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Research Report

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Defense Requirements Planning in Comparative Organizations

Case Studies of Selected Adversaries and Allied Nations

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About This Report

A level of global instability not seen since the second world war—marked by China exhibiting significant industrial capability and capacity in the Indo-Pacific and Russia increasing its ability to produce at speed and scale in its war in Ukraine—has impelled the United States and its close allies Australia and the United Kingdom to rethink how their defense systems function.

The U.S. Department of War's (DOW's) requirements system has become increasingly mismatched with evolving technology, emerging threats, and the speed needed to provide capabilities to operational forces.[1] U.S. leadership has directed sweeping acquisition reform through both executive and legislative action. Requirements modernization is being pursued through what have been described as generational changes by policymakers and experts. DOW's decision to replace the Joint Capabilities Integration and Development System (JCIDS) provides an opportunity to better align technology and innovation with operational needs.[2]

At the same time, U.S. allies and adversaries have also been undergoing similar transformation in their defense requirements and acquisition processes. As DOW considers ways to modernize its defense requirements system, the experiences of other nations—both allies and adversaries—in formulating their defense requirements may suggest useful approaches for DOW to consider, as some of the challenges and trade-offs other nations face are similar to those of the United States.

RAND researchers assisted DOW in answering Congress's mandate in Section 811 ("Modernizing the Department of Defense Requirements Process") of the fiscal year 2024 National Defense Authorization Act.[3] As part of that effort, we examined the defense requirements processes of four countries—the People's Republic of China, the Russian Federation, Australia, and the United Kingdom—to better understand these systems, draw comparisons, and leverage potential practices. The Section 811 report presents the summaries of these case studies.[4] This report presents the details behind those summaries.

This report should be of interest to those concerned with defense requirements modernization. The intended audience is mostly government officials responsible for such processes and those in industry who need to interact with these processes.

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[1] The Department of War is designated the Department of Defense under Public Law 81-216, National Security Act Amendments of 1949, August 10, 1949.

[2] Pete Hegseth and Steve Feinberg, "Reforming the Joint Requirements Process to Accelerate Fielding of Warfighting Capabilities," memorandum for senior Pentagon leadership, commanders of combatant commands, and defense agency and Department of War field activity directors, U.S. Department of War, November 7, 2025.

[3] Public Law 118-131, National Defense Authorization Act for Fiscal Year 2024, December 22, 2023. The Section 811 report is U.S. Department of Defense, *Fiscal Year 2024 National Defense Authorization Act: Section 811: Modernizing the Department of Defense Requirements Process*, July 14, 2025b.

[4] U.S. Department of Defense, 2025b.

RAND National Security Research Division

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For more information on the RAND Acquisition and Technology Policy Program, see www.rand.org/nsrd/atp or contact the director (contact information is provided on the webpage).

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We would also like to thank the subject-matter experts on China, Russia, Australia, and the United Kingdom who provided us valuable insight on these countries' defense requirements processes.

From the RAND National Security Research Division, we thank Anu Narayanan, vice president and director, and Caitlin Lee, director of the Acquisition and Technology Policy Program, for their counsel and tireless support. We also thank our team of peer reviewers—Cynthia Cook, Edmund Burke, Clinton Reach, Carolyn Bull, and Hans Pung—who offered helpful feedback on individual case studies and on cross-case takeaways. The work is much improved by virtue of their inputs, but any errors remain the responsibility of the authors alone.

Summary

Issue

A level of global instability not seen since the second world war—marked by China exhibiting significant industrial capability and capacity in the Indo-Pacific and Russia increasing its ability to produce at speed and scale in its war in Ukraine—has impelled the United States and its close allies Australia and the United Kingdom to make urgent changes to their defense acquisition systems that will support innovation, speed, industrial capacity, and requirements alignment.

The U.S. Department of War's (DOW's) requirements system has become increasingly mismatched with evolving technology, emerging threats, and the speed needed to provide capabilities to operational forces.[5] U.S. leadership has directed sweeping acquisition reform through both executive and legislative action. Requirements modernization is being pursued through what have been described as generational changes by policymakers and experts. DOW's 2025 decision to replace the Joint Capabilities Integration and Development System (JCIDS) provides an opportunity to better align technology and innovation with operational needs.[6] Similarly, in November 2025, Secretary of War Pete Hegseth outlined an aggressive strategy to transform the U.S. defense acquisition system that prioritizes three outcomes:

> 1. Field technology and modernize systems at a rate that outpaces our adversaries;
>
> 2. Increase production capacity and deliver wartime surge capacity for key capabilities, systems, weapons, and munitions to the U.S. warfighter and priority allies and partners;
>
> 3. Put the entire acquisition system and the industrial base on a wartime footing with the urgency and mandate to accept more risk, transition from a culture of compliance to one of speed and execution and rapidly tackle the strategic challenges facing the nation.[7]

At the same time, U.S. allies and adversaries have also been undergoing similar transformation in their defense requirements and acquisition processes. As DOW considers ways to modernize its defense requirements system, the experiences of other nations—both allies and adversaries—in

[5] The Department of War is designated the Department of Defense under Public Law 81-216, National Security Act Amendments of 1949, August 10, 1949.

[6] Executive Order 14265, "Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base," Executive Office of the President, April 9, 2025; Pete Hegseth and Steve Feinberg, "Reforming the Joint Requirements Process to Accelerate Fielding of Warfighting Capabilities," memorandum for senior Pentagon leadership, commanders of combatant commands, and defense agency and Department of War field activity directors, U.S. Department of War, November 7, 2025.

[7] Office of the Under Secretary of War for Acquisition and Sustainment, *Acquisition Transformation Strategy: Rebuilding the Arsenal of Freedom*, U.S. Department of War, November 7, 2025, p. 2.

formulating their defense requirements may suggest useful approaches for DOW to consider, as some of the challenges and trade-offs other nations face are similar to those of the United States.

RAND researchers assisted DOW in answering Congress's mandate in Section 811 ("Modernizing the Department of Defense Requirements Process") of the fiscal year 2024 National Defense Authorization Act.[8] As part of that effort, we examined the defense requirements processes of four countries—the People's Republic of China (PRC), the Russian Federation, Australia, and the United Kingdom—to better understand these systems, draw comparisons, and leverage potential practices. This report presents those case studies.

Approach

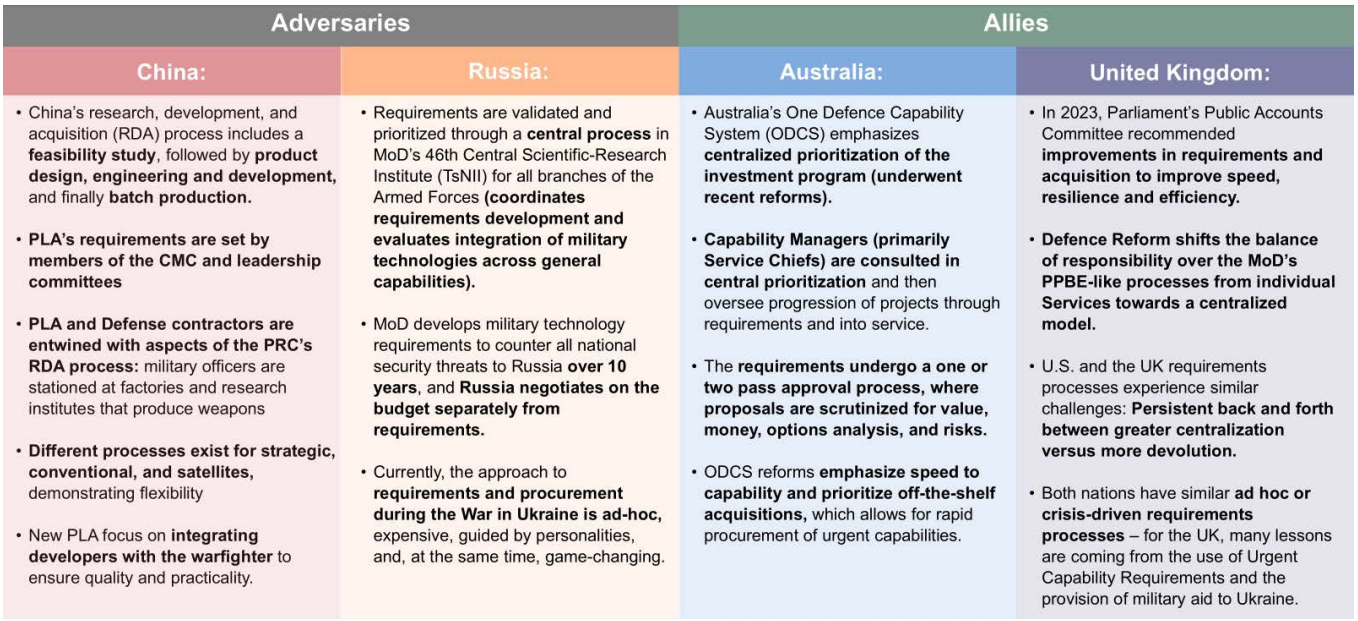
We used document reviews as the primary source of information on the four countries' defense requirements systems and then structured discussions with subject-matter experts to supplement as required. Each case study was assigned a unique team with country-specific expertise, incorporating research staff across RAND's offices in the United States, Europe, and Australia. For the PRC and Russian Federation case studies, the assigned experts had the language skills and methodological training to facilitate working with primary sources in Chinese or Russian. The analysis was also supplemented by experts on the U.S. requirements system, as applicable.

Key Insights from International Defense Requirements Systems

Given the differences in the scale and nature of the requirements and acquisition systems among these countries and the United States, it is not possible to extract one-for-one comparisons or directly applicable lessons. However, our analysis does offer a snapshot in time of how China, Russia, Australia, and the UK validate and prioritize defense requirements; how these requirements decisions influence budget and acquisition decisions; and how these systems compare with the U.S. requirements system. Although the facts about these systems will need to be updated when their large-scale transformation is complete, these case studies offer some practices for DOW to leverage and also ways to outpace adversaries and align better with close allies to improve integration and interoperability. Figure S.1 provides the most salient descriptive points about the current functions and approaches of these requirements systems (and how they relate to acquisition).

[8] Public Law 118-131, National Defense Authorization Act for Fiscal Year 2024, December 22, 2023. The Section 811 report is U.S. Department of Defense, *Fiscal Year 2024 National Defense Authorization Act: Section 811: Modernizing the Department of Defense Requirements Process*, July 14, 2025b.

Figure S.1. Adversaries' and Allies' Defense Requirements Systems Face Similar Trade-Offs and Offer Alternative Models



NOTE: CMC = Central Military Commission; MoD = Ministry of Defense (Russia) or Ministry of Defence (UK); PPBE = planning, programming, budgeting, and execution.

Overall Practices That the U.S. Department of War Could Leverage

DOW should consider the following potential practices from these countries as it modernizes its requirements system:

China

- China's acquisition process, including requirements, has similar steps to U.S. processes. However, the People's Liberation Army's (PLA's) access to China's entire innovation ecosystem (albeit via different mechanisms from the United States) is the key to China's ability to plan strategically and sustain funding over time, which allows the PRC to streamline some processes and accelerate others. New PLA policies are focused on integrating developers with the warfighter to improve quality and deliver the tools the warfighter needs.
- DOW needs that same knowledge of current innovation, connectedness, consistent funding, and understanding of how innovation can be applied to military purposes within the United States, while also expanding to understanding allies' innovation ecosystems in support of the 2025 National Security Strategy's goal of security through strength. The U.S. Acquisition Transformation Strategy's call for the U.S. defense industrial base to pivot capacity to wartime footing should provide some counterbalance to China's industrial capacity, but this will need to be coupled with consistent funding across the entire U.S. innovation ecosystem, as is done in China.

Russia

- Russian military requirements development is centralized within the Russian Ministry of Defense; planners consider ongoing military-technical research, costs and economics, personnel and management science, and industrial capacity when developing requirements for ten-year modernization and procurement programs.
- The war in Ukraine has forced Russia to come to a reckoning regarding its Soviet-era requirements and acquisition practices. Russia has exhibited some ability to shortcut the validation process and pursue adoption of foreign, commercial, and dual-use military technologies. There is an expectation that any future conflicts will require these same principles no matter where they happen globally. DOW has been tracking the war in Ukraine and what it will mean for the speed of its own processes (e.g., the use of lower-cost, attritable weapon systems) and the need to continuously innovate and integrate new solutions to key operational problems.

Australia

- Australia's requirements processes are defined under the One Defence Capability System (ODCS), which emphasizes centralized planning across the capability life cycle within resource limitations. To respond to the imperative for greater urgency in its military modernization and to avoid an increase in schedule failures and delays, Australia has redesigned its requirements development process:
  - There is greater emphasis on centralized prioritization of the investment program through the Vice Chief of the Defence Force.
  - Priorities are being driven by a shift in strategic direction toward a more urgent acquisition of capabilities focused on the most significant risks.
  - Capability managers (primarily service chiefs) are consulted in central prioritization and then lead capability realization planning throughout the life cycle.
  - Requirements undergo a one- or two-pass approval process in which proposals are scrutinized for value, money, options analysis, and risks.
- Australia's recent ODCS reforms emphasize speed to capability and prioritize off-the-shelf acquisitions, enabling the rapid procurement of urgent capabilities. DOW's requirements modernization must include these same principles. These were conclusions in the Section 811 report,[9] and they have been recently communicated to DOW and industry in Secretary of War Hegseth's Acquisition Transformation Strategy.

United Kingdom

- In 2023, UK authorities recommended improvements in requirements and acquisition to increase speed, resilience, and efficiency, shifting the balance of responsibility from individual

[9] U.S. Department of Defense, 2025b.

services toward a centralized model.[10] The UK Ministry of Defence is still working to complete the transformation and has not fully unveiled the extent of these reforms.

- As the UK and the United States reform their requirements processes, there are opportunities to share the lessons from the UK's ongoing Defence Reform with DOW—for example, through the forums of the International Joint Requirements Oversight Council (I-JROC), the Australia–United Kingdom–United States (AUKUS) partnership, or other extant bilateral avenues. The I-JROC also represents the most appropriate avenue through which the United States and the UK can better align requirements and enhance interoperability. In addition, the UK's Urgent Capability Requirement process and the lessons from Operation Scorpius (expedited provision of military aid to Ukraine) offer valuable insights for identifying key factors that enable greater speed.

[10] U.S. Department of Defense, 2025b, p. 160.

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Figures and Tables

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Chapter 1

Introduction

A level of global instability not seen since the second world war—marked by China exhibiting significant industrial capability and capacity in the Indo-Pacific and Russia increasing its ability to produce at speed and scale in its war in Ukraine—has impelled the United States and its close allies Australia and the United Kingdom to rethink how their defense systems function. In recent years, each nation has made or initiated major changes to its defense requirements and acquisition systems.

In 2025, U.S. leadership directed sweeping acquisition reform through multiple executive and legislative actions. Executive Order 14265 ("Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base") describes the perilous national security situation for the United States:

> As Chief Executive and Commander in Chief, I am committed to ensuring that the United States military possesses the most lethal warfighting capabilities in the world. America's defense industrial base is central to this effort. Similarly, the defense acquisition workforce is a national strategic asset that will be decisive in any conflict, where the factory floor can be just as significant as the battlefield. . . . [O]ur defense acquisition system does not provide the speed and flexibility our Armed Forces need to have decisive advantages in the future. In order to strengthen our military edge, America must deliver state-of-the art capabilities at speed and scale through a comprehensive overhaul of this system.[11]

The proposed SPEED (Streamlining Procurement for Effective Execution and Delivery and National Defense Authorization) Act similarly called for rapid reform:

> The United States faces its most dangerous security environment since World War II, driven by China's military buildup, Russia's war in Ukraine, Iran's proxy warfare, and North Korea's nuclear provocations. . . . Our national security depends on equipping our warfighters as quickly as possible.[12]

As part of the overall acquisition reform, requirements modernization is being pursued through what have been described as generational changes by policymakers and experts. The U.S. Department of War's (DOW's) 2025 decision to replace the Joint Capabilities Integration and Development System (JCIDS) provides an opportunity to better align technology and innovation with operational

[11] Executive Order 14265, "Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base," Executive Office of the President, April 9, 2025.

