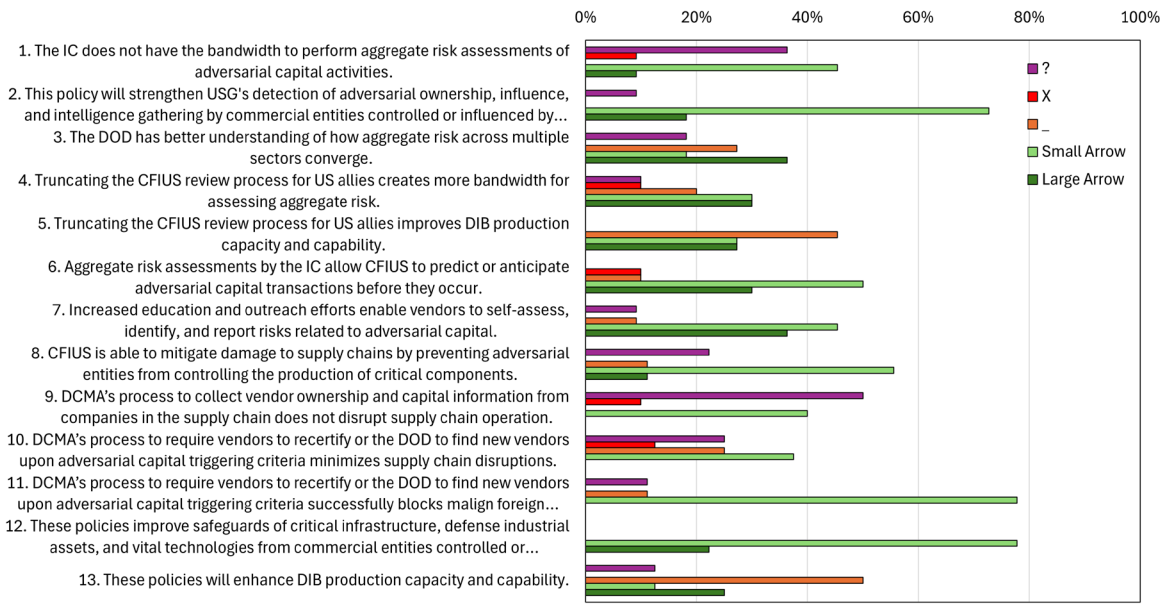
Source: CNA.

Figure 29. IP policy impact statement responses



Source: CNA.

Figure 30. Adversarial capital policy impact statement responses



Source: CNA.

To identify impacts with strong consensus across participants, responses were grouped into three categories: positive impact (small and large arrows), negative and neutral (X and -), and opted not to answer (?).[11] Using these groups, analysts then performed a chi-squared test against the uniform distribution. Given the diversity of opinions, one would expect to see an even split across all categories over many answers (33 percent in each of the three categories). The null hypothesis of the chi-squared test was "the participant responses are uniformly distributed," and the alternate hypothesis was "the participant responses are not uniformly distributed." At a significance level of p=0.05, most (61 percent) of impact statements failed this test, supporting the uniformly distributed hypothesis.[12] **The following impact statements passed the chi-squared test, which indicates evidence of group consensus:**

[11] Grouping was performed, in part, to mitigate small sample size issues and to avoid penalizing cases where participants agreed that an impact would occur but disagreed on its magnitude.

[12] Sample sizes varied by group and by question, since not all participants answered all questions. The number of responses were as follows for each policy group: IP n=29, adversarial capital n=11, OIB n=15, and expanding the DIB n = 23. Grouping the categories ensured the chi-squared test was valid for most of the policies (although at a lower than recommended n). This was not true for the adversarial capital policy responses. For our purposes, the chi-squared test is a filter to identify responses that had large agreement among participants and errors in the final calculated probability will not impact results presented here. For comparison, the Fisher exact test (more accurate for smaller n) tends to be conservative (increasing p values).

Anticipated impacts for policy on expanding the DIB

- **Impact Statement 1.** This policy eases certification requirements and reduces policy-related barriers for new businesses to enter the DIB (small impact 39 percent, large impact 30 percent).
    - Participants indicated that the impact depended on effectively centralizing processes, reducing several unique but similar requirements (such as across services) or policy-related barriers. Participants also indicated that ease of certification could increase risk.
- **Impact Statement 4.** An increased number of vendors are relying on the same pool of producers, increasing competition for parts and resources (small impact 41 percent, large impact 23 percent).
    - Participants indicated this would depend on the situation. For example, it might hold true for rare earth metals but not for other resources, or it could be a temporary issue as the market adjusts. Some participants indicated this was already an issue with some subtier vendors.
- **Impact Statement 6.** A fully centralized process makes it easier for new entrants to understand requirements (small impact 48 percent, large impact 24 percent)
    - Multiple participants agreed that a centralized process would make it easier for new vendors to enter the DIB, but they disagreed that a centralized process would make qualification faster. Participants also indicated this would be specific to individual processes and companies.
- **Impact Statement 10.** Mentorship improves trust between established primes and new subprimes (small impact 42 percent, large impact 21 percent).
    - One participant indicated that mentorship from USG technical resources to DIB firms would be beneficial.
- **Impact Statement 11.** This policy leads to increased DIB production capacity and capability (small impact 52 percent, large impact 14 percent).
    - Participants indicated that removing barriers (assumed with centralization) should increase production capacity and capability by easing the entry of alternate sources; however, additional vendors can also increase competition. In addition, if qualification timelines increased because of additional bureaucracy, an increase in DIB production capacity and capability would no longer be expected.

Anticipated impacts of OIB

- **Impact Statement 2.** Educating and advertising efforts targeting the general populace on DOD OIB careers increases the pool of applicants (small impact 36 percent, large impact 36 percent).
    - Participants indicated this depends on the economic or security context and both the employment opportunities and sense of duty of the general population. Participants noted it would be most effective when directed at a colocated or regional workforce (e.g., recruitment at local schools) rather than nationwide. Participants also repeatedly indicated that compensation, not visibility, is what recruits and retains top talent.
- **Impact Statement 3.** Policy does not address issues of pay differential between commercial and defense sectors, which limits the pool of potential applicants (small impact 8 percent, large impact 69 percent).
    - Participants indicated this was most important for skilled labor and experienced workers. Although nonfinancial incentives could be used to mitigate this (e.g., college funds, four-day workweeks, housing, child care), increased salaries would be the most effective.
- **Impact Statement 4.** Increasing the speed of final hiring decisions (expediting hiring authorities) will improve hiring and the retention of qualified applicants to OIB (small impact 38 percent, large impact 46 percent).
    - Participants specifically cited slow USA JOBS timelines of 60 to 90 days and noted that experienced candidates are frequently unable to wait through the hiring process. Accelerating the timeline would improve hiring (avoiding the loss of applicants) but not retention (which is tied to consistent workload). Participants also indicated disconnects between the government, PMs, and human resources.
- **Impact Statement 5.** Increasing the amount of government-provided or -subsidized training and apprentice programs available will improve the qualifications of the hiring pool (small impact 31 percent, large impact 46 percent).
    - Participants indicated that early career applicants may be strongly influenced by training opportunities but noted that training needs to be specific to be helpful. Safety training for munitions handling, for example, is critical.

Anticipated impacts for IP policy

- **Impact Statement 2.** IP agreements create opportunities for available businesses to build new products (small impact 48 percent, large impact 11 percent).

- Written responses associated the impact with motivating production of interoperable items and implementing new technology. However, the dissenting opinions indicated this disincentivizes innovation and complicates entry of new startups. Some were concerned that this policy did not address existing agreements.

- **Impact Statement 8.** This policy will make it easier for multiple vendors to cooperate and integrate when developing products that interface with each other (small impact 31 percent, large impact 38 percent).
    - Written responses associated the impact with successfully encouraging open architecture requirements or a modular open systems approach and referenced past examples. They also identified challenges with implementation and scoping focus to interface requirements.