[12] U.S. House of Representatives, Streamlining Procurement for Effective Execution and Delivery and National Defense Authorization Act for Fiscal Year 2026, H.R. 3838, 2025.

needs.[13] DOW is also reorienting the Joint Requirements Oversight Council (JROC) with the goal of "streamlining and accelerating" requirements-setting and acquisitions.[14]

In April 2025, Australia released updates to its One Defence Capability System (ODCS). These changes aim to streamline the country's requirements and approval processes, emphasizing centralized prioritization, minimum viable capability (MVC) procurement, and off-the-shelf acquisitions.[15]

Similarly, the UK's Ministry of Defence (MOD) recently began the implementation of wide-ranging reforms referred to collectively as the *Defence Reform*.[16] Part of this initiative—largely prompted by Russia's war in Ukraine—is the improvement of defense requirements-setting and acquisition speed, resilience, and efficiency.

U.S. adversaries—China and Russia—have likewise undergone transformation. China continues to modernize its military at an unprecedented rate, and Russia's war in Ukraine has forced it to adapt its Soviet-era defense enterprise to keep pace with rapidly changing technology on the battlefield.

As DOW considers ways to modernize its defense requirements system, the experiences of other nations—both allies and adversaries—in formulating their defense requirements may suggest useful approaches for DOW to consider, as some of the challenges and trade-offs other nations face are similar to those of the United States.

Project Scope

Section 811 of the Fiscal Year 2024 National Defense Authorization Act (NDAA) tasked the Secretary of Defense, acting through the Vice Chairman of the Joint Chiefs of Staff, with "Modernizing the Department of Defense Requirements Process."[17] This task directed the Department of Defense to develop "a streamlined requirements development process" in order to "improve alignment between modern warfare concepts, technologies, and system development and reduce the time to deliver needed capabilities to the warfighter." The Section 811 legislative language outlined 12 reform elements to be addressed (see Figure 1.1), ranging from updates to JCIDS to redesign of the joint requirements governance and processes.

[13] The Department of War is designated the Department of Defense under Public Law 81-216, National Security Act Amendments of 1949, August 10, 1949.

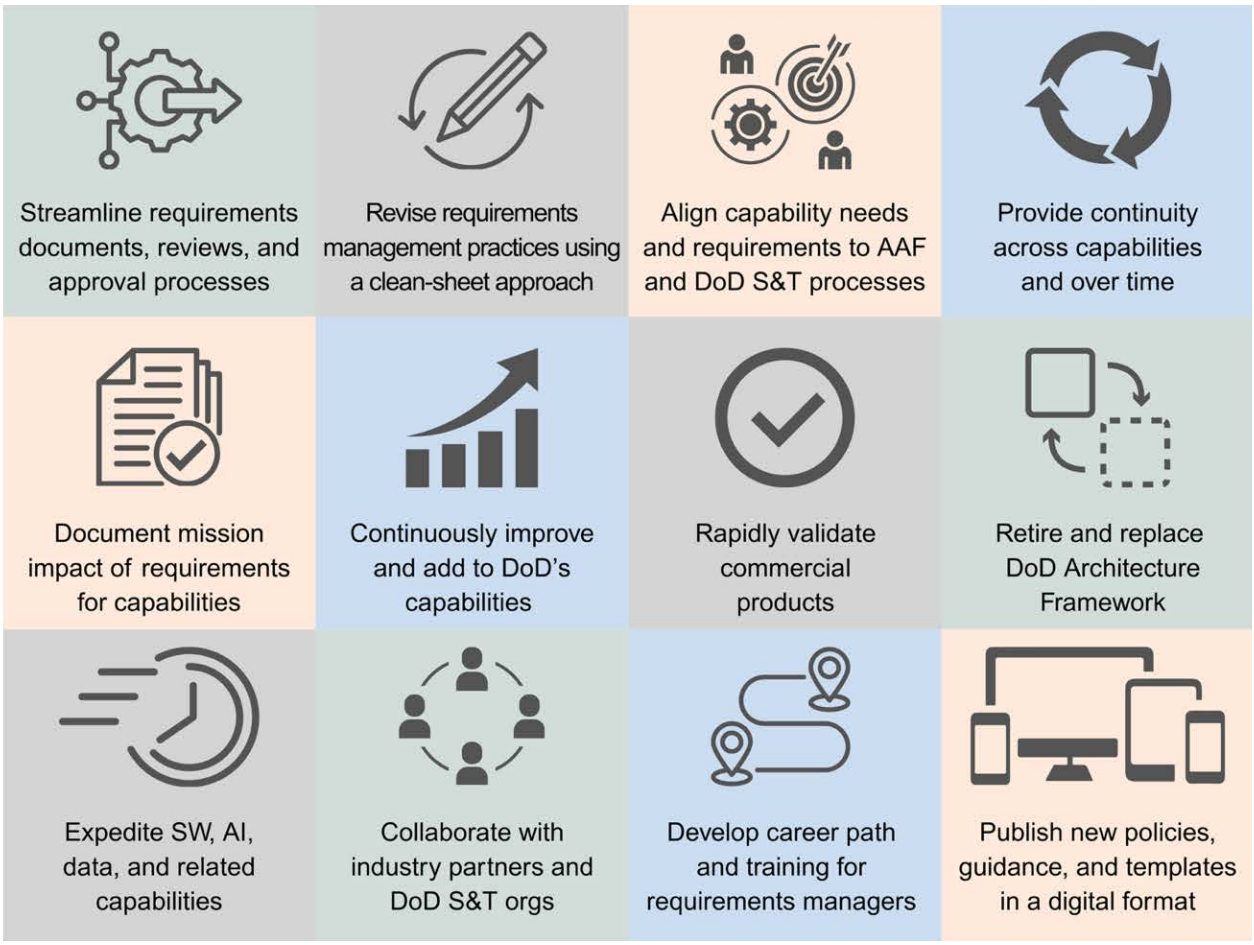
[14] Executive Order 14265, 2025; Pete Hegseth and Steve Feinberg, "Reforming the Joint Requirements Process to Accelerate Fielding of Warfighting Capabilities," memorandum for senior Pentagon leadership, commanders of combatant commands, and defense agency and Department of War field activity directors, U.S. Department of War, November 7, 2025.

[15] Australian Department of Defence, *The One Defence Capability System (ODCS) Manual*, version 2.0, March 17, 2025a.

[16] UK MOD, *The Strategic Defence Review 2025—Making Britain Safer: Secure at Home, Strong Abroad*, last updated July 8, 2025c.

[17] Public Law 118-31, National Defense Authorization Act for Fiscal Year 2024, December 22, 2023, Section 811.

Figure 1.1. Congressionally Mandated Elements in Section 811 of the Fiscal Year 2024 NDAA



SOURCES: U.S. Department of Defense, *Fiscal Year 2024 National Defense Authorization Act: Section 811: Modernizing the Department of Defense Requirements Process*, July 14, 2025b, p. 2; Pub. L. 118-131, 2023, § 811.
NOTE: AAF = Adaptive Acquisition Framework; AI = artificial intelligence; DoD = U.S. Department of Defense; orgs = organizations; S&T = science and technology; SW = software.

As described above, the Joint Staff J8 was tasked with organizing a response to Section 811. As part of this effort, the Joint Staff asked the National Defense Research Institute, a federally funded research and development center operated by the RAND National Security Research Division, to assist with a variety of analytic tasks. One of the tasks was to conduct case studies of comparative requirements systems in China, Russia, Australia, and the UK. The rationale for the countries was driven by the need to better understand adversaries and to also better understand how the requirements systems of AUKUS partners—Australia and the UK—function. AUKUS and the addition of the International-JROC (I-JROC) in recent years have been drivers of the need for additional information on ally requirements and acquisition systems to assist with U.S. interaction with these defense systems. (See the box on the next page for notes on the content of the Section 811 report and this report.)

Note on the Content of the Section 811 Report and This Report

RAND assisted DOW in answering Congress's mandate in Section 811 ("Modernizing the Department of Defense Requirements Process") of the fiscal year 2024 NDAA, producing a report on the topic.[a] The Section 811 report presents the summaries of these case studies. This report presents the details behind those summaries. In the interest of clarity, we repeat some of the key figures and summary text here from the Section 811 report, as part of our longer descriptions. We have added notes to figures and tables and in the text to indicate items that appear verbatim in the Section 811 report.

[a] The 2024 NDAA is Pub. L. 118-131, 2023. The Section 811 report is U.S. Department of Defense, 2025b.

Approach

The Joint Staff asked us to answer the following questions:

1. How do China, Russia, Australia, and the UK validate and prioritize defense requirements?
2. How do these requirements decisions influence budget and acquisition decisions?
3. How does the U.S. requirements process compare with these adversary and ally processes?
4. What practices can DOW leverage?
5. How can the U.S. requirements process better outpace adversary requirements processes?
6. How can the U.S. requirements process better align with ally processes to ensure integration and interoperability?

We used document reviews as the primary source of information on these four countries' defense requirements systems and then structured discussions with subject-matter experts to supplement as required. Each case study was assigned a unique team with country-specific expertise, incorporating research staff across RAND's offices in the United States, Europe, and Australia. For the case studies on China and Russia, the assigned experts had the language skills and methodological training to facilitate working with primary sources in Chinese or Russian. The analysis was also supplemented by experts on the U.S. requirements system, as applicable. The individual case study teams answered each question in a capacity that reflects the uniqueness of both the political systems in these countries and their histories.

Structure of This Report

Chapters 2–5 provide case studies on the defense requirements systems of China, Russia, Australia, and the UK, respectively. Chapter 6 provides conclusions and key insights across the case studies.

Chapter 2

China

Anna Puglisi, Elizabeth Bujwid, and Jackson Smith

Background

The People's Liberation Army (PLA) has evolved from what was once a guerrilla army into a modern professional force; this transformation is due in large part to the People's Republic of China's (PRC's) economic growth over the past four decades. World Bank data indicate that China's *announced* defense budget has not exceeded 2 percent of its gross domestic product since 2003.[18] Although China's budgetary process is opaque and its publicly announced budget levels are acknowledged to underestimate its true investments in military modernization, its announced 2025 military budget, totaling US$249 billion, is a 7.5 percent increase over the previous year. Additionally, China has made immense strides in its overall research and development (R&D) portfolio over the past 30 years, which are reflected in its budgetary commitments: In 2024 it spent approximately US$490 billion, an increase of 8.3 percent from the previous year, and is expected to have had a similar increase in 2025. These increases continue despite China's slowing economy.

This transformation has not been without challenges—indeed, China's struggles with corruption and quality control issues are well documented. Nevertheless, China has found a way to develop and field a suite of capabilities specifically designed to counter how the United States and its allies fight. This case study builds on RAND's previous work and explores in more detail the players, methods, and infrastructure that support China's requirements processes; we also describe the requirements process within the larger acquisition life cycle. Although it is difficult to gain a complete picture of China's requirements processes from open-source reporting, we have pieced together a narrative that provides an overview of similarities to and differences from the U.S. system.

An Introduction to China's Requirements System: How China Validates and Prioritizes Its Requirements

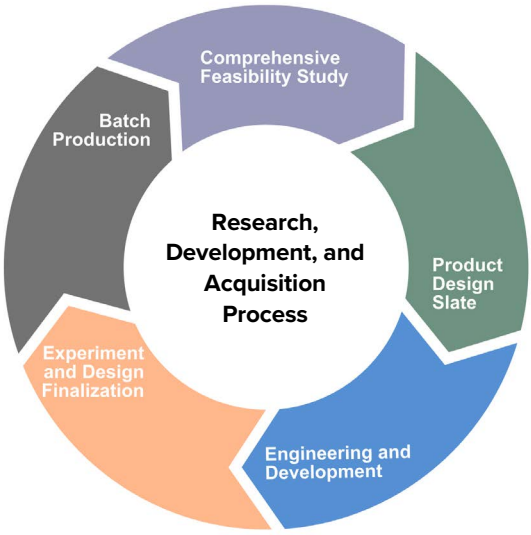
China's research, development, and acquisition (RDA) process is similar to that of the United States and generally follows the same steps: a feasibility study, followed by product design, engineering and development, and finally batch production.[19] (See Figure 2.1.) The feasibility study forms the basis of future R&D contracts and is usually completed by PLA institutions, universities and academic institutions, or defense contractors. The study assesses life-cycle costs, as well as technical and tactical

[18] World Bank Group, "Military Expenditure (% of GDP)—China, Military Expenditure by Country as Percentage of Gross Domestic Product," data from Stockholm International Peace Research Institute Military Expenditure Database, January 19, 2026.

[19] Christian Curriden, *The Chinese Acquisition Process*, RAND Corporation, CT-A2691-1, April 13, 2023.

requirements.[20] The new system then goes through a series of modeling, designing, and initial prototyping processes. Following this initial product design stage, the new system goes through further development in preparation for small-batch production: full-scale modeling and technical design, model testing and evaluation, and production process computer modeling. The PLA historically has also ground-tested products and incorporated redesigns during this engineering and development stage. Specialized centers and PLA units then conduct tests on development and small-batch production systems, including environmental, performance, and reliability tests, followed by the necessary redesigns. The new system then enters batch production before the cycle repeats, with incremental improvements often made to the same system. In some cases, new systems are distributed to operational units first, so that they can undergo additional evaluation before larger-scale production.

Figure 2.1. PRC Research, Development, and Acquisition Process Overview



SOURCE: Adapted from U.S. Department of Defense, 2025b, p. 162.

The PLA's requirements are set by members of the Central Military Commission (CMC) and leadership committees. These committees include experts from across China's innovation ecosystem and include universities, the Chinese Academy of Sciences, and State Key Laboratories. Military modernization also has two distinct efforts: modernizing existing legacy weapons and equipment and developing advanced and conventional weapons.[21]

[20] Mark Ashby, Caolionn O'Connell, Edward Geist, Jair Aguirre, Christian Curriden, and Jonathan Fujiwara, *Defense Acquisition in Russia and China*, RAND Corporation, RR-A113-1, 2021.

[21] Barry Naughton, Tai Ming Cheung, Siwen Xiao, Yaosheng Xu, and Yujing Yang, "Reorganization of China's Science and Technology System," University of California Institute on Global Conflict and Cooperation, Working Paper No. 10, July 2023.

Importantly, China has different processes for strategic weapons, conventional weapons, and satellites, demonstrating a level of flexibility built into the acquisition system for strategic weapons and new concept weapons.

In a departure from past practices and an attempt to deliver service-specific needs, new PLA policies are focused on integrating developers with the warfighter to improve quality and deliver the tools the warfighter needs.[22] Defense contractors and other parts of the innovation base are integrated into the PRC's requirements, development, and acquisition processes. Many defense contractors are state-owned enterprises (SOEs), but a new breed of state-supported companies is now also participating in the acquisition process. Analysis of policy and company financial documents indicates that these smaller companies are often associated with universities, State Key Laboratories, or the Chinese Academy of Sciences and are supported by Chinese government guidance funds.

Key Players

The key acquisition players within China's defense requirements system include various commissions, ministries, and departments within the PRC, as well as entities more loosely affiliated with the PRC government, such as defense contractors and National Strategic Science and Technology Forces (NSSTFs). The United States also leverages outside organizations, but China's approach to development is more holistic than that of the United States and includes entities not normally associated with military development. This section will provide a general overview of the roles and responsibilities of these entities.