Anticipated impacts for adversarial capital policy

- **Impact Statement 2.** This policy will strengthen USG's detection of adversarial ownership, influence, and intelligence gathering by commercial entities controlled or influenced by adversarial nations (small impact 73 percent, large impact 18 percent).
    - Participants indicated that additional scrutiny on aggregate adversarial risk would increase awareness and visibility and could detect more problematic investments. However, they also recognized that it requires market expertise, a suite of tools, and IC time and resources to understand and identify issues.
- **Impact Statement 6.** Aggregate risk assessments by the IC allow CFIUS to predict or anticipate adversarial capital transactions before they occur (small impact 50 percent, large impact 30 percent).
    - Participants indicated trend analysis would be helpful in preparing CFIUS and understanding what to monitor, but actionable data would require specific risks. Continually evaluating and updating aggregate risk at this level of detail might not be sustainable.
- **Impact Statement 7.** Increased education and outreach efforts enable vendors to self-assess, identify, and report risks related to adversarial capital (small impact 45 percent, large impact 36 percent)
    - Participants indicated this would require a cultural change (which might be associated with a long timescale for successful implementation) and questioned the resources required.
- **Impact Statement 11.** DCMA's process to require vendors to recertify or the DOD to find new vendors upon adversarial capital triggering criteria successfully blocks

malign foreign influence from DOD supply chains (small impact 78 percent, large impact 0 percent).

  - Participants indicated this would slow or disrupt but not block malign foreign influence. They also indicated that placing additional onerous requirements on industry could risk leading to firms leaving the DIB.

- **Impact Statement 12.** These policies improve safeguards of critical infrastructure, defense industrial assets, and vital technologies from commercial entities controlled or influenced by adversarial nations (small impact 78 percent, large impact 22 percent).

  - Participants added little information that has not been mentioned previously.

Anticipated impacts on improving DIB capacity and capability (OASD IBP desired endstate)

Participants' responses to the impact worksheet, along with discussion throughout the workshops and wargame, indicate that the four recommendations and synthesized policies explored in this series addressed secondary DIB challenges and are not directly tied to expanding production capacity or capability.

Each impact worksheet included a statement associating the policy with improving IB capacity or capability. Table 7 shows the breakdown of individual responses for each policy on the question of DIB capacity and capability, with responses grouped in the same way as described earlier. Most participants did not associate any of the four policies explored with large impacts on production capacity and capability. Instead, participants tended to associate the policies with small, negligible, or nonquantifiable impacts.

Table 7. Impact exercise responses to "Policy improves production capacity and capability"

	X[b]	-[c]	↑[d]	↑[e]	?[a]
Expanding the DIB	10%	14%	52%	**14%**	10%
OIB	8%	8%	31%	**8%**	46%
IP	18%	21%	25%	**11%**	25%
Adversarial capital	0%	50%	13%	**25%**	13%

Source: CNA.
Notes:
X = Potential Impact will not occur.
- = Policy will have no impact.
Small ↑ = Policy will have stated impact; impact will be relatively small.
Large ↑ = Policy will have stated impact; impact will be relatively large.
? = Policy will have stated impact but scale of impact cannot be estimated.

CNA analysts again ran a chi-squared test, which resulted in a $p>0.05$ for IP, adversarial capital, and OIB. This indicates we cannot distinguish these results from a uniform distribution and

there was little consensus. Of the policies reviewed, only the expanding the DIB policy had a majority of participants anticipating even a small impact on DIB capacity and capability. In the case of the OIB policy, participants tended to indicate inability to assess the impact (generally associated with a lack of information or assumptions). Although most participants did not assess these four policies as having large impacts on industrial base production capability and capacity, each policy was assessed to have some impacts if implemented well. **We recommend that OASD IBP review the other impacts that participants indicated and determine if the anticipated costs and benefits merit implementation or further consideration.**

Appendix B: Wargame Reconstruction

The wargame took place over two days. The first day focused on identifying the potential impacts of the synthesized policy actions on different elements of the DIB. The second day mapped policy actions onto a timeline and introduced a disruption. Attendees were broken into three groups consisting of both government and industry participants, with each group discussing two of the four synthesized policy narratives. Groups discussed the same policies on the first and second day. The OIB and expanding the DIB narratives were covered by two separate groups to solicit additional insights.

Appendix A summarizes the findings from the individual worksheets from the Day 1 impact activity, while the following sections summarize the discussion across the two days.

Impacts Activity (Day 1)

Group 1

Synthesized Policy 1—Organic Industrial Base

At the workshops, discussion of this policy narrative included recruitment, retention, and modernization. Group 1 decided that it was more beneficial to focus discussions on recruitment at the wargame. The challenges of an adequately trained workforce and retaining employees are moot if a producer does not *have* employees.

A central question throughout the conversation on recruitment was whether supporting analysis or data substantiated the options presented to the group. Participants suggested that historical data from past service recruitment efforts could be useful because it could reveal what had been tried, what was successful, which untraditional communities had already been targeted, and any remaining gaps. The group noted opportunities to better use this data to maximize the OIB's recruitment efforts. Participants emphasized that the positive narratives advocating for OIB careers need to be positive and focus explicitly on addressing and overcoming perceived negatives. One example of a positive narrative that could be incorporated into recruitment efforts is the impact the industrial base workforce can have on the overall economy.

Participants indicated that the identified OIB policies would increase the speed of hiring decisions and reduce roadblocks in the hiring process. They stated that expanding government-provided or -subsidized training could improve and potentially expand the hiring pool. Additional discussion highlighted that efforts to increase recruitment will need to be

paired closely with other efforts, such as the modernization of facilities. Participants also noted that in a large-scale conflict, OIB workers may be called up for service, which could decrease production capacity.

Policy 2—Intellectual Property

As during the second workshop, Group 1 discussed how IP was not as significant of a concern for industry as government attendees initially believed. Conversations instead focused on existing DOD mechanisms that provide protection for industry's IP. Participants broadly agreed on the need for an IP strategy associated with new products but resisted defining what a "good strategy" might be and expressed concern that implementation could devolve into a box-ticking exercise.

Participants also indicated that chosen IP policy could significantly affect communication and improve cooperation and integration across vendors when developing products that interface with each other. They noted that interoperability could be improved through open architecture and contracting alternatives, such as licensing agreements with financial and nonfinancial incentives provided for companies. Participants recommended additional enhancements to already modified contract measures, such as an ability to process variance requests, and identified the need for earlier and increased support from IP experts in the acquisition process.

Group 2

Policy 1—Expanding the DIB

Group 2 chose to focus their discussion on a few key impacts from the worksheet. First, they discussed that more testing facilities might be needed if the government wanted to bring about a tangible reduction in qualification timelines or the government wants the DIB to expand to include small and new firms. They viewed the centralization of the certification processes as impactful, able to reduce the costs to qualifying members and streamline processes. Participants stated that a centralized baseline standard, or a minimum viable quality plan, could be created that would also lower costs. Services can then add additional components to these baseline standards as needed to meet specific goals or requirements.

Some participants expressed frustration with the qualification process, noting the USG makes vendors qualify with each lab they work with. A potential solution to this was the idea of reciprocity, with labs needing to qualify only once for the same component or part to work with multiple companies. This could reduce the cost for firms and accelerate qualification processes by removing one additional step in the process.

One important area of discussion surrounded products with low private sector demand but high government demand, such as rifling or chrome plating. Several attendees suggested

keeping these processes in GOCO or GOGO facilities. The private sector can focus on products with larger demand signals and potentially lower costs.

Participants had two primary concerns about this policy narrative: (1) bottlenecks in the supply chain resulting from expanding the number of suppliers, and (2) negative impacts on quality and efficacy resulting from changes to the qualification process. If an increased number of firms is relying on few suppliers farther down the supply chain, this could lead to bottlenecks for all firms. One solution to help avoid these bottlenecks is to ensure policies focus on increasing the number of firms further down in the supply chain and not just those producing the final product; however, changing suppliers can be costly because of requalification requirements. In addition, more firms applying for qualification could create longer wait times.