Central Science and Technology Commission

The Central Science and Technology Commission (CSTC) (中央科技委员会) is a Chinese Communist Party (CCP) Central Committee policymaking body tasked with centralizing the Party's approach to key core technologies. It appears to guide and coordinate science and technology (S&T) reform across competing ministries, agencies, and other government bodies by developing plans and policies. It also tasks national laboratories and other NSSTF entities with major projects, allocates resources to support those projects, and more broadly supports military-civilian S&T development integration.[23] In March 2023, the CSTC functionally replaced three former State Council leading small groups (LSGs): the National S&T LSG, the National S&T System Reform and Innovation System Construction LSG, and the Medium- and Long-Term Science and Technology Development Plan LSG.[24] As a committee, the CSTC is able to issue authoritative documents and regulations.

Ministry of Science and Technology

The Ministry of Science and Technology (MOST) (科技部重组改革) simultaneously operates as a government ministry under the State Council and manages the General Office of the CSTC. It

[22] Phillip Saunders, Arthur Ding, Andrew Scobell, Andrew Yang, and Joel Wuthnow, *Chairman Xi Remakes the PLA*, National Defense University Press, 2019.

[23] Naughton et al., 2023.

[24] Naughton et al., 2023.

appears to predominantly focus on strategic planning and coordination, as well as the execution of specific products and technology transfers.[25] It also manages national laboratories in addition to major national S&T.[26]

Ministry of Industry and Information Technology

The Ministry of Industry and Information Technology (MIIT) (中华人民共和国工业和信息化部) oversees the PRC's national economic development technological development zones. Its responsibilities include the oversight of high technology zones (HTZs), which are special economic zones that receive special government incentives to concentrate talent and high-tech infrastructure. Prior to the CCP's S&T reorganization efforts in March 2023, HTZs were overseen by MOST.[27] MIIT also executes various other responsibilities, including internet and telecommunications oversight, and works to promote innovation and develop technological equipment.[28]

State Administration for Science, Technology, and Industry for National Defense

The State Administration for Science, Technology, and Industry for National Defense (SASTIND) (国家国防科技工业局), alongside the Equipment Development Department (EDD), licenses processes and regulations for defense-related firms, including the regulation of the structure of research institutes.[29] It falls under MIIT and essentially manages the PRC's defense industrial base.[30]

Equipment Development Department

The EDD (装备发展部) is the "centralized unified management" body of the PLA armament system.[31] It performs procurement management functions,[32] including research, development, test, and evaluation functions.[33] Additionally, the EDD develops an overall Weapons Equipment Development Strategy to help the PLA address geostrategic trends, technological developments, and potential future conflicts.[34] Since PLA reforms in 2016, the EDD has generally taken on the responsibilities previously entrusted to the General Armaments Department (GAD), with the exception of its Science and Technology Commission, which is now separate under the CMC,[35] and GAD's equipment repair

[25] Naughton et al., 2023.

[26] Naughton et al., 2023.

[27] Naughton et al., 2023.

[28] Thompson Reuters Practical Law, "Glossary, Ministry of Industry and Information Technology (MIIT) (工业和信息化部)," webpage, undated.

[29] Curriden, 2023.

[30] Tai Ming Cheung, "Hearing on China's Pursuit of Defense Technologies: Implications for U.S. and Multilateral Export Control and Investment Screening Regimes," testimony before the U.S.-China Economic and Security Review Commission, April 13, 2023.

[31] Curriden, 2023.

[32] Saunders et al., 2019.

[33] Saunders et al., 2019.

[34] Curriden, 2023.

[35] Saunders et al., 2019.

and maintenance responsibilities.[36] Although the GAD director held a seat on the CMC prior to the 2016 reforms, neither the head of the EDD nor the head of the S&T Commission holds a seat on the CMC.[37] While this change indicates that the EDD sits lower on the hierarchy than its predecessor, it may also enhance the EDD's responsiveness to the needs of the PLA and improve the PLA's commercial acquisition pipeline.[38]

The Science and Technology Commission

The Science and Technology Commission (科学技术委员会) moved under the CMC's oversight following the 2016 reforms.[39] It bears some similarities to the United States' Defense Advanced Research Projects Agency (DARPA) in how it treats innovation but also promotes civil-military fusion domestically.[40]

Service Branches and Armed Support Services

PLA service branches are responsible for manning, training, and equipping their forces.[41] Each branch has its own equipment development departments, which appear to oversee weapon tests for each respective service.[42] The support services also seemingly have their own in-house research, development, and testing body, namely the Aerospace Support Service. It is also worth noting that the PLA is directly and closely entwined with other aspects of the PRC's RDA process—military representative officers, for instance, are stationed at factories and research institutes that produce the weapons the representatives' services require.

National Strategic Science and Technology Forces

NSSTFs (国家战略科技力量) include State Key Laboratories and national research institutes, high-level research universities, and leading S&T enterprises.[43] In general, State Key Laboratories and research universities perform basic research, national research institutes address major S&T challenges, and S&T enterprises commercialize new technologies. However, the development cycle is much more integrated than that in the United States, with each of these different classes of entities involved. For example, a State Key Laboratory or university can begin basic research but then continue with the project through prototyping and in conjunction with a defense enterprise overseeing production.[44] The three types of entities also collaborate via supporting entities, such as innovation

[36] Saunders et al., 2019.

[37] Saunders et al., 2019.

[38] Subject-matter expert on China, interview with the authors, February 2025.

[39] Saunders et al., 2019.

[40] Ming Cheung, 2023.

[41] Ashby et al., 2021.

[42] Curriden, 2023.

[43] Naughton et al., 2023.

[44] Emily S. Weinstein, Channing Lee, Ryan Fedasiuk, and Anna Puglisi, "China's State Key Laboratory System," Center for Security and Emerging Technology, Georgetown University, May 2022.

centers or innovation consortia (创新联合体), the latter of which are sometimes organized by local government bodies in coordination with research institutes.

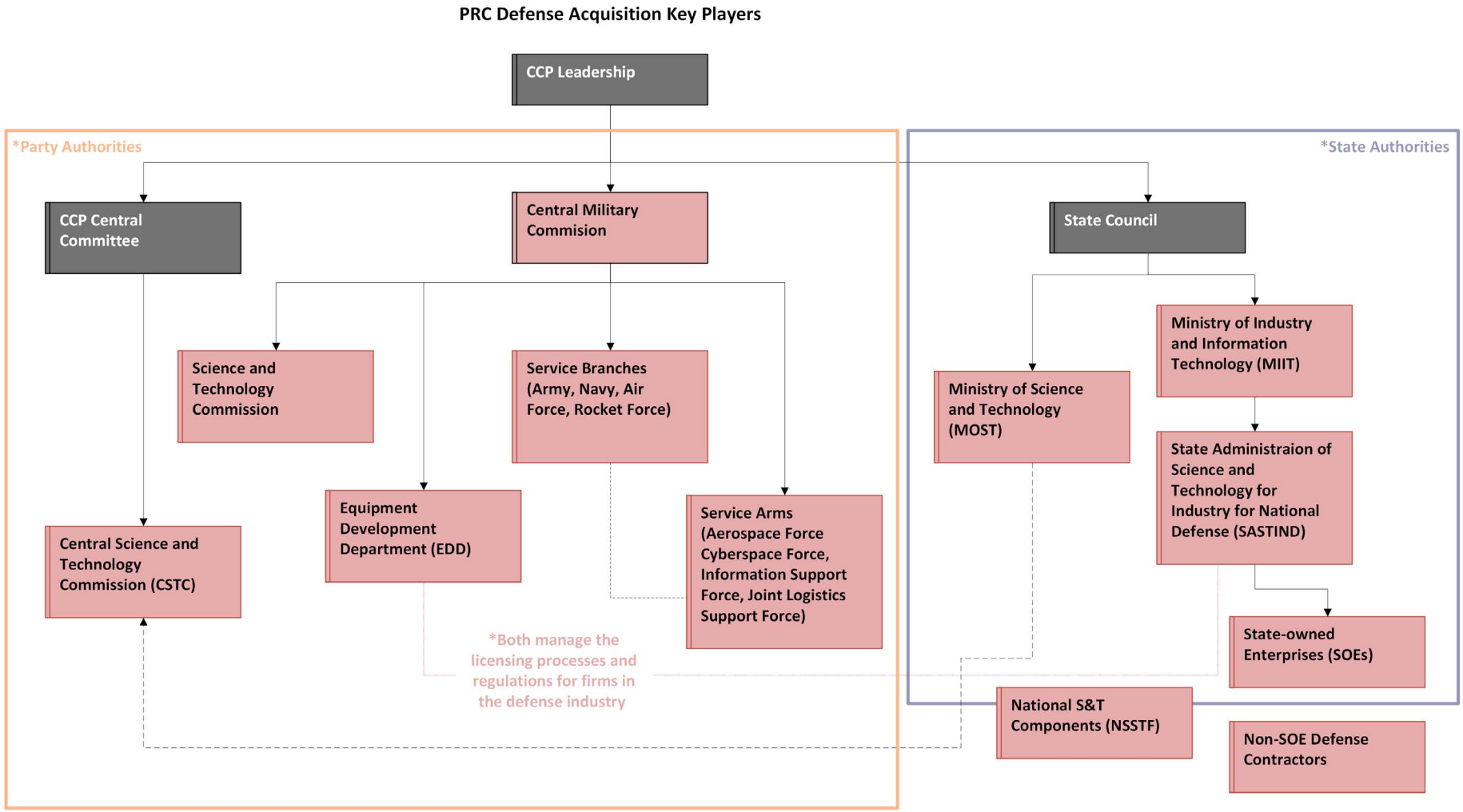
Defense Contractors

Defense contractors are integrated into the PRC's RDA process. The largest are SOEs, although a new breed of state-supported companies also participates in the acquisition process. SOE chief executives carry an official rank equivalent to a vice minister and are overseen by the Organization Department of the CCP, and executives of China's national champions also have close ties to the CCP.[45]

Figure 2.2 diagrams the relationships between key players in the PRC acquisition process.

[45] Curriden, 2023.

Figure 2.2. PRC Acquisition Key Players



SOURCES: RAND analysis featuring information from Naughton et al., 2023; Curriden, 2023; Saunders et al., 2019; Ming Cheung, 2023; and Weinstein et al., 2022.

China's New Regulations Focused on Military Modernization and the Acquisition Process

China has shown a propensity for being able to field strategic weapons that it prioritizes, but its struggles with the quality and efficiency of its weapon development programs are well documented and have been an ongoing focus of China's leaders. In this section, we describe a series of new regulations aimed at addressing these struggles.

One of China's newest regulations, released by the CMC in 2025, is the "Military Equipment Scientific Research Regulations."[46] The goal of these regulations is to better align PLA practices with weapon modernization, as well as increase what China calls "innovation independence," or technological self-sufficiency. These regulations are a revision of an earlier regulation and have the following goals:

- Implement hierarchical and classified management of equipment pre-research, equipment development, equipment comprehensive research, and other projects.
- Strengthen quality and standardize quality control of equipment and scientific research.
- Strengthen the supervision of contracts and implement inspection protocols.[47]

Integrating advanced communications infrastructure and automation—including artificial intelligence (AI)—is a major focus of PLA reforms. A 2024 regulation addresses this, directing the services that they must consider the "informatized and intelligentized conditions" of future operations, meaning interoperability, advanced survivable communications, and automation. This regulation also addresses the need to modernize weapons and equipment while continuing to develop advanced and conventional weapons.[48]

The PLA has recognized that different types of systems present different challenges. As a result, it has different development processes for conventional weapons, strategic weapons, and satellites. This may explain how, despite the inefficiencies of China's system, it has been able to achieve success with a large number of advanced and strategic weapon developments. We describe the different development phases in the remainder of this section.

Conventional Weapons

Conventional weapon development is divided into the demonstration stage, planning stage, engineering development stage, design finalization stage, and production finalization stage. The CMC issued the "Military Equipment Regulations," which stipulate three types of tests (performance testing, combat testing, and in-service assessment) and two types of reviews (status appraisal and equipment finalization).

[46] Baidu Baike, "Military Equipment Scientific Research Regulations" ["军队装备科研条例"], webpage, undated-b.

[47] Baidu Baike, undated-b.

[48] Zhuo Fabao [禚法宝], "A Dialectical Revelation of Weapon and Equipment Construction Patterns" ["武器装备建设规律的辩证揭示"], *PLA Daily* [解放军日报], May 9, 2024.

Strategic Weapons

Strategic weapon development is divided into the demonstration stage, planning stage, engineering development stage, and finalization stage. The last stage also involves the services (i.e., customers) and gives the developers and customers flexibility.

Satellites

It is telling that the PLA considers satellites and space weapons in a separate category, especially given its success in this area. Developmental stages related to space include the demonstration stage, planning stage, initial prototype development stage, finalized prototype development stage, and use improvement stage.

Additional Regulations

Finally, in 2024, as a way to potentially address corruption and improve the end product, more competition was introduced into the requirements process through the "Regulations on Competitive Procurement of Military Equipment," which aim to eliminate single-source procurement.[49] These regulations introduce competition into various stages of equipment preliminary research, development, testing, ordering, and maintenance and support. The regulations also state that personnel related to equipment procurement projects (i.e., they or close relatives previously worked for the supplier) must avoid any conflicts of interest with suppliers, which is a departure from past practices, described by Ashby et al.:

> The monopolistic structure of China's defense industry gives the SOEs significant bargaining power to keep this arrangement in place. Despite splitting each SOE into two separate companies in 1999, China's defense industry still lacks much real competition. SOEs dominate each of the major defense industry's sectors, and a long-established system of compartmentalization means there is little crossover of SOEs between sectors. Contracts are single-sourced for the majority of military equipment, with only non–combat related contracts undergoing a formal bidding process. PLA leadership admitted as recently as 2014 that these institutional features—more than funds or technology—are the biggest impediments to China's RDA process.[50]

Additionally, the competitive procurement management unit is tasked with establishing joint supervision mechanisms with the discipline inspection and supervision teams, as a way to implement an audit process. These mechanisms include the

- supervision of competitive procurement methods
- setting of key indicators and access conditions
- calculation of price ceilings

[49] Ministry of Finance of the People's Republic of China [中华人民共和国财政部], "'Regulations on Competitive Procurement of Military Equipment' Published" ["《军队装备竞争性采购规定》公布"], December 27, 2024.

[50] Ashby et al., 2021, p. 23.

- selection of evaluation experts.[51]

Implications of Civil-Military Fusion

China's centrally directed S&T development plans are all designed to support military modernization. China says it will use any knowledge or technology it acquires for its military. This is not conjecture, profiling, or analysis; it has been China's stated position for decades. From early military-civilian integration (军民结合) policies to the more recent civil-military fusion (军民融合), China takes a holistic approach to development, blurring what is civilian, what is military, what is private, and what is public, making it challenging to accurately assess the PRC's defense investments.

One centrally directed S&T development plan is the "13th Five-Year Plan for Military and Civil Fusion,"[52] which was established in 2017. It is focused on emerging technologies and calls for a "cross-pollination of military and civilian technology in areas not traditionally seen as 'national security issues.' This includes topics such as quantum telecommunication and computing, neuroscience and brain-inspired research." In addition to this overarching plan, there are programs to develop specific high-tech areas, such as biotechnology,[53] integrated circuits,[54] and "next-generation" AI (see box).[55] As Table 2.1 details, a number of academic institutions are involved in these efforts. For each group of topics listed in Table 2.1, the table indicates whether the academic institution is engaged in a military collaboration (MC) or whether the institution has developed or made a key technology or achievement (KT/A) in the area.

[51] Ministry of Finance of the People's Republic of China, 2024.