Participants had a lengthy discussion about where to accept risk because any change related to qualification or certification could have an implication for safety or efficacy. Although relaxing qualification standards could increase risk, participants noted certain processes have relatively low trade-offs. They specifically identified relaxing shelf-life requirements as an opportunity worth pursuing, noting munitions can still be effective and lethal beyond their shelf-life requirements.

Importantly, the group did not think the market risked becoming oversaturated. Participants believed that the market would rightsize itself and that firms could always look to international markets if the market became too saturated domestically.

Policy 2—Adversarial Capital

The group began by reviewing several concerns about the synthesized policy as it was stated. Some participants had reservations about truncating the process for all NATO countries, noting that not all NATO countries have the same vetting processes as the US and that firms in many countries may already have a significant amount of adversarial involvement. Participants suggested changing the language from NATO to "close allies," such as the UK, Australia, and other nations that have similar comprehensive review processes that reduces risk within their own industrial base. Participants felt these agreements with allies could help ensure the limited resources to assess adversarial capital could focus on true threats. Participants also noted the spotlight should not be unduly focused on CFIUS because other methods, such as the DCMA, can also identify adversarial capital investments.

Much of the conversation focused on the aggregation of risk and knowledge sharing. Participants noted that intelligence agencies could share their intelligence to better understand the threat landscape. Participants also suggested the USG should increase touchpoints with small businesses and banks to better inform and understand subtier suppliers. This is key to prevent adversaries from taking a bottom-up approach to controlling the munitions supply chain. Ultimately, Group 2 felt large gaps in knowledge made handling the adversarial capital problem uniquely difficult.

Group 3

Policy 1—Expanding the DIB

Efforts to expand the number of vendors in the DIB face persistent challenges with qualification and its standardization. Participants highlighted that qualification, involving both production processes and the final product, is more expensive than certification and could benefit from increased focus and additional resources.

Participants agreed that although centralization could potentially streamline processes and introduce certain efficiencies, it could increase costs and complexity, because of varying requirements across different services, or create bottlenecks, depending on staffing and resourcing. Participants stressed the importance of transparency and clear communication in ensuring that new entrants understand the requirements and processes for vendors, products, and production methods. Grants and other financial tools could help nontraditional vendors overcome initial barriers, which could both expand the DIB and help foster innovation.

The group discussed the idea of a one-stop shop for qualification to simplify the process and gain efficiency. Some participants were skeptical that the necessary skill sets could be consolidated in one location given the wide variety of products and components that would need attention. Others highlighted that having a portal or principal coordinator could be useful. Several pointed to industry consortia as entities that could play the role of translator and guide new vendors through the DOD process.

The discussion raised several specific ideas that could improve qualification processes. In some cases, qualification testing requires old and outdated equipment that is not readily available. Updating equipment could simplify the qualification process, accelerate production, and lower costs for both industry and government. Participants also proposed the idea of reciprocity, between military services for simpler DIB products or between the government and primes. Reciprocity could help avoid services and new entrants duplicating production lines or processes.

A more stable and transparent demand signal was seen as key to motivating companies' participation in the DIB, encouraging investment from both primes and smaller companies and increasing DIB capacity. Another key theme was the need for better visibility into demand and clearer signals into long-term demand, given industry's challenges predicting and adapting to demand surges. Industry participants expressed frustration with the limited level of detail offered by DOD interlockers. For example, although government representatives could say they might need batteries in the future, they could not provide a unit of scale (e.g., 4 batteries versus 40, versus 40,000). Participants called for better communication about projected needs, improved transparency in contracting, and increased early indicators (i.e., baseline orders or

publicized priorities). Many participants suggested moving beyond static, quantity-focused contracts toward flexible models that would allow the government to fund capacity.

Finally, participants worried that any efforts to expand the DIB might fall short because primes continue to dominate the market and make it hard for smaller firms to scale.

Policy 2—Intellectual Property

Participants noted that a lack of understanding about IP policies and requirements can create friction and limit new entrants' willingness to work with the government. Industry attendees reflected that government representatives with whom they have worked sometimes appear to lack detailed knowledge of IP rights. Compounding this challenge, new industry entrants may be confused as to why the government is so interested in their proprietary IP or in methods to acquire full ownership of IP during crisis. Requirements can also change based on the value of the IP to the government and the type of company. Participants highlighted a need for upfront conversations about acquisition and IP rights. Broadly, participants agreed that transparency from the government about why different IP contracting setups were required and insight into the government's IP strategy could build trust across parties.

Similarly, participants reached consensus about the importance of a full IP strategy for new programs, encompassing both a plan ("how") and goal ("to what end"). Participants offered anecdotes where the government's desire to own IP has sometimes resulted in "over purchasing" or different parts of the DOD purchasing the same IP multiple times.

Discussions also emphasized the benefits of modularity and open system architecture, which participants broadly felt could improve production capacity and capability. However, the long-term planning required for modular systems and the proactive work needed to avoid vendor lock can be challenged by staff turnover (caused by military processes such as Permanent Changes of Station), as contracting processes often outlast individual project managers.

Participants noted that flexible contracting vehicles do exist, leading to a debate about where the incentives and responsibility for the implementation of IP strategy for programs should fall. Some suggested PMs, who are the key responsible party within the DOD program architecture. Others highlighted that PMs already report being overwhelmed and face conflicting requests from higher up the chain. The group did not reach a consensus about how to build incentives or monitoring to make sure the policy actions on IP strategy are properly implemented. Participants felt they needed more information about what metrics would be modified and used to potentially evaluate PMs' performance to provide more robust feedback.

Hotwash—Day 1

During the closing discussion of Day 1, participants had a chance to comment on all the inputs related to each policy narrative. Each group independently stated they struggled with the need

for a consistent demand signal, noting consistency would make prioritization and investment decisions considerably easier.

Group 2 had the most difficulty finding consensus on the adversarial capital narrative, noting the limited time and resources available. In addition, participants questioned whether addressing some of the challenges with adversarial capital would help increase production capability or capacity. Despite these concerns, participants thought the policy narrative was worth further discussion to see if they could identify major roadblocks in information sharing or communication between stakeholders more generally.

Timeline Activity (Day 2)

For all three groups, the timeline activity began in November 2025 and ended in December 2035. Participants were asked to identify and map out short-, medium-, and long-term actions. Government actions were denoted by black pins, industry actions or responses were denoted by orange pins, and policy implementation (when a policy would come into effect) were denoted by red pins.

Group 1

Policy 1 Timeline—Organic Industrial Base

The initial discussion centered on establishing concrete baseline assessments, as well as identifying ways to prioritize actions that would ensure the development of critical capabilities. Participants focused on recruitment efforts, rather than retention.

Group 1's discussion for this activity centered on answering the following question: "How do we motivate hiring for critical capacity needs to fill and issue of 'latent capacity' in terms of workload and workforce?" Participants noted that the implementation of the policies on this timeline was possible only under the assumption of a consistent workload. Currently, OIB estimates hiring based on demand signals and risks being either critically under- or overstaffed if it estimates poorly.