[52] MOST, "The '13th Five-Year Special Plan' for Biotechnology Innovation" ["'十三五' 科技军民融合发展专项规划"], August 24, 2017; State Council of the People's Republic of China [中华人民共和国国务院], "National Integrated Circuit Industry Development Plan" [国家科技创新基地优化整合方案], June 25, 2014.

[53] MOST, 2017.

[54] State Council of the People's Republic of China [中华人民共和国国务院], 2014; State Council of the People's Republic of China [中华人民共和国国务院], "Next-Generation Artificial Intelligence Development Plan" ["新一代人工智能发展规划"], July 8, 2017.

[55] State Council of the People's Republic of China [中华人民共和国国务院], 2017.

Projects That Support Military Modernization

Mega Projects

- Core electronic components
- High-end generic chips and basic software
- Extra-large-scale integrated circuit manufacturing and technique
- New-generation broadband wireless mobile telecommunications
- Advanced numeric-controlled machinery and basic manufacturing technology
- Large-scale oil and gas exploration
- Large advanced nuclear reactors
- Water pollution control and treatment
- Genetically modified new-organism variety breeding
- Drug innovation and development
- Control and treatment of AIDS, hepatitis, and other major diseases
- Large aircraft
- High-definition Earth observation systems
- Manned aerospace and Moon exploration

Likely Projects (not publicly confirmed)

- Beidou satellite project
- High-energy laser project
- Hypersonic vehicle

SOURCE: Features information from Anna Puglisi, "Recent Advances in Artificial Intelligence and the Department of Energy's Role in Ensuring U.S. Competitiveness and Security in Emerging Technologies," testimony before the U.S. Senate Committee on Energy and Natural Resources, April 27, 2023.
NOTE: AIDS = acquired immunodeficiency syndrome.

Table 2.1. PRC Academic Institutions That Support Military Modernization

Institution	MC or KT/A	Topics
Beihang University[a]	MC	Beihang University has four key research institutes that work on military technologies. Topics include examining U.S. Navy nuclear submarine atmospheric monitoring systems and evaluating next-generation carrier-based aircraft development standards.
	KT/A	Beihang University supports research on unmanned systems, large aircraft, deep space detection quantum information, integrated circuits, AI, and the industrial Internet of Things.
Beijing Institute of Technology (BIT)[b]	MC	BIT works with the PLA on anti-submarine warfare, such as the evaluation of the effectiveness of maritime camouflage technology, as well as background clutter suppression in radar.
	KT/A	BIT supports research on intelligent robotics, wireless, full-range-of-motion-electric vehicles for passenger use, commercial use, and specialized use. In radar, BIT developed the first series of special range radars, first satellite-borne space target measurement radar, and first space-based warning radar. It has also developed advanced materials for armored vehicles and heat dispersion, as well as a towed artillery fire control integration system.
Harbin Engineering University[c]	MC	The Harbin Engineering University collaborates with the PLA on undersea explosion dynamics, including the impact on ship hulls. It also researches rust-resistant materials, ocean acoustic materials, damping materials, and multifunction compound materials.
Harbin Institute of Technology[d]	MC	The Harbin Institute of Technology works with the PLA on integration and networking of missiles, microsatellites, AI, and advanced materials. It also supported construction of the Long March (LM)-5 and -7 rockets.
Nanjing University of Aeronautics and Astronautics[e]	KT/A	The Nanjing University of Aeronautics and Astronautics works with the PLA on technical problems associated with strengthening lightweight materials, precision drive systems, micro intelligence systems, and intelligent structures.
	MC	The university has made breakthroughs in piezoelectric precision drive and control, nonlinear dynamics of vibration control systems, physical mechanics of low-dimensional nanofunctional materials and device principles, and aircraft design and structural strength research; developing the preparation, performance characterization, and measurement and control technologies of application-oriented nano-intelligent material devices; exploring the application prospects of nanotechnology in energy, information, and especially high-end fields related to aerospace technology and the leap from basic research to engineering technology of nanotechnology; aviation radar enhancement; and shipborne information system evaluation.
Nanjing University of Science and Technology[f]	MC	The Nanjing University of Science and Technology works with the PLA on explosives and on anti-explosive protections for armored vehicles. Additionally, it created a number of programs meant to transition military technologies for use in local economies, inducing high-power fiber lasers, charging station technology, thin-film lithium batteries, advanced welding, and zirconium oxide materials.
Northwestern Polytechnic University[g]	MC	The Northwestern Polytechnic University works with the PLA on advanced material research, quantum research, and high manufacturing for metals and plastics.

Institution	MC or KT/A	Topics
	KT/A	The university supports research on ultra-high-temperature structural composite materials, high-performance metal materials and solidification technology, additive manufacturing, energetic materials, advanced lubricating and sealing materials, and superconducting materials.

SOURCES: Features information from the following:

[a] Beihang University [北京航空航天大学], "Scientific Research Overview" [科研概括], undated; Yu Tao [余涛], Li Can [李灿], Zhou Jiayong [周家勇], Tian Wan [田琬], Leng Wenjun [冷文军], and Chen Longfei [陈龙飞], "A Review of Main Air Monitoring System for U.S. Navy Nuclear Submarine" ["美国海军核潜艇舱室大气监测主分析仪器发展述评"], *Ship Engineering* [船舶工程], Vol. 42, No. 1, 2020; Zhang Wei [张伟], Xu Yingqi [许莹琪], Xiang Jianfeng [项剑锋], He Junwei [何俊伟], and He Hangxuan [何杭轩], "Brief Analysis on the Application Status of Key Technical Standards in the Development of Domestic Carrier-Based Aircraft" ["国内舰载飞机研制关键技术标准应用现状浅析"], *Standardization Research* [标准化研究], March 2024.

[b] "Secret Revealed: How Powerful Is BIT's National Defense Technology Based on the September 3 Military Parade?" ["从9.3大阅兵看北理工的国防技术有多牛"], Sina, February 2, 2016; Guo Feng [郭峰], Feng Yunpeng [冯云鹏], Liu Ruijie [刘瑞杰], and Li Xin [李欣], "Research on the Evaluation Method of Camouflage in Visible Light Band for Marine Targets" ["海上目标可见光波段伪装效果评估方法"], *Ship Science and Technology* [舰船科学技术], Vol. 43, No. 7, July 2017; Li Yong [李勇], Hu Weidong [胡伟东], Zhang Yang [张洋], and Wen Bin [文斌], "Research on Technology of Background Clutter Suppression in Outdoor RCS Measurement" ["外场RCS测量中背景杂波抑制技术研究"], *Journal of Ordnance Equipment Engineering* [兵器装备工程学报], Vol. 42, No. 3, March 2021.

[c] Baidu Baike, "Harbin Engineering University Maritime Advanced Materials Research Institute" ["哈尔滨工程大学海洋先进材料研究院"], undated-a; Dong Jinxin [董金鑫], Huang Weijia [黄伟佳], Song Dandan [宋丹丹], Wei Song [魏松], and Nie Shensong [聂神送], "Research on Stability of Pressure Cylindrical Shell Under Deep Water Explosion" ["深水爆炸作用下耐压圆柱壳的稳定性研究"], *Ship Electronic Engineering* [舰船电子工程], Vol. 44, No. 5, May 2024.

[d] "Harbin Institute of Technology: Civil-Military Fusion, Deep Development" ["军民融合 深度发展"], *Heilongjiang Daily* [黑龙江日报], November 12, 2018; Wang Chunguang [王春光], Xu Le [许乐], Cai Liyan [蔡立言], and Xu Yong [徐勇], "A Synthetic Firepower Distribution Method for Multi-Stage Confrontation Game" ["一种多阶段对抗博弈的合成火力分配方法"], *Journal of Ordnance Equipment Engineering* [兵器装备工程学报], Vol. 44, No. 7, July 2023; Dong Yanqin [董燕琴], Chen Xiaozhen [陈效真], and Wang Changhong [王常虹], "Requirements of Missile Intelligentization for Inertial Technology Development" ["导弹智能化对惯性技术发展需求"], *Navigation and Control* [导航与控制], Vol. 19, No. 4/5, October 2020.

[e] Nanjing University of Aeronautics and Astronautics [南京航空航天大学], "Shared Scientific Research Service Platforms on Campus" ["校内共同科研服务平台"], webpage, undated; Zhang Hongxin [张洪新], Wu Donghui [吴东辉], Jie Hongbo [节洪波], Fang Xiaoxing [方小星], and Cao Qunsheng [曹群生], "Fusion Design Research of Electromagnetic and Aerodynamic Characteristics of Target Loaded with Luneburg-Lens Reflectors" ["靶标龙伯球一体化反射器电磁和气动特性融合设计"], *Fire Control & Command Control* [火力与指挥控制], Vol. 47, No. 3, March 2022; Zhang Feng [张峰], Wu Yafeng [吴亚锋], and Zhao Wei [赵伟], "Reliability Testing Technology of Complex Shipborne Information System Based on Mixture Mode" ["基于混合模型的复杂舰载信息系统可靠性测试技术"], *Ship Electronic Engineering* [舰船电子工程], Vol. 44, No. 6, 2024.

[f] Zhang Hongjun [张弘钧], *Research on the Integrated Development Path of Military Scientific Research Platform and Regional Economy—Taking Nanjing University of Science and Technology as an Example* [军工科研平台与区域经济融合发展路径研究—以南京理工大学为例], Nanjing University of Science and Technology [南京理工大学], March 16, 2017; Cao Xin [曹鑫], Cui Donghua [崔东华], Feng Wei [冯炜], and Jiao Junjie [焦俊杰], "Design and Simulation Analysis of EFP Structure Based on Sandwich Charge" ["基于夹层装药的 EFP 结构设计及仿真分析"], *Journal of Ordnance Equipment Engineering* [兵器装备工程学报], Vol. 43, No. 3, March 2022; Fu Yaoyu [傅耀宇], Niu Shantian [牛善田], Yan Jiyu [闫际宇], Gui Xincheng [贵新成], Zhou Yunbo [周云波], and Zhang Ming [张明], "Research on Multi-Objective Optimization of Steel/Fiber Composite Bulletproof Armor Structure" ["钢/纤维复合防弹装甲结构多目标优化研究"], *Journal of Ordnance Equipment Engineering* [兵器装备工程学报], Vol. 44, No. 11, November 2023.

[g] You Wanjun [尤婉珺], *Brief Introduction to the Engineering Research Center of Advanced Manufacturing Technology for Aero-Engines, Ministry of Education* [航空发动机先进制造技术教育部工程研究中心简介], Northwestern Polytechnic University [西北工业大学], October 31, 2022; Northwestern Polytechnic University School of Materials Science and

Engineering [西北工业大学材料学院], "Overview" ["学院概括"], June 2024; Wu Ruijie [吴瑞杰], Sun Peng [孙鹏], Sun Yu [孙昱], and Deng Changlai [邓长来], "Self-Adaption Quantum Genetic Algorithm Used in Design of Command and Control Structure" ["自适应量子遗传算法在指挥控制结构设计中的应用"], *Application Research of Computers* [计算机应用研究], Vol. 34, No. 7, July 2017.

How Does the United States' Requirements Process Compare with China's Process?

The steps in China's acquisition life cycle are very similar to those in the U.S. acquisition life cycle. This includes a focus on looking to entities beyond traditional defense contractors to supply new technology. The PLA, through its newest policies, seeks to inject competition into various stages of preliminary research, development, testing, ordering, and maintenance and support for equipment.[56] These new rules include conflict-of-interest provisions in an attempt to achieve higher-quality products.

The two systems differ the most in how China is able to leverage its entire innovation ecosystem to support national goals through its civil-military fusion policies. China takes a holistic approach to military development, stating that it will use any technology it acquires for its military. China's laws also allow it to compel its commercial and academic sectors to share any information or data and technology with the state and the military.[57] Universities, research institutes, and the commercial sector also play a central role in China's requirements process and often focus on developing the technology needed for these programs. Experts from each of these sectors participate in strategic planning, development, and execution. Additionally, it is important to note that the Chinese government sponsors the theft of technology globally, including from the United States, to support its weapon development.[58] Finally, all the PLA's policies outlined here are working together to support a "Chinese defense industrial base [that] is increasingly on a wartime footing and, in some areas, outpacing the U.S. defense industrial base."[59]

What Practices Can the United States Leverage from China?

China's ability to plan strategically and sustain funding over time allows it to streamline some processes and accelerate others because the PLA has access to the entire innovation ecosystem. Sustained funding over time has made China's researchers and developers less risk-averse, enabling the integration of emerging technologies into legacy systems and the integration of new systems, such as hypersonics and autonomous vehicles.

Manufacturing capacity across a wide variety of technologies and systems gives China a deep bench from which to draw, as well as surge capabilities.

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[56] Ministry of Finance of the People's Republic of China [中华人民共和国财政部], 2024; Baidu Baike, undated-b.

[57] William C. Hannas and Didi K. Tatlow, eds., *China's Quest for Foreign Technology: Beyond Espionage*, Routledge, 2020; Naughton et al., 2023.

[58] U.S. Department of Defense, 2025b, pp. 162–163.

[59] Seth G. Jones and Alexander Palmer, *Rebuilding the Arsenal of Democracy: The U.S. and Chinese Defense Industrial Bases in an Era of Great Power Competition*, Center for Strategic and International Studies, March 2024, p. 1.

China's SOEs, while seemingly inefficient by Western standards, ensure a "home-team" advantage with a continued focus on the needs of military modernization, not only what is commercially viable. China is layering new national champion state-supported companies that compete internationally but still serve the goals of the state. All elements of China's S&T system support weapon development.

New PLA policies are focused on integrating developers with the warfighter to improve quality and practicality and to enable immediate needs to be met at scale. This is supported by changes to the EDD, SASTIND, and MOST.[60]

How Can the United States Outpace China's Processes?

China is a determined and focused adversary that has made reforming and modernizing its military an all-of-nation effort. The following are ways that the United States can better support its processes if it hopes to keep pace with China.

Strategic Budgeting

The current U.S. political environment, including the use of continuing resolutions to fund the federal government, affects military readiness and the ability to plan strategically. In contrast, China's central plans unfold over decades, providing clear directions and sustained funding over time to solve hard problems.

Flexible Requirements to Meet Dynamic Needs

DOW needs to rethink its acquisition processes to create ways to be nimble. This can include updating requirements over time, moving to cancel or retire programs that no longer meet those requirements, and having flexibility in the budget to respond to emerging threats.

Integrate Civilian Experts and Technology to Increase Capabilities

Again, all elements of China's S&T system support weapon development. China's SOEs focus on the needs of military modernization, not just what is commercially viable, and China is incorporating new state-supported companies that compete internationally but still serve the goals of the state. Defense research entities also often move technology from the military to civilian use. DOW needs that same knowledge of how innovation can be applied to military purposes.

Manufacturing Base Sustainment

The United States must identify those areas where national security and the market diverge and maintain key manufacturing infrastructure and supply chains (including what is needed to manufacture dual-use technologies). These areas include fortifying U.S. national and DOW labs and

[60] U.S. Department of Defense, 2025b, p. 163.

rebuilding public-private partnerships. This bench strength will ensure that industrial base and manufacturing processes can respond to requirements quickly and ensure that there is capacity when needed.

Technology Protection Built into All Programs

All U.S. weapon acquisition programs and research funding need to have technology protection and research security as part of the program. The Chinese government sponsors the theft of technology globally, including from the United States, to support its weapon development.

China targets all aspects of the innovation base—including universities, national labs, and defense contractors—to acquire technology and technological know-how. Its laws allow it to compel its commercial and academic sectors to share any information or data and technology with the state and the military. Universities, research institutes, and the commercial sector play a central role in China's requirements process. Experts from each of these sectors participate in strategic planning, development, and execution.[61]

[61] U.S. Department of Defense, 2025b, pp. 163–164.