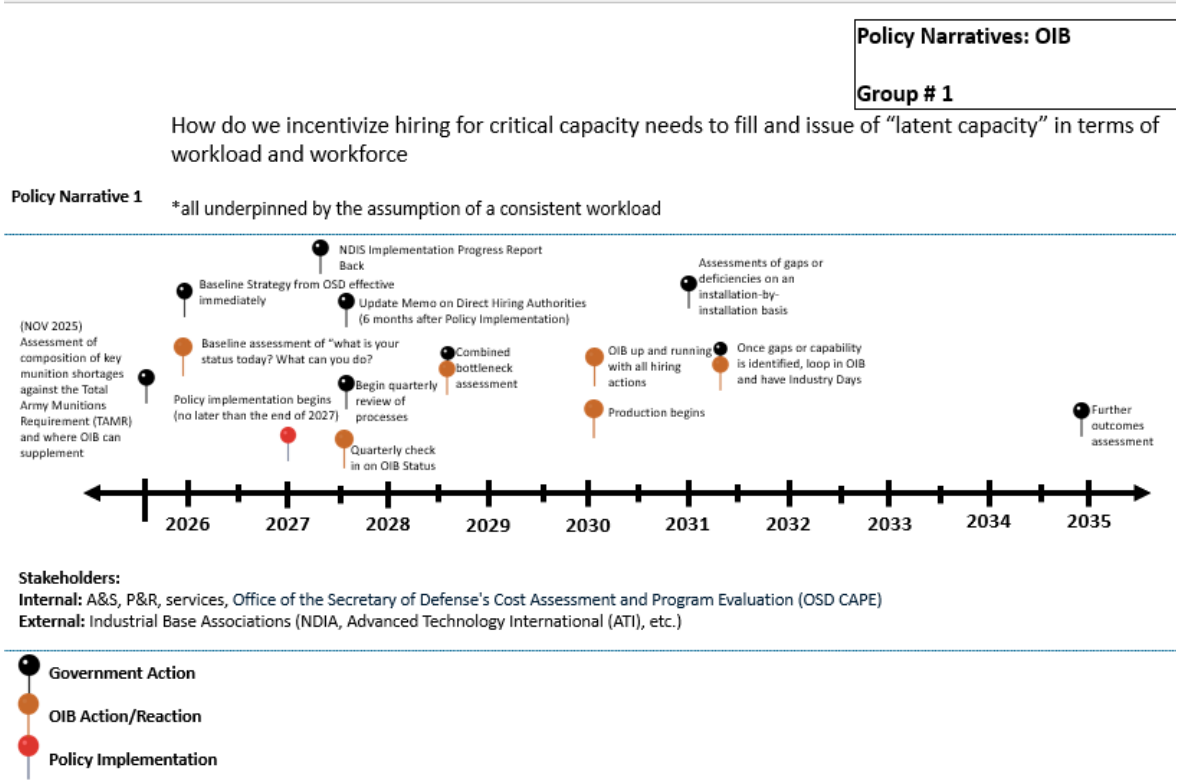
Participants believed that full policy implementation could be achieved by no later than the end of calendar year 2027. Two key government actions identified early in the discussion were (1) an assessment of the composition of key munition shortages of Munition Requirements Process against the Total Army Munitions Requirement to identify where OIB can supplement and, (2) following that assessment, a baseline strategy document from OSD outlining key priority areas for immediate action.

Participants added another action to the timeline approximately six months after the earlier policy's implementation: DOD's OPM provides an updated Direct Hiring Authority memo. This

memo further identifies priority areas for hiring and outlines an implementation plan for exactly how these gaps will be filled and on what timescale. A re-creation of the timeline is included in Figure 31.

Throughout the discussions, it became clear that any approach taken to increase or improve recruitment efforts would need to use a regional approach rather than a nationwide strategy. The group noted that a data call focused on existing recruitment mechanisms and incentive strategies would be a useful way to see which efforts had been successful or sustainable. To identify latent capacity, participants noted that this data call should focus on the five most needed job series to show where recruitment efforts can pivot to make the most direct impact.

Figure 31. Group 1 timeline for OIB



Source: CNA.

Policy 2 Timeline—Intellectual Property

The group initially struggled to plot the synthesized policy on the timescale because participants disagreed about whether IP issues constituted a barrier to increasing production capacity and capability. The group agreed that existing IP strategies could remove some

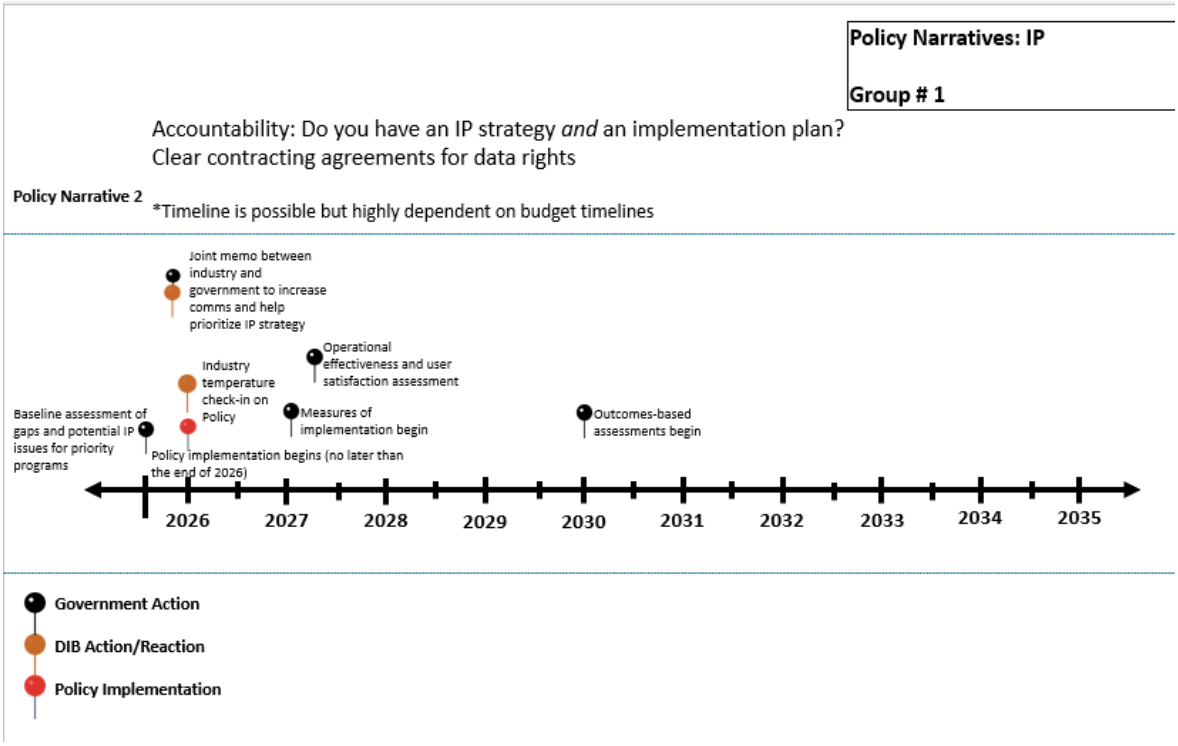
contracting hurdles. The implementation plans for how contracting mechanisms are being used and whether they are successful are what is lacking.

Ultimately, the policy the group decided to map onto the timeline focused on accountability, with participants focused on the question: "How do you ensure there is both an IP strategy *and* an implementation plan that provides clear contracting agreements for data rights?" The first action Group 1 plotted was a baseline assessment of gaps and potential IP issues related to priority programming. Roughly six months after that assessment, the group recommended the publishing of a joint memo between industry and government, with both parties committing to work together to increase communication and prioritize actions related to IP.

Mirroring the OIB discussion, the group felt the timeline created was possible and that policy implementation could happen quickly. Although it would be highly dependent on budget timelines, participants felt full implementation could be achieved no later than December 2026. Following implementation, participants identified three subsequent actions, all focused on measuring effectiveness and user satisfaction. The timeline Group 1 constructed for the IP narrative is included in Figure 32.

Participants flagged a disagreement on the nomenclature used to describe flexible contracting arrangements for production, specifying that a scale-up in production is not strictly an "emergency," but rather "urgency." Currently, agreements of this type are called springing or conditional licenses and often include options such as "until a certain number of units sold" that target the "break-even point" (when a firm's costs of production align with the costs spent on development and production). Attendees noted government is not always trying to encourage firms to sell all rights but rather fit the arrangement to their use case. They proposed that government should ask for IP if it affects sister rights or programs as a standard. PMs should have to defend their lack of use of special licensing (e.g., there are no sister programs where IP would be valuable in the event of urgency). The group recommended increased education about special contracting measures.

Figure 32. Group 1 timeline for IP



Source: CNA

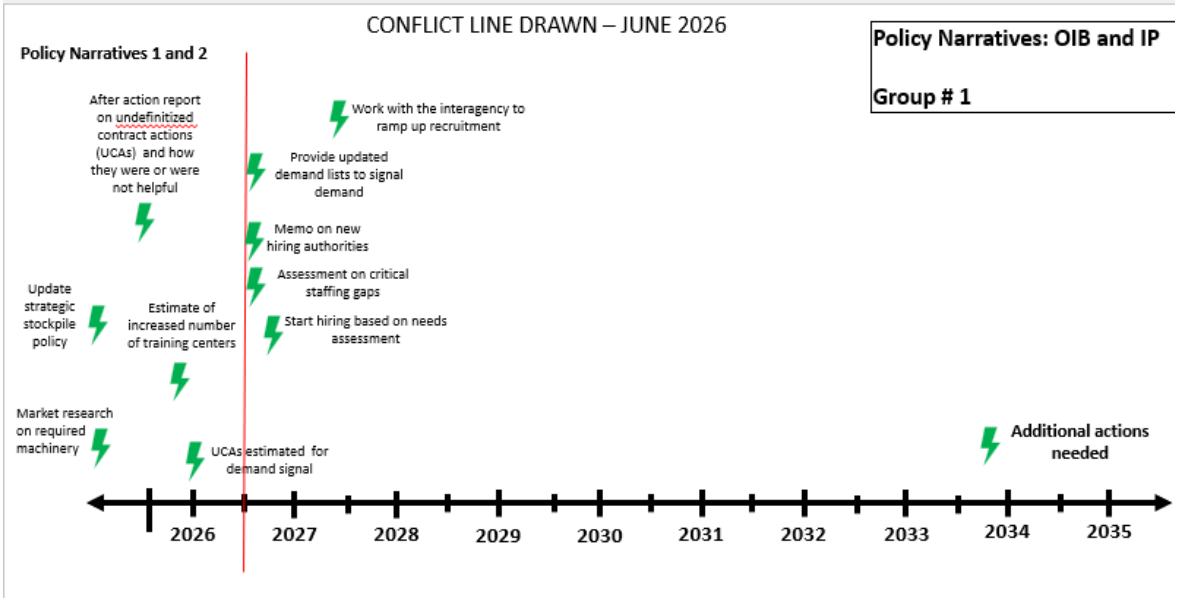
Crisis Timeline

For Group 1, the injection of impending conflict was added in mid-2026, with conflict slated to begin in mid-2027. This aligned with when the most actions were taking place across both the OIB and IP timelines.

IP policies would have already been in place by the crisis, allowing these agreements to be activated based on the urgency. Although the DIB will be standing by for contracts, it cannot act on an ambiguous signal, just orders. If a priority list exists, the items should be added to the list of DX-rated programs (programs that are currently of the highest national defense urgency) and prioritized. The goal would be to double the OIB workforce in advance, using the updated list of priorities published by DOD. For this proposed timeline to succeed, participants noted that the USG would need to prioritize the right skill sets in recruiting.

Figure 33 shows the timeline and additional actions participants felt could be taken to ensure preparedness for impending conflict. Most additional actions participants identified as necessary were focused on the OIB and not the IP timeline

Figure 33. Group 1 crisis timeline for IP and OIB



Source: CNA.

Group 2

Policy 1 Timeline—Expanding the DIB

Group 2's discussion on the timeline centered around creating two distinct phases—an analysis phase and an implementation phase. The analysis phase focused on the development of policy, with industry, government, and limited international partners working together. Policies would focus on contracting and DFARS changes that could give the government increased ability and control to expand the private sector (e.g., through contracting clauses that require some percentage of work to go to new or small firms). Policies also focused on the creation of core, common components and parts that could be made more easily and cheaply and that could then be shared across services and modified to fit specific needs.

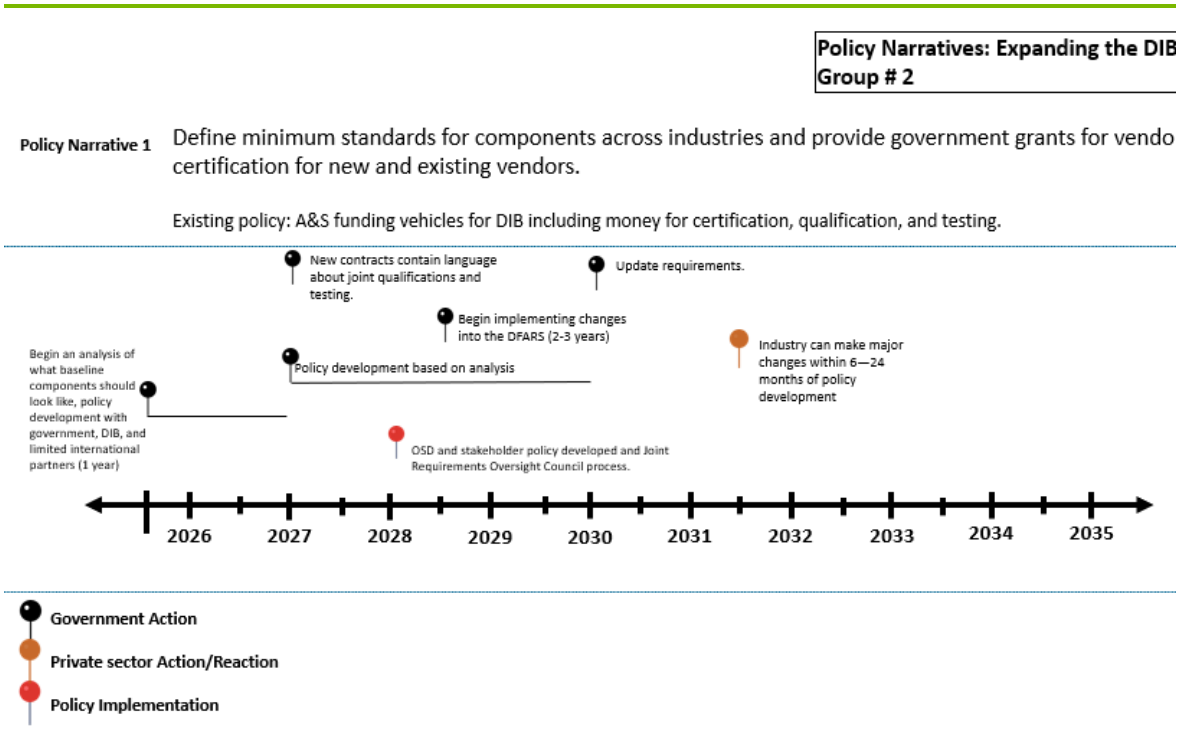
The group created a four-year policy creation and implementation plan, with the analysis phase taking one year and the implementation of policy and DFARS changes taking two to three years. The rationale was that the analysis phase should be prioritized, and once baseline components were identified and ready for implementation, policy development and implementation could begin. The timeline Group 2 constructed is included in Figure 34.

In addition, the group discussed joint qualifications and testing, which would be developed and implemented in coordination with baseline requirements. Firms often must be certified

multiple times for the same parts across different government buyers, requiring additional work, costs, and time only to replicate qualifications requirements.

Participants highlighted several challenges. First, they noted additional funding could be needed with some of the proposed DFARS changes. Although DFARS could be used to require redundancy in contracts, ensuring that a munition or part is produced by more than one supplier, this would come at a price because it would mean not fully taking advantage of economies of scale. In addition, if these actions did expand the number of companies in the DIB, the expansion might require more testing and evaluation centers, which would also need to be funded. Finally, some weapons systems are owned by the companies that produce them. To expand the number of companies that could make those systems, firms could create new versions with similar standards, but this could be costly as well.