Chapter 3

Russia

Mark Stalczynski and Yuliya Shokh

Background

Russia's military requirements process is rooted in the decades following World War II and the death of Joseph Stalin, as the Russian state transitioned to the Khrushchev era and embarked on various reforms, including economic, in the late 1950s and 1960s.[62] In 1958, the Soviet Union established the Scientific and Technical Committee of the General Staff of the Armed Forces to manage weapon development, and in 1960 the head of the committee transitioned the weapon acquisition process to one based on targeted programs.[63] The idea was to optimize military spending by centralizing decisionmaking within the Ministry of Defense (MoD) and not basing decisions on individual departmental needs.[64]

By the early 1970s, the MoD had begun to implement ten-year armament plans, five-year research and development (R&D) plans, and annual weapon orders, similar to those in use today.[65] In 1977, the MoD established the 46th Central Scientific-Research Institute (or Центральный Научно-Исследовательский Институт [46th TsNII] in Russian), the entity that now has primary responsibility for the development of military requirements.[66]

The 1990s and the dissolution of the Soviet Union were difficult for all aspects of Russian society, including the military. Budget shortfalls, inflation, and the poor state of the economy only further emphasized the need for carefully studying the requirements process and then the development, procurement, and sustainment of military equipment.[67]

However, certain additional realities complicated the requirements process. For one, Russia was no longer isolated from global market forces: The MoD had to compete with export markets. In addition, corruption had become rampant in a destabilized post-Soviet Russia. In the late 1990s and early 2000s, the international export market for Russian weapon systems was more profitable for the Russian defense industry than the Russian military's State Defense Order (SDO), causing Russia's

[62] O. B. Achasov, G. V. Babkin, V. M. Burenok, and G. A. Lavrinov, "Major Milestones in the National History of Weapons Program Management and Development" ["ОСНОВНЫЕ ВЕХИ ОТЕЧЕСТВЕННОЙ ИСТОРИИ ПРОГРАММНОГО УПРАВЛЕНИЯ РАЗВИТИЕМ ВООРУЖЕНИЯ"], *Vooruzhenie i Ekonomika*, No. 3, 2022.

[63] Achasov et al., 2022.

[64] Achasov et al., 2022.

[65] Achasov et al., 2022.

[66] Achasov et al., 2022.

[67] G. A. Lavrinov, "The State and Direction of Improving Military-Economic Research for the Development of Weapons and Military Equipment" ["СОСТОЯНИЕ И НАПРАВЛЕНИЯ СОВЕРШЕНСТВОВАНИЯ ВОЕННО-ЭКОНОМИЧЕСКИХ ИССЛЕДОВАНИЙ ПРИ ОБОСНОВАНИИ ПЕРСПЕКТИВ РАЗВИТИЯ ВООРУЖЕНИЯ И ВОЕННОЙ ТЕХНИКИ"], *Vooruzhenie i Ekonomika*, No. 3, 2022.

sprawling and struggling defense enterprises to reorient production toward export, often to the detriment of the needs and requirements of the Russian MoD.[68] Under President Vladimir Putin, between 2002 and 2007, the state began to consolidate Russia's nearly 800 defense industrial enterprises under partial and majority state control via the state corporation Rostec.[69] In addition, the state brought back the Soviet-era Military-Industrial Commission (or *Voeynno Promyshlennaya Komissiya* [VPK] in Russian) to add oversight to the distribution of the SDO among contractors.[70] These reforms were undertaken to increase efficiencies and centralization, to enable defense enterprises to compete more effectively on the global market and not against each other, and to stem graft.[71] By some accounts, a quarter to half of the SDO was lost to corruption and other malfeasance (e.g., price gouging) in the early 2000s.[72] Not coincidentally, a close associate of Putin, Sergey Chemezov, was appointed to lead Rostec and has been in this position since its formation, following a pattern of Russian leaders installing loyalists to manage critical parts of the Russian economy and state while also growing their wealth.[73]

It is well documented that the Russian military was plagued with problems in the 1990s and early 2000s: undermanned units, low levels of readiness, poor service conditions, hazing, insufficient wages, draft dodging, desertion, and poor quality of equipment.[74] These conditions and the military's performance in the 2008 war in Georgia, on the back of increasing energy export prices (Russia had more to spend from its budget), catalyzed Russia's New Look defense reforms, guided by then–Defense Minister Anatoly Serdyukov.[75] One aspect of the New Look reforms was a major push for weapon procurement that was focused on modernizing 70 percent of the Russian Armed Forces' equipment by 2020.[76] The 46th TsNII was a key player in developing the requirements for this modernization.

The Russian Defense Requirements Process Today

Analyzing the work of the 46th TsNII and its interactions with other military stakeholders is instructive in understanding Russia's requirements process. It provides insight into how Russia's centrally planned process, a legacy of the Soviet Union, has been adapted to a market economy to guide investments in research and weapon development. It may also illustrate how Russia will inform

[68] Achasov et al., 2022.

[69] Federal Law of the Russian Federation No. 270-FZ, On the State Corporation for the Promotion of the Development, Manufacture, and Export of High-Tech Products ("Rostec"), November 23, 2007.

[70] Megan McKernan, Stephanie Young, Timothy R. Heath, Dara Massicot, Mark Stalczynski, Ivana Ke, Raphael S. Cohen, John P. Godges, Heidi Peters, and Lauren Skrabala, *Planning, Programming, Budgeting, and Execution in Comparative Organizations*: Vol. 1, *Case Studies of China and Russia*, RAND Corporation, RR-A2195-1, 2024b.

[71] McKernan et al., 2024b.

[72] McKernan et al., 2024b.

[73] McKernan et al., 2024b.

[74] Anika Binnendijk, Dara Massicot, Anthony Atler, John J. Drennan, Khrystyna Holynska, Katya Migacheva, Marek N. Posard, and Yuliya Shokh, *Russian Military Personnel Policy and Proficiency: Reforms and Trends, 1991–2021*, RAND Corporation, RR-A1233-6, 2023.

[75] Binnendijk et al., 2023.

[76] Binnendijk et al., 2023.

the reconstitution of its armed forces after the war in Ukraine ends. In broad terms, the 46th TsNII is responsible for the following within the MoD:

- studying military-economic theory, analysis, and methods
- analyzing the quantitative and economic aspects of military technology and policy
- evaluating and proposing program options for new military weapon systems
- forecasting and estimating the cost of military equipment
- implementing plans for the development and acquisition of military equipment
- analyzing the development of dual-use technologies
- studying the quality of military equipment
- assessing the defense-industrial base, its capacity, and its potential
- training specialists in military-technical economics, operations, and management.[77]

More specifically, the 46th TsNII contributes to the requirements process by formulating the military requirements necessary to counter threats to Russian national security that inform options for the ten-year State Armaments Program (SAP). The SAP is Russia's main document for defense procurement and acquisitions. Although it is classified, public statements by officials allude to the goals of these ten-year plans, which can often be revised midway through because of changing requirements or economic circumstances.[78] The 46th TsNII is also responsible for evaluating the implementation of the SAP, its trajectory toward fulfillment based on annual spending on procurement (the SDO), and the scientific-technical readiness level of prospective or *next-generation* military technologies given investments in R&D.[79] There have been five SAPs since the formation of the Russian Federation in the early 1990s, with the most recent, SAP-2027, paused because of the war in Ukraine.[80] SAP-2020, which was initiated after the New Look reforms of 2008 and sought 70-percent modernization of equipment, was somewhat successful at improving the effectiveness of the Russian Armed Forces.[81] Russian officials have suggested that a new SAP is in development and, once announced, will reflect changes in requirements due to the war in Ukraine.[82]

Naturally, the Russian MoD aspires to develop and acquire weapon systems and equipment that will provide a technological edge over adversaries. The requirements process in Russia is the methodological basis by which the 46th TsNII formulates options for decisionmakers to consider

[77] Lavrinov, 2022.

[78] McKernan et al., 2024b.

[79] S. A. Monin, A. V. Shvyrkov, R. S. Belorozov, and I. A. Karpachev, "Justification for the Direction of Military-Technical Policy as One of the Main Scientific Tasks of the 46th TsNII of the Ministry of Defense" ["ОБОСНОВАНИЕ НАПРАВЛЕНИЙ ВОЕННО-ТЕХНИЧЕСКОЙ ПОЛИТИКИ ГОСУДАРСТВА КАК ОДНА ИЗ ОСНОВНЫХ НАУЧНЫХ ЗАДАЧ ФГБУ «46 ЦНИИ» МИНОБОРОНЫ РОССИИ"], *Vooruzhenie i Ekonomika*, No. 3, 2022.

[80] McKernan et al., 2024b.

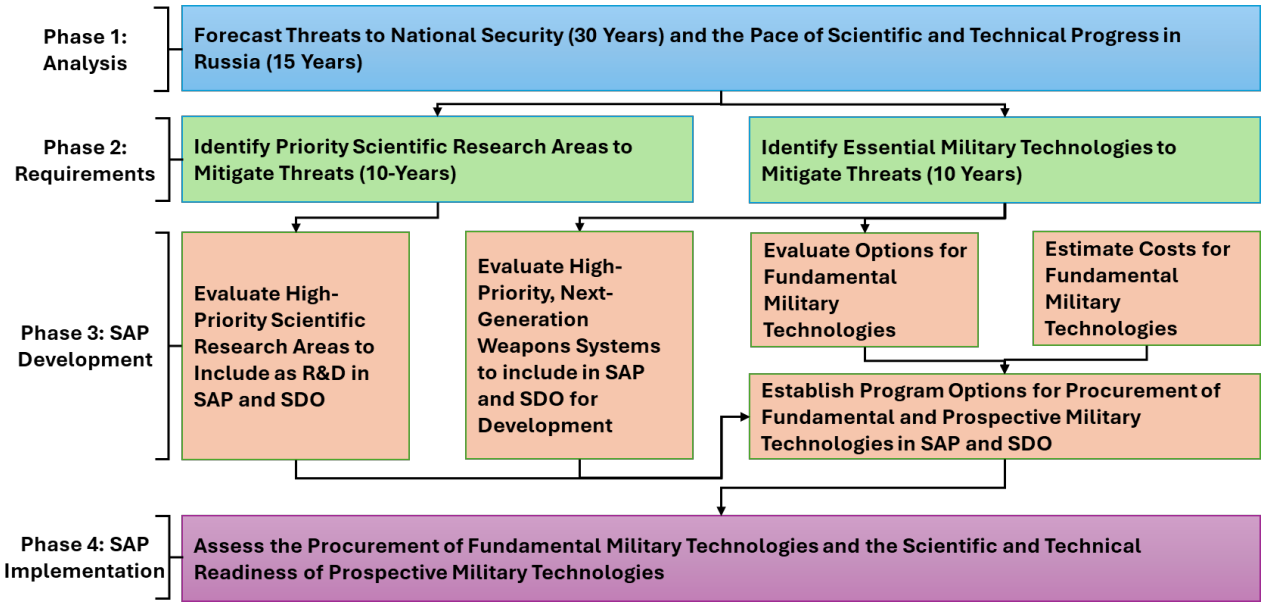
[81] Richard Connolly and Mathieu Boulègue, *Russia's New State Armament Programme Implications for the Russian Armed Forces and Military Capabilities to 2027*, Chatham House, Russia and Eurasia Programme, May 2018.

[82] Petr Buzlaev, "Putin Instructed to Clarify the Scope of the SAP Accounting for the Special Military Operation" ["Путин поручил уточнить объемы программы вооружений с учетом спецоперации"], *Komersant*, September 19, 2023.

when adopting the next SAP.[83] The Russian MoD credits the requirements process for the development and integration of more recent, prospective technologies, such as the hypersonic Kinzhal missile, the Avangard glide vehicle, and the Tsirkon hypersonic sea-based missile, into its capabilities.[84] However, the war in Ukraine has laid bare harsh realities about Russian warfighting capabilities and illustrates the distance between requirements planning in the ten-year SAP and current needs at the front. Nevertheless, requirements planning and SAP formulation are essential functions within the MoD and 46th TsNII.

There are four phases to developing an SAP, with the first two phases most akin to the requirements process as understood in the United States: Phase 1, Analysis; Phase 2, Requirements; Phase 3, SAP Development; and Phase 4, SAP Implementation (see Figure 3.1). Within these four phases, there are nine important processes, or methods, also presented as boxes in Figure 3.1.[85]

Figure 3.1. High-Level View of Russia's Defense Requirements Process



SOURCE: Adapted from Reulov, Stukalin, and Pronin, 2022; and U.S. Department of Defense, 2025b, p. 165.

Phase 1, Analysis, includes a 30-year forecast of threats to Russian national security and an assessment and 15-year forecast of Russian scientific and technical development and progress. Phase 2, Requirements, although not entirely aligned with the U.S. understanding, identifies priority scientific research areas that are essential to national security for further study over the next ten years,

[83] While the 46th TsNII is responsible for formulation of the SAP, other entities within and outside the MoD, such as the Advanced Research Fund and Russian Academy of Sciences, review and approve identified priorities for the further development of weapon systems.

[84] R. V. Reulov, S. V. Stukalin, and A. Yu. Pronin, "Modern Development of Basic Military Technologies: Rationale, Planning, Implementation" ["РАЗВИТИЕ БАЗОВЫХ ВОЕННЫХ ТЕХНОЛОГИЙ НА СОВРЕМЕННОМ ЭТАПЕ: ОБОСНОВАНИЕ, ПЛАНИРОВАНИЕ, РЕАЛИЗАЦИЯ"], *Vooruzhenie i Ekonomika*, No. 3, 2022.

[85] Reulov, Stukalin, and Pronin, 2022; U.S. Department of Defense, 2025b, p. 165.

as well as priority military technologies to pursue over the next ten years given both the threat forecast and assessment of the pace of technological change.[86] A recent list of priority scientific areas for further research (circa 2023) consisted of 11 applied scientific fields (for which there were 56 subfields and 759 areas). A recent list of military technologies consisted of nine technology categories (for which there were 54 subcategories and 461 specific military technologies; see box).

List of Priority Research Areas and Military Technologies

Priority Scientific Research Areas (11 fields)

- Biotechnology, medicine, and ecology
- Chemistry and materials science
- Energy
- Geophysics, oceanography, and atmospheric science
- Guidance and navigation
- Information science
- Mechanics: aerodynamics, hydrodynamics, gas dynamics
- Military construction, education, and economics
- Nuclear physics
- Optics and quantum electronics
- Radio and electronic physics

Military Technologies (9 categories)

- Command and control
- Defeat of military personnel, facilities, and infrastructure
- Defense of military objects and infrastructure
- Ensuring mobility and maneuverability of forces
- Ensuring development and integration of technologies
- Ensuring health and survival of personnel
- Maintenance and recovery of military-technical equipment
- Reconnaissance and situational awareness
- Navigation and targeting

SOURCE: Features information from Reulov, Stukalin, and Pronin, 2022.

Phase 3, SAP Development, includes evaluating program options for the next SAP. While the 46th TsNII develops requirements on behalf of the MoD for the Armed Forces, the 46th TsNII has little influence over actual appropriations. Therefore, the 46th TsNII develops program options with varying levels of military requirements to counter threats to national security given a distribution of available funding. These options fall under three solution levels: *Desired*, *Minimally Required*, and *Critical* (see Table 3.1). *Desired* is the level of funding to meet all military requirements, i.e., the full suite of weapon systems and R&D for prospective, next-generation technologies to counter all forecast threats to Russian national security as described in Phase 1, Analysis. *Minimally Required* is the funding for a suite of weapon systems and R&D to counter the largest threats to the Russian Federation now and in the near future, and *Critical* is, at the very least, modernization of multiple existing weapon systems to counter most threats and enough R&D to progress toward the next generation of some weapon systems.[87] Table 3.1 is an example based on literature published by the 46th TsNII and press reporting from *Izvestia* on proposed costs for SAP-2027 when it was being considered in 2018. Actual percentages for technologies, R&D, and threats are unknown or classified, as is the option under which the costs of SAP-2027 resided. However, press reporting for illustrative purposes stated that the MoD assessed 55 trillion rubles to be the sum required to counter all threats,

[86] Reulov, Stukalin, and Pronin, 2022.