Figure 34. Group 2 timeline for expanding the DIB



Source: CNA.

Policy 2 Timeline—Adversarial Capital

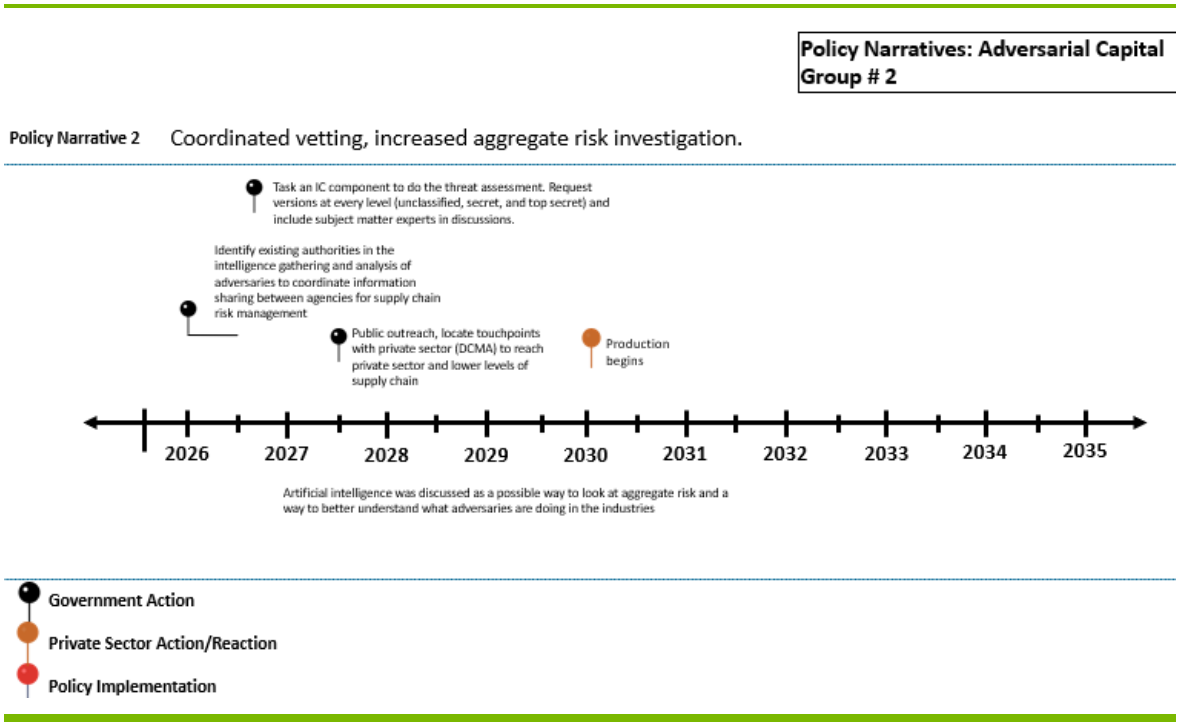
The group focused on the entities that have access to intelligence resources and those that vet foreign investment. They identified several agencies that fulfill this function, including the Department of State and the Department of Treasury, specifically CFIUS, and discussed the creation of a board across these branches that could help identity aggregate risk. Artificial

intelligence or large language models were also discussed as tools to help the USG better understand the aggregate risk that foreign investment might present to the DIB. The timeline Group 2 constructed is included in Figure 35.

Participants also highlighted the importance of transparency and communication, with CFIUS or other government decisions written for maximum releasability. It is particularly important for industry to receive a window into decision-making because denials or rejections with little to no explanation can lead to frustration. Additional outreach and communication to industry were also identified as important area to focus on. Participants recommended more public outreach that emphasizes the risks associated with adversarial capital, such as IP theft. This outreach should focus on reaching companies lower in the DIB supply chain, such as raw material suppliers, parts manufacturers, and subprimes.

Finally, the group pointed out that if other proposed policies succeed in expanding the DIB, this could have negative implications for adversarial capital. New entry points would create more access for adversaries, and new companies would need to be educated on risks.

Figure 35. Group 2 timeline for adversarial capital



Source: CNA.

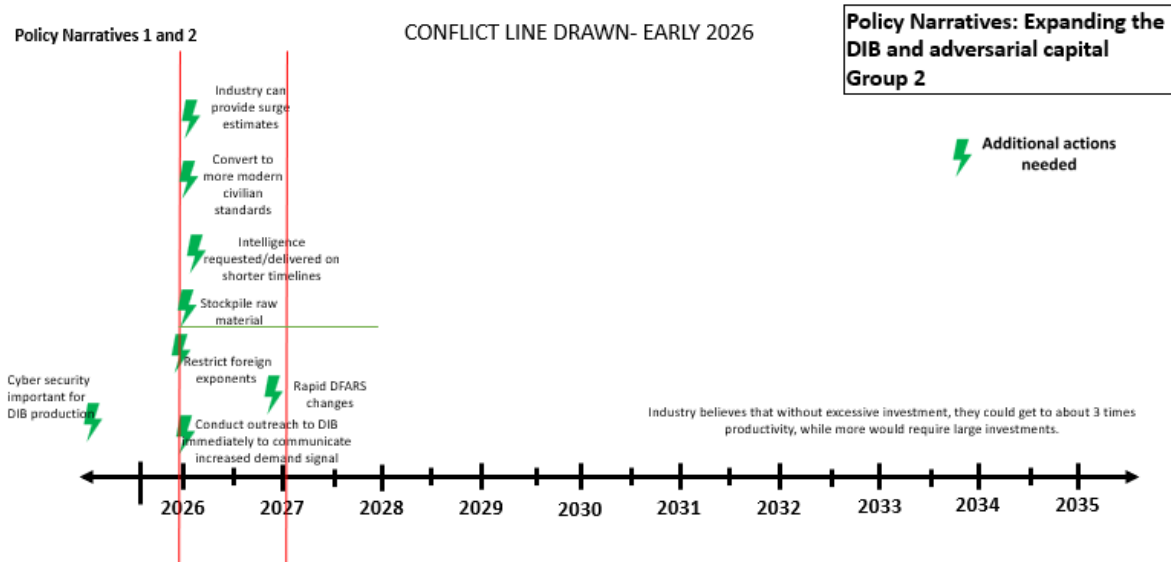
Crisis Timeline

For the second group, the crisis inject was added in 2026, with conflict set to emerge in 2027. Participants identified several issues and actions as more urgent in the face of impending crisis. First, they discussed moving toward civilian standards, which are much more modern than government standards. They estimated that could double production, although the security of new standards would need to be managed.

Participants suggested government begin signaling to the private sector its intent to increase demand. They noted that industry could increase capacity to some degree, but that investment would be needed to see a large increase in production. If companies make these investments without an actual increase in demand, it could make them much more hesitant to invest in the future. If demand fails to go up after the USG has urged it is necessary, this could create issues for future conflicts that the government signals early demand changes for.

One place where there was a shift in timeline when faced with a crisis was in making DFARS changes. Certain mechanisms can accelerate a DFARS change from 2 to 3 years to 2 to 12 weeks assuming no major objections to these changes.

Figure 36. Group 2 crisis timeline for adversarial capital



Source: CNA.