[87] Reulov, Stukalin, and Pronin, 2022.

36 trillion rubles to be in the middle, and 10–12 trillion rubles to be on the lower end of what the Ministry of Finance wanted.[88]

Table 3.1. Example of Program Options Based on Analysis of SAP-2027 in 2018 (prewar)

Solution Levels Based on SDO Funding	Available Options (rubles)	Note	Technologies Procured or Modernized	R&D Funding	Threats to the Russian Federation Countered
Desired	Option 1: 55 trillion	This is what the MoD said the funding **should be**.	100%	100%	100%
Minimally Required	Option 2: 45 trillion		95%	75%	95%
	Option 3: 36 trillion	This is what the MoD **requested**.	90%	70%	90%
	Option 4: 23 trillion		75%	50%	80%
	Option 5: 19 trillion	This is what the MoD **got**.	70%	40%	75%
Critical	Option 6: 12 trillion	This is what the Ministry of Finance **wanted to give**.	60%	30%	50%
	Option 7: 10 trillion		50%	30%	40%

SOURCE: Features information from Reulov, Stukalin, and Pronin, 2022; and Bogdanov, 2018.
NOTE: These are notional examples drawn from Reulov, Stukalin, and Pronin (2022) and from *Izvestia* press reporting on SAP-2027 and the negotiation process; actual percentages would be classified.

It is also important to note that during Phase 3 in the development of SAP options, the 46th TsNII works with additional entities, such as the Russian Academy of Sciences and the Advanced Scientific Research Fund, to further define the list of prospective and exploratory scientific research areas and nontraditional weapon technologies to be prioritized in the SAP, optimization being the key method by which certain technologies or areas are selected for an option, given estimated costs and capabilities to mitigate threats.[89]

Prior to the war in Ukraine, the process of approving an SAP usually unfolded as follows. The MoD would request a substantially large amount of funding for the SAP based on the *Desired* or *Minimally Required* program options as developed by the 46th TsNII. The Ministry of Finance would counter with a smaller amount given the constraints of the federal budget and its focus on minimizing budget deficits. This amount could cover the *Critical* program options, but the actual amount would

[88] Konstantin Bogdanov, "Signed Up for 10 Years: To What Is the New State Armaments Program, Approved for 2018–2027, Dedicated?" ["Подписались на 10 лет: Чему посвящена новая госпрограмма вооружений, утвержденная на 2018-2027 годы"], *Izvestia*, February 28, 2018.

[89] Bogdanov, 2018.

ultimately be decided in a less transparent process by the president and his security council (which includes the Minister of Defense and the heads of the security services), with input on production capacity, enterprise priorities, and feasibility or willingness from the defense industry as represented by the VPK.[90] The annual funding to implement the SAP (the SDO) would then be submitted to the Federal Assembly as part of the MoD's budget and undergo few changes during review by the Duma (lower house) and passage by the Federation Council (upper house).[91] There were periods in the past in which more significant reductions were made to the SDO during budget passage, but these reductions usually were the result of economic circumstances (e.g., lower global oil prices and budget deficits) and the need to postpone some spending rather than a rebuke of the priorities of both the president and the military.[92]

Phase 4, SAP Implementation, includes the evaluation of the fulfillment of the SAP. The 46th TsNII, the MoD, the Advanced Research Fund,[93] and associated Russian universities and institutes undertake military-technical experiments on prospective and exploratory military technologies to gauge readiness levels of next-generation weapon systems to pursue prototypes and eventually scaled production via the defense industrial base, not unlike within the U.S. system.[94] Examples of prospective weapon systems undergoing military-technical experiments to produce prototypes include additional hypersonic platforms, lasers and other directed energy weapons, and robotics.[95] Additionally, the 46th TsNII, MoD, VPK, and other stakeholders analyze factors that could be restraining fulfillment of weapon programs, such as the effect of sanctions and export controls on key components and the need for import substitution.[96] Given the myriad factors, SAPs tend to be revised before ten-year time frames end, reflecting the realities of implementation. Many of the contracts signed with defense-industrial enterprises are shorter than ten years, giving the MoD some flexibility to pivot, albeit at a cost to defense enterprises.[97] At the same time, the MoD rarely cancels programs outright, preferring to postpone programs indefinitely, suggesting a de facto cancellation that is not mentioned publicly, while a modernized existing system with a similar capability is procured. Examples of programs that have been postponed include the T-14 Armata tank, the Project 23560 Cruiser, and the RS-26 Rubezh intercontinental ballistic missile, where cost, technology readiness

[90] However, the executive director of Rostec (Sergey Chemezov), as well as personal and business ties—not only between Putin and Chemezov but between industry incentives and government more broadly—likely play some role in decisions involving the funding of the SAP (McKernan et al., 2024b).

[91] McKernan et al., 2024b.

[92] Julian Cooper, "The Russian Budgetary Process and Defence: Finding the 'Golden Mean,'" *Journal of Post-Communist Economies*, Vol. 29, No. 4, 2017.

[93] The Advanced Research Fund is a government agency that focuses on military use of emerging technologies, somewhat like the United States' Defense Advanced Research Projects Agency.

[94] Y. A. Pechatnov, I. A. Martynov, and D. M. Semerunin, "Military-Technical Experiments as a Mechanism for Selecting Initiatives in the Weapons Development" ["ВОЕННО-ТЕХНИЧЕСКИЕ ЭКСПЕРИМЕНТЫ КАК ЭЛЕМЕНТ МЕХАНИЗМА ОТБОРА ИНИЦИАТИВНЫХ РАЗРАБОТОК ОБРАЗЦОВ ВООРУЖЕНИЯ"], *Vooruzhenie i Ekonomika*, No. 3, 2022.

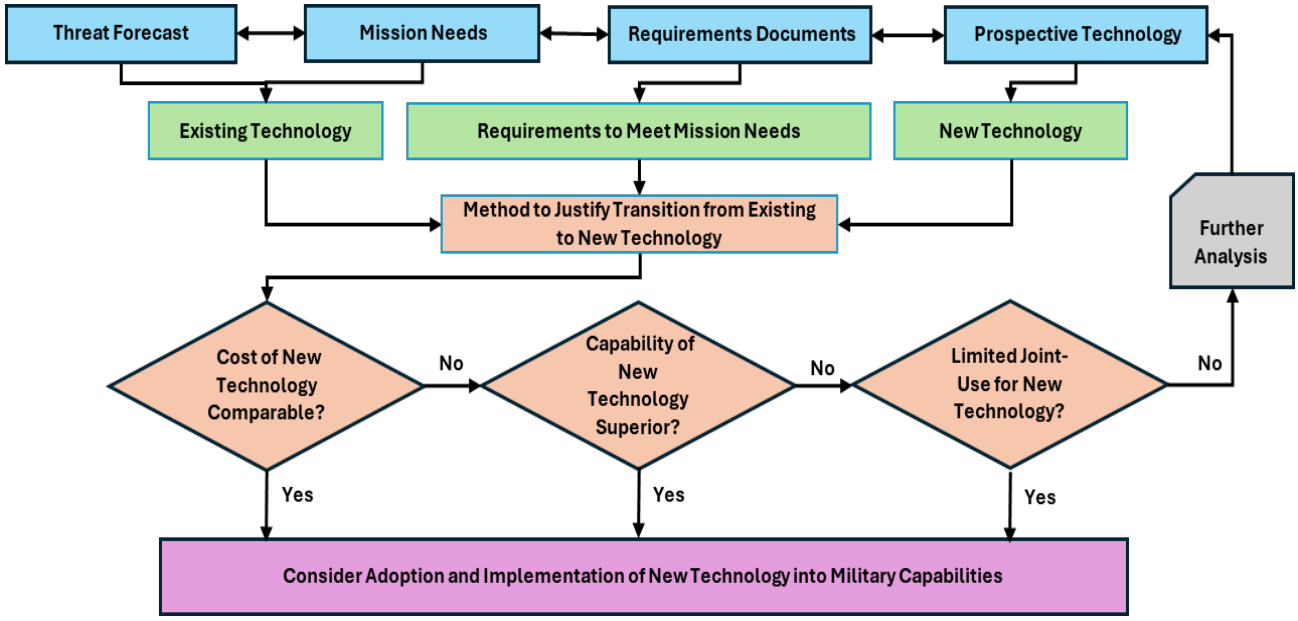
[95] Reulov, Stukalin, and Pronin, 2022.

[96] Reulov, Stukalin, and Pronin, 2022.

[97] McKernan et al., 2024b.

level, and redundancy may have factored into such decisions.[98] The implementation of SAP-2020 clearly demonstrated that Russia has had far more success delivering weapon systems based on Soviet-era designs, with the modernized T-72B3 and T-90 main battle tanks rather than the new T-14 Armata being a prime example. Military planners underestimated the additional investments in R&D and human and physical capital to produce novel weapon systems from the ground up, independent of Soviet-era designs and infrastructure.[99] Figure 3.2 presents the process that the 46th TsNII uses to evaluate whether a new technology is suitable to replace, or at least partially compensate, an existing weapon capability.

Figure 3.2. Process for Optimal Transition to a New Technology for Weapons Capabilities



SOURCE: Adapted from A. V. Leonov and A. U. Pronin, "Methods for Justifying the Optimal Transition to a New Technology in the Development of Advanced Weapons Systems" ["МЕТОДЫ ОБОСНОВАНИЯ ОПТИМАЛЬНОГО ПЕРЕХОДА К НОВОЙ ТЕХНОЛОГИИ ПРИ СОЗДАНИИ ПЕРСПЕКТИВНОГО ВООРУЖЕНИЯ"], *Vooruzhenie i Ekonomika*, No. 4, 2023.

How Does the United States' Requirements Process Compare with Russia's Process?

Similarities

We noted several similarities between the U.S. and Russian military requirements systems. First, both systems similarly approach the identification of capability gaps. The Joint Capabilities Integration and Development System (JCIDS) was originally built to respond to changes in threats,

[98] McKernan et al., 2024b.

[99] Connolly and Boulègue, 2018.

missions, and the aging of legacy weapon systems throughout their life cycles.[100] Similarly, Russia responds to changes in threats. As foreign militaries acquire new weapon systems, Russia perceives degradation in the relative combat effectiveness of its weapons, thus leading it to reevaluate the current and future states of domestic weapon systems by conducting comparative analyses with foreign weapon systems.[101]

Second, both countries perceive that other foreign militaries, and specifically their competitors, are moving faster than they are. For example, the United States perceives China's fielding of missiles and Russia's fielding of certain types of missiles (e.g., hypersonic) as much faster than its own.[102] At the same time, Russian academic text notes that "often we look at how quickly foreign militaries increase the quantity of their weapon systems."[103]

Third, both countries acknowledge that, throughout a product's life cycle, adjustments may have to be made to keep requirements and costs aligned. The United States recognizes that its systems' capability requirements and performance attributes may have to be adjusted to conform to technical and fiscal reality.[104] At the same time, Russia notes that the costs of weapon systems may limit the appropriate quantities of such systems. Thus, to counter "the threat of imbalance," it either has to improve existing weapon systems that might not be analogous or modernize similar weapon systems to technical levels that improve a sufficient number of weapon systems at relatively low cost.[105]

Finally, both countries have a hard time canceling programs that no longer serve their purpose. For the United States, planning for weapon system retirement and disposal is part of DOW's acquisition life-cycle management.[106] However, program retirement can occur when both Congress and the service branch make successful arguments for retirement (e.g., the E-8 Joint Surveillance Target Attack Radar System [JSTARS]) and can take several years.[107] Program retirement can also occur for a variety of reasons, including when a capability no longer meets a commander's requirements, but Congress is less likely to retire a program because of cost.[108] Relatedly, program cancellations also happen rarely (e.g., the E-8 JSTARS Recapitalization Program) and are usually due

[100] Patrick Willis, "Joint Capabilities Integration and Development System (JCIDS): A Primer," Defense Acquisition University, January 31, 2019.

[101] V. M. Burenok, R. N. Pogrebnyak, and A. P. Skotnikov, "Methodology for Justification of Prospects for Development of Means of Conventional Weapons Warfare" ["Методология обоснования перспектив развития средств вооруженной борьбы общего назначения"], Russian Academy of Missile and Artillery Sciences [Российская академия ракетных и артиллерийских наук], 2010.

[102] For example, see McKernan et al., 2024b.

[103] Burenok, Pogrebnyak, and Skotnikov, 2010, p. 99.

[104] Joint Staff, *Manual for the Operation of the Joint Capabilities Integration and Development System*, JCIDS Manual, August 31, 2018, p. B-G-1.

[105] Burenok, Pogrebnyak, and Skotnikov, 2010.

[106] Air Force Instruction 63-101/20-101, *Acquisition/Logistics: Integrated Life Cycle Management*, Department of the Air Force, June 30, 2020.

[107] Compiled from a review of congressional hearing transcripts, committee reports, National Defense Authorization Acts, and budget requests between fiscal years 2002 and 2022 for retirement decisions for the B-1, E-8, F-15, F-16, and EC-130 aircraft.

[108] Compiled from a review of congressional hearing transcripts, committee reports, National Defense Authorization Acts, and budget requests between fiscal years 2002 and 2022 for retirement decisions for the B-1, E-8, F-15, F-16, and EC-130 aircraft.

to high costs rather than the program no longer meeting a commander's requirement.[109] Major acquisition programs are even less likely to get canceled.[110] For Russia, determining when to retire the current systems is also part of its comparative analysis during requirements development. But, as we noted in our earlier discussion of the Russian requirements system, the Russian MoD tends to postpone programs rather than cancel them outright. Russia's comparative analysis instead facilitates a decision on whether to replace an existing technology with a new technology based on cost, capability improvement, and/or the possibility of using both the existing and new military technology together through a transition period (see Figure 3.2).[111]

Differences

We also noted several differences between the U.S. and Russian requirements systems. Generally, both systems seek to respond to warfighter needs, but the U.S. requirements process is most concerned with fielding weapon systems to the warfighter faster, whereas the Russian requirements process is more concerned with fielding weapon systems to the warfighter more efficiently, since Russia, like the Soviet Union, has been operating in a cost-constrained environment.

Both systems also differ in how they manage the requirements process, who makes the decisions on capability development, how its stakeholders interact, and what types of solutions can result from them.

First, the Russian requirements process is centralized and run top-down out of the 46th TsNII, which reports to the Military-Scientific Committee of the Russian General Staff. The 46th TsNII is a science and technology (S&T) institution housed within the Russian MoD and is not a separate community. While the 46th TsNII does partner with other Russian military and quasi-government entities, such as the Section on Defense Problems of the MoD and the Office of Advanced Research and Special Projects, the 46th TsNII is the primary developer of military requirements. In contrast, the U.S. requirements process is much more decentralized and run by the Joint Requirements Oversight Council (JROC) but relies on a joint stakeholder community of various boards, agencies, and sponsors who lead development of capability requirements for the services from the bottom up.[112]

As a result, the U.S. process emphasizes *jointness* as it considers joint requirements in Joint Capability Areas or Joint Military Intelligence Requirements, as services compete and advocate for their capability requirements.[113] As the war in Ukraine—as well as the New Look reforms after the 2008 war with Georgia—has demonstrated, input from the Russian military does inform research undertaken at the 46th TsNII, but we did not find analogous capability gap assessments done by

[109] DAF acquisition official, discussion with author, June 13, 2022. For example, see Richard Aboulafia, "Opinion: How the F-111 Sets a Precedent for NGAD," *Aviation Week & Space Technology*, June 28, 2022.