Group 3

Policy 1 Timeline—Expanding the DIB

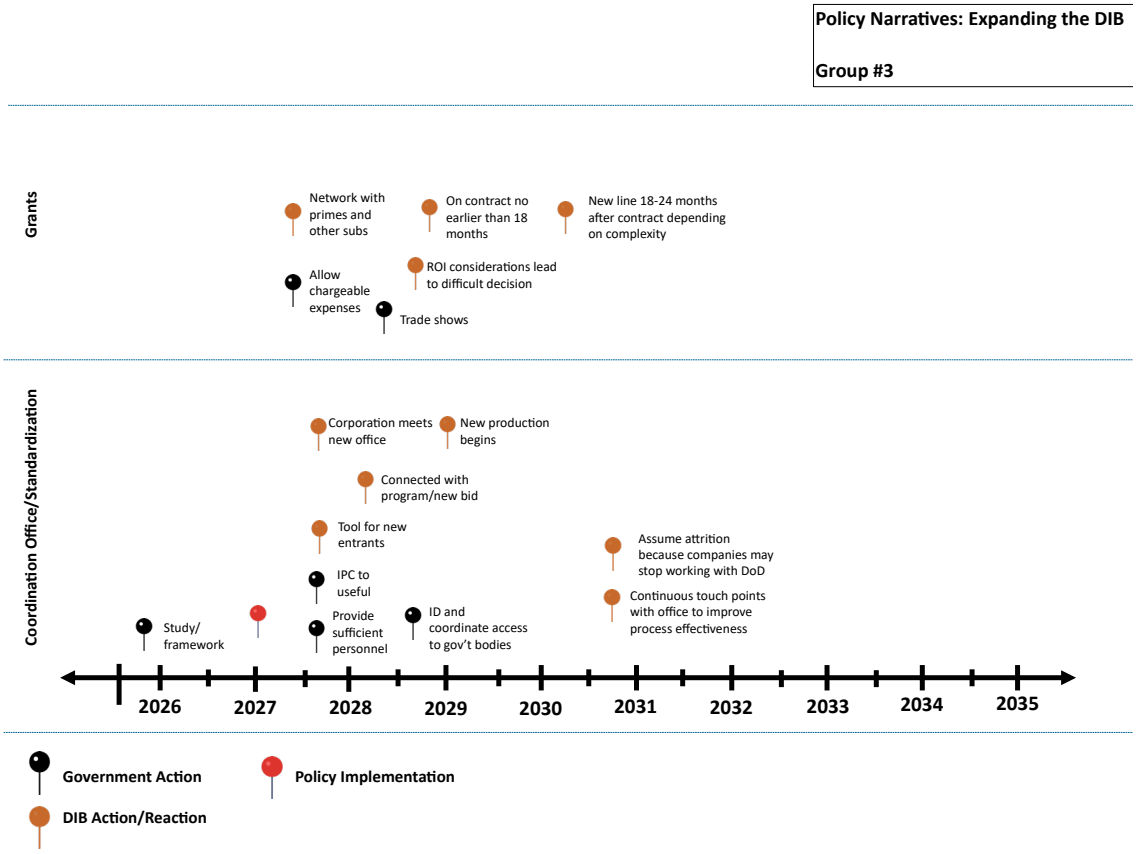
Participants chose to focus on two major lines of effort. The first prioritized policies to overcome initial barriers to entry into the DIB for nontraditional vendors, such as those in highly specialized technical areas, that might be able to fill critical manufacturing gaps. The USG and prime contractors should clearly communicate the specifications new entrants need to meet and the requirements for certification. The USG could also provide funding to nontraditional companies to aid in the certification process.

The second line of effort created a coordination office to help overcome some practical challenges for sharing data and identifying priority areas. To create this office, participants noted a new DOD instruction would be necessary to clarify areas of responsibility for the USG and outline the requirements for industry partners. One obstacle was whether a new instruction would impact only new programs and qualifying lines or if it would also apply to existing programs. Participants recognized that this might be relevant only for qualification, as certification is more difficult to standardize. These actions are plotted on a timeline in Figure 37.

Policy 2 Timeline—Intellectual Property

Group 3 chose not to plot a policy timeline for the IP-synthesized policy. Participants felt these policy actions did not need to be a priority since as far as participants were aware, no firms or programs have chosen not to move forward because of issues related to IP.

Figure 37. Group 3 timeline for expanding the DIB



Source: CNA.

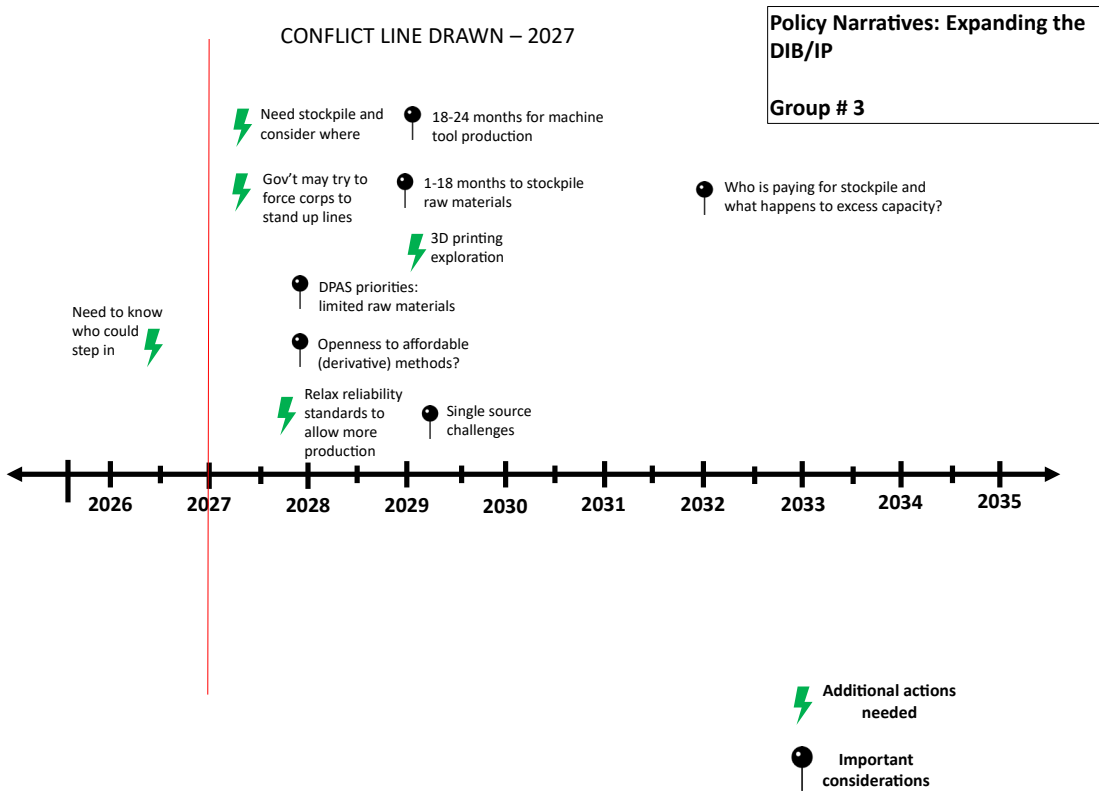
Crisis Timeline

For the third group, the crisis inject was added in 2027, with conflict set to emerge in 2028. Participants identified several issues and actions as more urgent in the face of impending crisis, which are depicted in Figure 38.

The discussion focused on how to ramp up production quickly following the injection of conflict. Participants focused heavily on using existing capacity, noting that there would be no time to bring in new entrants to the DIB and that most DOD production lines are already underutilized. They also noted ramping up production would quickly become a workforce issue. While full training for a new hire takes one to two years, participants suggested the DIB may need to be willing to accept less if conflict is eminent. Participants also discussed how the

DIB would become more dependent on assistant contracts, focusing less on the product itself and instead easing restrictions to meet production requirements.

Figure 38. Group 3 crisis timeline for expanding the DIB



Source: CNA.

As with other groups, Group 3 identified the importance of stockpiling raw materials both in the US, via the Defense Logistics Agency (DLA) that manages the reserves, and internationally, encouraging allies and partners to stockpile as well. An important part of stockpiling requires storing raw materials correctly, and participants were unsure if storage was adequate.

Group 3 also pointed out that IP could create a barrier for the creation of baseline parts. The government is limited in its ability to mass produce components by the fact that private companies own the IP. Several options were proposed, including negotiating for a licensing agreement, adding a CLIN or a task+ for surge production to contracts, and locating companies that can produce in the case of a conflict scenario.

Hotwash—Day 2

At the conclusion of the wargame, the group had a discussion on general takeaways from the activities and the workshop series. Attendees expressed that events like this help to improve government's relationship with industry, support outreach across the DIB, and facilitate interagency communication. The resulting improved communication can help to identify issues that lie further down the supply chain and to holistically evaluate the whole of the problem.

Attendees were also asked to prioritize three out of the four policies for action in the wargame's final activity. In response, a majority of participants agreed that IP could be deprioritized. This is an important takeaway, indicating that OASD IBP can deprioritize improving IP policy and focus on other policies.

Appendix C: Government Workshop

This workshop was the first in the Arsenal of Policy series and sought to gain perspective and insights from members of the USG. Attendees included representatives from DOD, Commerce, Treasury, DCMA, DOD OGC, DLA, DHS, US Trade Representative, Department of Energy, and the Joint Staff.

Workshop 1 included two activities. The first identified the critical challenges, relevant factors, and involved stakeholders for each policy recommendation. The second was an opportunity for participants to discuss the potential factors—positive or negative—that might emerge in the implementation phase of a policy. The key takeaways from this workshop were the following:

- Training and education for government on the currently available policies and contracting mechanisms would increase efficiency.
- Increased coordination across the interagency is needed, as industry has different touchpoints with various agencies throughout the production process. Increased communication would help visibility for both government and industry.
- Simplicity is key, yet unnecessary overcomplication is common. Clear and concise processes could be helpful for both government and industry.

During the first workshop, participants identified the following challenges, factors, stakeholders, and policy actions.

Table 8. Summary narratives developed at the government workshop

Policy Recommendation	Challenge	Factor	Stakeholder	Policy Action
Expanding the DIB	The barriers to entry for startups, nontraditional vendors, and other new suppliers	The high cost of certifying new manufacturing lines	New and nontraditional vendors and existing vendors	Centralized certification authorities; Government grants for new vendors' certification if an item meets requirements

Policy Recommendation	Challenge	Factor	Stakeholder	Policy Action
OIB	The lack of a trained workforce	Lack of competitiveness or interest in DOD OIB careers and the absence of needed technical skills	The general population	Expedite hiring authorities; Advertise, market, and educate about DOD OIB careers
IP	Absence of interchangeable systems	The metrics used to evaluate contracts and the incentives provided to contracting officers and PMs	Primes, subtier suppliers, new and nontraditional vendors; SAEs, contracting officers, PMs; OSD-level policy-makers	Incentives for USG contracting personnel to consider IP during acquisitions or use existing IP policies
	Fear of IP loss or perception of DOD overreach	The communication between industry and DOD		
	Industry's hesitancy to work with DOD or share data for fear of IP loss	The information that DOD requires from industry		
Adversarial capital	The difficulty assessing the aggregate risk associated with investments, transactions, and acquisitions	The current transaction-based analysis process	CFIUS, primes, and subtier suppliers	Expanded analysis on aggregate risk in national security threat assessments prepared by the IC for CFIUS

Policy Recommendation	Challenge	Factor	Stakeholder	Policy Action
	The industry's lack of visibility into potential threats from adversarial capital	Limited education of and outreach to industry on threats and trends	Existing primes, subtier suppliers, new entrants, nontraditional vendors, OSD-level policy-makers and the services	Increased outreach (connecting industry with existing resources, events and workshops) and assessments of emerging technology

Source: CNA.

Appendix D: Industry Workshop

The second workshop in the Arsenal of Policy series gathered industry representatives to solicit their reactions to the policy narratives developed in the first workshop. The workshop was attended by primes, subprimes, and raw material suppliers, including traditional vendors and industry disruptors, along with representatives from industry consortia.

Attendees participated in three activities designed to capture industry's perspectives and its perception of the potential impacts of Workshop 1 policy narratives. Participants first red teamed the policy narratives developed by government, identifying any missing challenges or factors and noting where they saw a mismatch between the original narratives and their firm's challenges. Participants were then asked to identify the factors that would make a proposed policy effective and the most important enablers for success. Finally, participants discussed the potential impacts the policies might have, identifying both the worst- and best-case scenarios.

Participants were also given the chance to point out gaps in the identified solutions, responding to the question: "Are there any solutions to the problems identified that you were surprised we didn't explore?"

The following are the key takeaways from this workshop:

- Industry participants helped inform the policies prioritized in the final wargame by identifying which policies they viewed to be most impactful. Expanding the DIB and the OIB generated the most discussion and opportunities for policy impact. Participants viewed the challenges linked to adversarial capital and IP challenges as less urgent and less closely linked to the end state of expanding DIB capacity and capability.
- Anything that places an additional burden on industry creates not only delays but also risks. Given the already small profit margins of the defense industry, any action that affects those profit margins could cause businesses to leave the DIB for the commercial sector or to close. For example, participants expressed concerns about the proposal that industry should track adversarial capital investments across their supply chains, noting both the time and resources required and the potential consequences for firms if they missed an investment. Industry urged government to be cautious when implementing any policy that translated to increased burden on industry, as it could discourage existing vendors or drive away new vendors.
- Industry frequently articulated that profits, margins, and business cases drive decision-making on everything from expansion and hiring to innovation. These topics were not

raised in the government workshop, revealing a critical mismatch on one of the key motivating factors for industry.

- Although financial incentives were the most motivating for industry, industry representatives also identified others. These included tax incentives, regulatory passes from organizations such as the Environmental Protection Agency, and IP waivers that would allow them to simultaneously produce for the commercial sector and the DIB.
- Effectively expanding the DIB requires not just expanding primes' production capacity or the number of primes but also expanding the entire supply chain. This means increasing the number of subtier vendors, raw material suppliers, trained employees, and the recruitment pool.
- Primes are familiar with the government resources available to them and the processes for qualification, adversarial capital management, and IP sharing. New suppliers, small vendors, and nontraditional vendors that may be trying to break into the DIB, some of which have valuable available production capacity, have the least knowledge of these resources and the most need. Education efforts by government or mentorship by primes were both identified as potential solutions.

Figures

Tables

Abbreviations

CAPE	Office of Cost Assessment and Program Evaluation
CFIUS	Committee on Foreign Investment in the United States
CLIN	contract line item number
DCMA	Defense Contract Management Agency
DFARS	Defense Federal Acquisition Regulation Supplement
DHS	Department of Homeland Security
DIB	defense industrial base
DLA	Defense Logistics Agency
DOD	Department of Defense
DOD OGC	DOD Office of the General Counsel
DSCA	Defense Security Cooperation Agency
FOCI	foreign ownership, control or influence
GOCO	government-owned, contractor-operated
GOGO	government-owned, government-operated
IC	intelligence community
IP	intellectual property
JAPEC	Joint Acquisition Protection and Exploitation Cell
MIPA	Munitions Industry Production Analysis
NATO	North Atlantic Treaty Organization
NDIA	National Defense Industrial Association
NDIS	*National Defense Industrial Strategy*
OASD IBP	Office of the Assistant Secretary of Defense for Industrial Base Policy
ODNI	Office of the Director of National Intelligence
OIB	organic industrial base
OPM	Office of Personnel Management
OSD	Office of the Secretary of Defense
OUSD A&S	Office of the Under Secretary of Defense for Acquisition and Sustainment

PGM/ICA	Precision-Guided Missile Industrial Capacity Assessment
PM	program manager
SAE	service acquisition executive
SPA	systems planning and analysis
STEM	science, technology, engineering, mathematics
TAMR	Total Army Munitions Requirements and Prioritization Policy
UCA	undefinitized contract authority
USG	US government

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DGR-2025-U-043140-Final