[110] Program management experts at RAND, discussion with author, May 31, 2022.

[111] U.S. Department of Defense, 2025b, pp. 166–167.

[112] Chairman of the Joint Chiefs of Staff Instruction 5123.01H, *Charter of the Joint Requirements Oversight (JROC) and Implementation of the Joint Capabilities Integration and Development System (JCIDS)*, Joint Chiefs of Staff, August 31, 2018.

[113] Air Force Instruction 10-601, *Operational Capability Requirements Development*, Department of the Air Force, November 6, 2013, p. 19; Air Force Policy Directive 10-6, *Capability Requirements Development*, Department of the Air Force, November 6, 2013.

individual branches of the Russian Armed Forces.[114] The 46th TsNII conducts threat assessments of foreign militaries acquiring new weapon systems that may lower the relative combat effectiveness of Russia's weapons. These results lead to the MoD's need to reevaluate the current and future state of domestic weapon systems. The 46th TsNII then aligns requirements with the capabilities across the Russian Armed Forces and works to address capability gaps by expediting research on nontraditional weapon technologies, for example, into the SAP for R&D funding. R&D organizations then evaluate requirements and present program options with cost estimates for addressing the gaps to the decisionmakers. The VPK and Rostec provide input on production capacity when the president and Security Council make their appropriations decision (see Figure 3.2). Overall, the Russian process emphasizes fielding weapon systems in a capacity- and cost-constrained environment.

Third, Russia's comparative analysis process focuses on building requirements for weapon systems based on the Russian Armed Forces' weapon systems portfolios, whereas DOW's JCIDS focuses on building requirements to fulfill operational capabilities.[115] The U.S. system also provides nonmateriel options from doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTmLPF-P) solutions, whereas Russia's system focuses on delivering materiel means for its Armed Forces.[116] The 46th TsNII employs a comparative analysis of capabilities, with various mathematical methods to prioritize and optimize which capabilities to include as program options within the SAP based on requirements derived from the threat and technology forecasts.

What Practices Can the United States Leverage from Russia?

Although each new SAP is effectively a "clean sheet" approach to developing Russian military requirements, it should be noted that the Russian Federation is a relatively young nation in many respects. The centralized requirements process is a legacy of the Soviet Union, and the 30-year technology forecasts and 15-year forecasts of the pace of scientific technical advancement may be antiquated. However, the modern Russian Federation has had only five SAPs, and none of these were 100-percent fulfilled. This was a function of the economic realities in post-Soviet Russia, the need for modernization after de-industrialization hollowed out the defense industrial base, and, of course, the effects of corruption, inefficiencies, and demand for arms abroad.[117]

Still, the United States can glean lessons from the Russian requirements process. The alignment of requirements, capabilities, and procurement, albeit nontransparent, is streamlined across S&T; research, development, test, and evaluation (RDT&E); and industry. There also seems to be significant continuity across requirements and capabilities given that the process is so centralized. Perhaps most important is the flexibility that materialized during the war in Ukraine. At times

[114] Megan McKernan, Stephanie Young, Andrew Dowse, James Black, Devon Hill, Benjamin J. Sacks, Austin Wyatt, Nicolas Jouan, Yuliya Shokh, Jade Yeung, Raphael S. Cohen, John P. Godges, Heidi Peters, and Lauren Skrabala, *Planning, Programming, Budgeting and Execution in Comparative Organizations*: Vol. 2, *Case Studies of Selected Allied and Partner Nations*, RAND Corporation, RR-A2195-2, 2024a.

[115] Air Force Instruction 10-601, 2013, p. 19; Air Force Policy Directive 10-6, 2013; Burenok, Pogrebnyak, and Skotnikov, 2010.

[116] Burenok, Pogrebnyak, and Skotnikov, 2010.

[117] McKernan et al., 2024b.

breaking from its traditional requirements process, Russia seems more agile at quickly validating and introducing civilian and foreign military technologies into its warfighting capabilities. From Chinese-made DJI civilian first-person view unmanned aerial vehicles (UAVs) to North Korean artillery shells to Iranian-designed and now domestically produced one-way attack UAVs, the methods that Russia has used to quickly incorporate these capabilities into its armed forces should be further studied by the United States and allies.[118]

How Can the United States Outpace Russia's Processes?

As stated previously, the United States must understand how the war in Ukraine has influenced, both positively and negatively, Russia's requirements process. Open-source evidence suggests that Russia has not abandoned its traditional requirements process via the 46th TsNII and that a new SAP for the 2030s is in development.[119] However, the United States cannot ignore the flexibility with which Russia has quickly validated and delivered new or foreign dual-use and military technologies to the front, regardless of the role of a centralized requirements development process. The United States would benefit from improving its means to reallocate funding to support new, emerging requirements and to more quickly integrate dual-use, commercial capabilities. It would also benefit from more integration with warfighters to facilitate the cancellation or pivot away from capabilities that no longer meet current and evolving requirements. A major test for Russia after the war in Ukraine will be to see whether it falls into old patterns of failing to cancel weapon programs that have not delivered necessary capabilities to the front, while also exceeding costs. A prime example will be whether stakeholders in the defense industry will advocate continuation of the T-14 Armata main battle tank even though it has not been effective and is overly costly to produce.[120]

Furthermore, the United States needs to get better at integrating S&T into requirements and the capability development process to facilitate technology maturation and faster transitioning of weapon systems to the warfighter. Russia's military requirements may call for incorporating more electronic warfare (EW), artificial intelligence (AI), and commercial off-the-shelf (COTS) products and emerging technologies into its military capabilities, but Russia remains constrained in accessing important technological components because of the United States' and its allies' export controls on electronic integrated circuits, electrical and optical technologies, and machine tools and parts.[121] The Russian economy is also under pressure from sanctions, and it is unclear how long it can truly maintain such elevated levels of defense spending on the procurement of weapon systems without consequences.[122] After the war in Ukraine ends, should the Russian government reduce defense spending, the Russian defense industry may have to "demobilize"—that is, reduce output and pivot to

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[118] Christopher S. Chivvis and Jack Keating, *Cooperation Between China, Iran, North Korea, and Russia: Current and Potential Future Threats to America*, Carnegie Endowment for International Peace, October 8, 2024.

[119] Dara Massicot, *Russian Military Reconstitution: 2030 Pathways and Prospects*, Carnegie Endowment for International Peace, September 12, 2024.

[120] Maya Carlin, "Russia Fears Losing Its T-14 Armata Tank in Ukraine," *National Interest*, February 27, 2025.

[121] U.S. Department of Commerce, Bureau of Industry and Security, "Common High Priority List," webpage, February 23, 2024.

[122] Peter Mironenko, "Is Russia's Economy Addicted to Military Spending?" *The Bell*, September 21, 2024.

the new priorities of reconstitution. Thus, the United States should use this opportunity to overcome Russia in some key capability areas.

Finally, the DOW requirements community needs to work closely with the U.S. Intelligence Community from the early stages of capability gap analysis and requirements development. Russian achievements in the war in Ukraine (not to understate its tremendous losses) have stemmed from its ability to deploy cost-effective, asymmetric capabilities. The U.S. Intelligence Community should monitor mission areas in which Russia is making considerable improvements "to counter the threat of imbalance" between it and foreign militaries to compensate for its cost constraints, such as its use of UAVs in Ukraine.[123] Future U.S. requirements development should strive to outpace adversaries' development of these cheaper, asymmetric capabilities, as well as their ability to integrate EW, AI, and COTS products into the battlefield.

[123] Burenok, Pogrebnyak, and Skotnikov, 2010.

Chapter 4

Australia

Andrew Dowse, Sachini Kadaoluwa, Daniel Marns, and Austin Wyatt

Background

Australia has a highly organized requirements development system that promotes a strategy-to-task approach, with clear alignment between resources and the outcomes that they deliver.[124] The smaller scale of Australia's Defence organization compared with that of the United States, together with Australia's desire for efficiency, have facilitated substantial integration, with a high level of centralization in the setting of capability priorities.

Centralized planning is a key feature in Australia's One Defence Capability System (ODCS), which is a set of processes across the capability life cycle that ensures that capability decisions optimize capability outcomes within resource limitations.[125] Other characteristics of the ODCS are that execution of processes is devolved to the right decisionmakers, specific processes are associated with obtaining government approval of acquisition decisions, and separate processes are associated with implementing operational priorities. Before describing the requirements system currently used in Australia, it is informative to address the factors that have led to its evolution over the past decade. Most important in this shift has been the recognition by Australian governments since 2020 that the geostrategic deterioration will demand greater urgency in defense acquisition.

The Need for Reform

Prior to the most recent reform effort, the ODCS comprised four phases: development of strategy, risk mitigation and requirements-setting, acquisition, and in-service operation and support. This structure evolved from the findings of the *First Principles Review*, delivered in 2015, which identified issues with extant processes for capability development and acquisition. Before that time, requirements processes had been overseen by a dedicated Capability Development Group (CDG). However, the 2015 review found that the multiple handoffs between different parts of the organization during capability processes were suboptimal. The review recommended that the three services and other capability managers (CMs) should have end-to-end responsibilities for capabilities through a "one defence approach."[126] The review led to the disbandment of CDG, with the individual CMs (the services, intelligence, and joint) assuming responsibility for requirements processes.

Australia's 2020 Defence Strategic Update identified that shifts in the geostrategic environment meant that the previous assumption of a ten-year warning time for conflict was no longer an

[124] McKernan et al., 2024a, p. 18.

[125] Australian Department of Defence, *Defence Capability Manual 2023*, June 14, 2024a.

[126] Australian Government, *First Principles Review: Creating One Defence*, 2015, pp. 16–17.

appropriate basis for planning.[127] This acknowledgment necessitated changes to make the defense requirements processes more responsive to, and aligned with, strategic priorities.

The 2023 Defence Strategic Review noted that, to manage strategic risk, Australia needed to move away from a business-as-usual approach to achieve higher levels of military preparedness and accelerated capability development.[128] Cognizant of the need for substantial changes in force structure, the authors of the 2023 review identified three epochs for change: make urgent changes to *enhance the force-in-being* over the following three years, accelerate acquisition of the *objective integrated force* over the remainder of the decade, and deliver the *future integrated force* in the next decade.

The 2023 review directed that future force design needed to be driven by a net assessment-planning process to focus the force on credible conflict scenarios with a structure that is achievable within available resources and time frames. The review noted that this would require changes to the current force, including a shift from the current bias toward platforms to an integrated and effects-based approach. The review envisaged a force that was designed to address the most significant credible risk, a departure from the prior focus on a balanced force able to respond to a range of contingencies.

The 2023 review further noted the need for acquisition reform in order to limit the ability for CMs to independently alter capability programs. Strategic circumstances necessitated a more urgent approach to acquisition, with the review advocating for Australia's Defence to abandon pursuit of perfect solutions and instead focus on delivering timely and relevant capabilities.[129] Accordingly, the review stated that further reforms of the ODCS were required, that Australian Defence Force (ADF) capabilities were not fit for purpose given Australia's strategic circumstances, that like-for-like replacement of military platforms had become ingrained in the department's culture, and that the acquisition system was too cumbersome.[130] The review thus recommended acquisition reform to deliver *minimum viable capability* (MVC) into service without delay while achieving value for money. In relation to requirements, the review also criticized the "bottom-up" nature of current processes. Specifically,

> Defence has had an over-reliance on bottom-up proposals forming the bulk of new entries into the IIP [Integrated Investment Program], and a surprising lack of top-down direction or genuine joint-assessment of pre-Gate 0 proposals.[131]

Partially flowing from this criticism, the 2023 review introduced a set tempo for the publication of strategy documents from which top-down direction could be derived. Following the 2023 review, Defence moved to a biennial schedule for its core strategy documents, replacing the previous ad hoc approach of only publishing strategy when the department and political leadership agreed that the circumstances merited a change in direction. In 2024, the first National Defence Strategy (NDS) in this new cycle was published.

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[127] Australian Department of Defence, *2020 Defence Strategic Update*, 2020, p. 14.

[128] Australian Government, *National Defence: Defence Strategic Review*, 2023, p. 25.

[129] Australian Government, 2023, p. 20.

[130] Australian Government, 2023.

[131] Australian Government, 2023, p. 91.

The 2024 NDS further emphasized the urgent need for "speed to capability" to deliver timely and relevant capability. Supporting this principle, the 2024 NDS expanded the MVC approach to defense acquisition, emphasizing the achievement of the lowest acceptable mission performance within required time frames.[132] In this area, the 2024 NDS reflected a recognition that requirements and acquisition processes had tended to give priority to level of capability and cost over schedule imperatives. Capability projects had sought to obtain a solution that not only was perfect but also came at the best cost, and process managers paid substantial attention to fair and open competition. This often resulted in schedule being the "poor cousin" in project outcomes, a practice that does not reflect the strategic direction for urgency.

Similarly, the 2024 NDS argued that reform was needed in the requirements development and approval processes for Defence to achieve the intent of speed to capability.[133] The critical need for this reform was illustrated by the assumed time frame for completion of the requirements process, which had risen above four years.[134] Notably, however, while the 2024 NDS stated an intent to make requirements processes faster and more responsive to changing priorities through reform of the ODCS, it did not detail the nature of those changes or the timing for their implementation.[135] The NDS did, however, imply that the reforms would prioritize sole-source acquisition and off-the-shelf procurements, with design changes and modifications either eliminated or limited to only that which is required to achieve MVC.[136]

Recognition of the need for schedule-driven reforms of the ODCS follows a history in Australia of defense projects running late. At the end of 2024, the top 21 defense projects had an aggregate delay of 442 months.[137] According to the Australian National Audit Office (ANAO), "[d]elivering Major Projects on schedule continues to present challenges for Defence," with consistent schedule slippage affecting when capabilities are made available for operational release by the ADF.[138] As an example, the Hunter frigate project has experienced substantial delays stemming from the selection of an immature design and the incorrect perception about the complexity of modifications, resulting from Defence's "procurement process and related advisory processes lack[ing] a value for money focus."[139] The declassified *Hunter Class Frigate Procurement Review* found that "a systemic change in approach is needed to substantively strengthen the manner in which Defence develops value for money capability proposals."[140] The increased emphasis on MVC can be seen as a response to this critique and will likely result in greater selection of off-the-shelf systems and improved schedule performance.

Although the reforms called for in the 2024 NDS and 2023 review were known and have been incrementally implemented, the formal capstone doctrine for capability planning was only signed in

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[132] Australian Government, *National Defence Strategy*, 2024a, p. 56.

[133] Australian Government, 2024a, pp. 69, 72.

[134] McKernan et al., 2024a, p. 31.

[135] Australian Government, 2024a, p. 55.

[136] Australian Government, 2023, p. 91.

[137] Australian National Audit Office (ANAO), *2023–24 Major Projects Report*, December 18, 2024.

[138] ANAO, 2024.

[139] ANAO, *Department of Defence's Procurement of Hunter Class Frigates*, May 10, 2023a.

[140] Australian Department of Defence, *Hunter Class Frigate Procurement Review*, September 21, 2023.

March 2025 and not released publicly until April 2025.[141] ODCS reforms included centralizing the setting of capability priorities, in order to acquire what might be considered the right capabilities. While somewhat of a reversion to the pre-2015 arrangements, in which a dedicated CDG led requirements, the 2025 reforms focused on centralizing responsibilities in the early stages of the capability life cycle, leaving CMs with chief sponsorship responsibility in the latter stages.

Notably, ahead of release of the updated manual, Defence stakeholders provided sufficient advice and information to provide an informed view of the new requirements process. This case study also uses publicly available information on Australian defense processes, interviews with key stakeholders in Defence, their provision to us of draft policies and briefings on the new processes, and the 2025 revision to the policy and manual.

Australia's Capability Acquisition Process: The One Defence Capability System

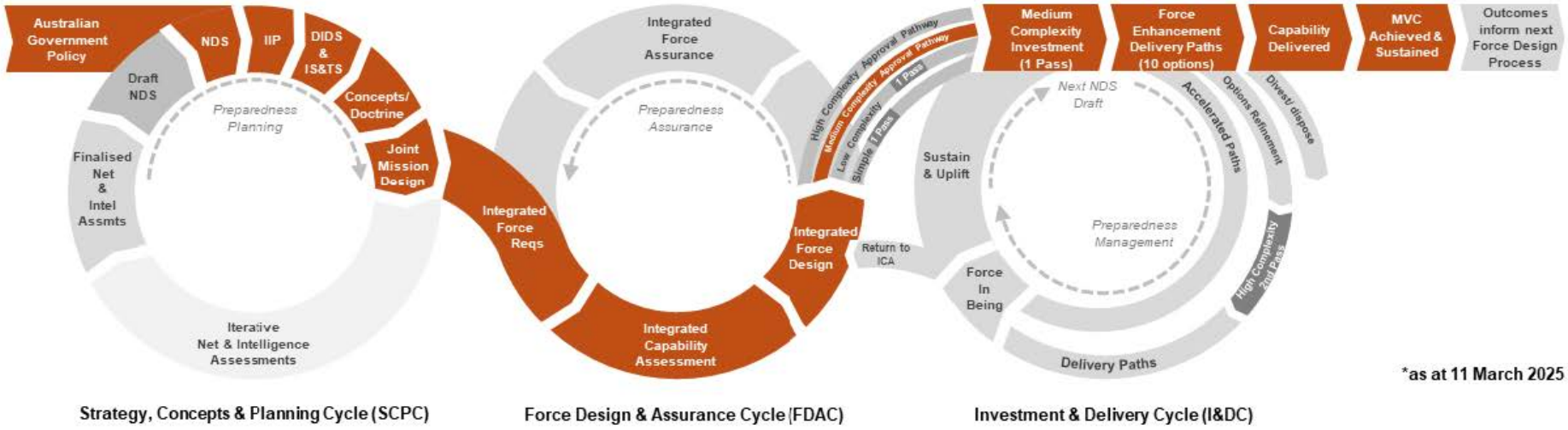
The requirements process sits within the broader ODCS. Whereas the original ODCS represented a strategy-to-task approach, it was criticized as delivering capabilities that lacked required timeliness and relevance. After the 2025 reforms, the ODCS is designed to be a more continuous process, with three concurrent cycles within the biennial drumbeat of defense strategies, as shown in Figure 4.1.

The key features of the reformed ODCS process are

- shifting from capability development being driven from the bottom up, which reinforced the like-for-like problem, to a more centralized approach in the early phases of capability development that ensures alignment with strategy
- refocusing force structure to deal with the greatest strategic risks, rather than attempting to balance capabilities against a range of scenarios
- changing the ODCS from a sequential to a continuous process
- replacing the Defence Capability Assessment Program, intended to translate priorities into capabilities, with an Integrated Capability Assessment (ICA) process
- as one of the outcomes of the new assessment process, centralizing the provision of integrated capability directives to CMs to guide requirements activities
- increasing speed to capability, enabled by streamlining processes, prioritizing off-the-shelf acquisitions, and defining MVCs
- tailoring approval and acquisition pathways to the level of acquisition risk
- creating a stated intent to engage industry as early as possible, supported by industry intelligence and digital engineering initiatives.

[141] Australian Department of Defence, "Release of the Updated Defence Capability Policy and the One Defence Capability System (ODCS) Manual (not publicly available)," DEFGRAM 184/2025, April 11, 2025b.

Figure 4.1. The One Defence Capability System Process



SOURCE: Reproduced from Australian Department of Defence, 2025a.
NOTE: Assmts = assessments; DIDS = Defence Industry Development Strategy; ICA = Integrated Capability Assessment; Intel = intelligence; IS&TS = Innovation, Science and Technology Strategy; Reqs = requirements.

Two key documents are central to the ODCS. The first is the NDS, to be published on a two-year basis, which outlines the government's strategic framework to guide the significant and urgent changes required to address Australia's challenging strategic circumstances.[142] The other is the IIP, which sets out a plan to acquire defense capabilities.[143]

The first two cycles of the new ODCS are intended to provide stronger alignment between strategy and capabilities, with the product of these cycles being the NDS and IIP, respectively. The focus on alignment helps to ensure that the future force is optimized to deal with perceived priorities and threats. The third cycle of the new ODCS is concerned with effective and efficient execution of investment approvals and delivery of capability. This cycle starts with decisions about the pathways for new capability programs, leading to requirements definition, approvals, and acquisitions.

Strategic Planning Cycle

The Australian government's defense priorities are set out in the biennial NDS, the first of which was published in 2024. Prior to that, defense strategies were periodically published in white papers. One criticism of the post-2024 strategic planning cycle is that there is no overarching national *security* strategy.[144] This is exacerbated by the fact that the 2024 NDS highlights complementary national security priorities outside of the defense portfolio but has no authority to assure that other arms of government will invest in those priorities. Additionally, there are other challenges and risks associated with the NDS, including a lack of urgency in investment, deficiencies in regional engagement, flaws in its approach to risk, workforce shortfalls, and presumptions of military advantage through technology.[145]

Nevertheless, the 2024 NDS provides a good foundation to inform the requirements process. The underlying development process draws together government policies, military strategic concepts, and the ongoing conduct of net assessment activities to inform its strategy. The resultant strategy is one that directs the development of an integrated and focused force designed to address the most significant strategic risks.

While not in public documents,[146] such strategic risks are understood to primarily relate to the projection of force against Australian territory through maritime approaches. Thus, the NDS gives priority to military capabilities that will deter such aggression through denial. This guides downstream ODCS activities to give priority to requirements that will achieve such deterrence by denial through the development of a more "lethal, integrated and focused force."[147] Accordingly, weapon systems that can target adversaries in the maritime domain at greater ranges and with greater effectiveness will be given greater priority than capabilities that do not contribute to this deterrence effect.

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[142] Australian Government, "2024 National Defence Strategy," press release, April 17, 2024b.

[143] The IIP is a ten-year expenditure plan that articulates defense proposals for future funding by the government. It includes the proposed scope of each proposal, time frame, and budget. The IIP is explained in greater detail later in this section.

[144] Stephen Kuper, "Renewed Call for a New National Security Strategy," *Defence Connect*, April 11, 2024.

[145] Andrew Dowse, "Australia's Defense Strategy," *Journal of Indo-Pacific Affairs*, Vol. 7, No. 6, 2024, p. 12.

[146] In addition to the public version of the NDS, there is a classified version that is more specific about the most-significant risks that Defence needs to prepare for.

[147] Australian Department of Defence, "One Defence Capability System Presentation," briefing, December 17, 2024b.

In addition to the NDS itself, the first cycle of the reformed ODCS informs concepts, doctrine, and the development of integrated force requirements. It is centrally led, with the office of primary responsibility being the Deputy Secretary for Strategy, Policy and Intelligence in the Department of Defence.

Force Design and Assurance Cycle

The Force Design and Assurance Cycle is also centrally led, with the Vice Chief of the Defence Force (VCDF) having overall responsibility as the Joint Force Authority. The Joint Force Authority has overall responsibility for strategic-level development and generation of joint forces, including platforms and systems, essential enablers, and integrating elements.[148] This central authority has been strengthened to ensure that capability requirements are developed in accordance with strategic guidance, functional and domain concepts, joint mission designs, force design priorities, and doctrine. The CMs for each of the domains (maritime, land, air, cyber, and space) are responsible to the Joint Force Authority for development of military capabilities.[149] Additionally, the Joint Force Authority can appoint program sponsors in relation to joint programs.[150]

A key activity in the second cycle of the ODCS is the conduct of ICAs. These assessments examine force options to achieve focused missions and to appreciate the comparative advantages and risks of those options. The result of these assessments is the production of integrated capability directives and the recasting of the IIP. Against each capability program, the assessments define Capability Target States (CTSs), which identify "point-in-time" objectives, effects, and performance requirements, with any particular CTS being "continually reassessed" to ensure relevance and desirability.[151] These target states help inform CMs of performance requirements and timelines associated with initial operational capabilities, MVCs, and final operational capabilities, which inform acquisition and upgrade strategies. The assessments consider various factors associated with the capability options, with the aim of informing recommendations on approval pathways and acquisition strategies for each IIP entry. This guidance informs an appropriate balance of capability, risk management, and speed to capability suitable for each capability program.

The depiction of the ODCS as three cycles in Figure 4.1 may mislead the reader to assume that the ICA follows the development of the NDS and formulation of the IIP. However, the assessment is actually a key process in identifying changes to the IIP and is undertaken concurrently with the NDS and IIP development. A chronological view of the two-year cycle is shown in Figure 4.2.

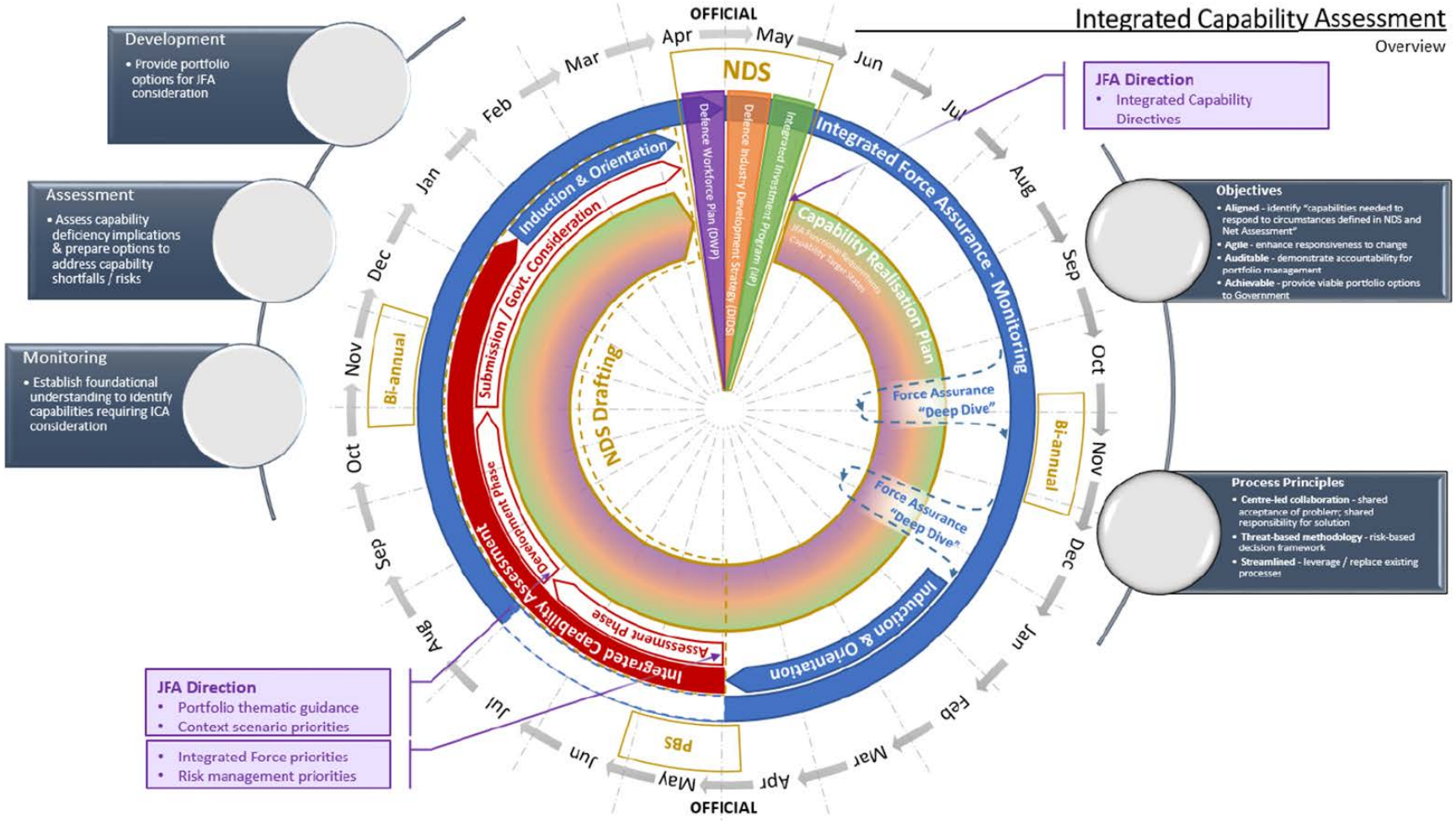
[148] Australian Department of Defence, 2025a, p. 93.

[149] Australian Department of Defence, 2024a, pp. A-5, A-8.

[150] Australian Department of Defence, 2025a, p. 21.

[151] Australian Department of Defence, 2025a, p. 14.

Figure 4.2. Utility of the Integrated Capability Assessment Within the Strategy Cycle



SOURCE: Reproduced from Australian Department of Defence, 2025a.
NOTE: PBS = Portfolio Budget Statement.

The reforms to the ODCS have reinforced centralized prioritization of the IIP, with VCDF having control over projects being added to the investment program.[152] VCDF also has control over the definition of MVC for each project, the extent of integration with other systems, and setting cost and schedule imperatives. This centralization of key decisions associated with IIP projects strengthens the alignment of acquisition activities with strategic outcomes, the jointness of the force, and the balance between levels of capability and speed to capability.

As the Joint Force Authority, VCDF maintains oversight of the IIP, including an integrated force assurance process that ensures that projects and programs are meeting the government's strategic priorities.[153] VCDF also leads allied engagement on requirements, with the International Joint Requirements Oversight Council (I-JROC) a key forum for such engagement since 2023. The I-JROC is important not only to realize interoperability opportunities through convergence of allies' requirement priorities, but also to manage divergences.[154]

Validation and Prioritization of Requirements by the Integration Capability Assessment Process

Under the previous ODCS process, the services each identified gaps in capability program plans, validated by a centralized force design process. From this, a capability needs statement was produced to seek IIP entry. This arrangement tended to support a like-for-like approach to requirements.

Under the reformed ODCS process, joint mission design activities, as derived from strategic guidance, generate a set of integrated force requirements. Then, the ICA process examines these general force requirement statements with respect to current and potential force options to identify gaps and capability needs. This assessment process provides for center-led initial validation and prioritization, communicated through directives that inform required investments. These are then progressed into the IIP as capability proposals, at a milestone referred to as *gate zero*. The capability proposal is then developed through the requirements process, with CMs leading and supported by other stakeholders, with further scrutiny by independent reviews and the internal Defence Investment Committee with respect to overall priorities across the IIP.

The Integrated Investment Program

The IIP is a ten-year expenditure plan that articulates defense proposals for future funding by the government. It includes the proposed scope of each proposal, time frame, and budget. While the IIP as a whole is approved by the government, it represents a notional funding envelope for future

[152] Ultimately, the government approves the IIP, but VCDF (as the Joint Force Authority) determines the projects within the IIP based on strategic guidance, engagement with capability managers, and outcomes of ICAs, which determine the optimal force structure and required capability investments.

[153] Australian Department of Defence, 2025a, p. 90.

[154] Andrew Dowse, Megan McKernan, James Black, Stephanie Young, Austin Wyatt, John P. Godges, Nicolas Jouan, and Joanne Nicholson, *AUKUS Collaboration Throughout the Capability Life Cycle: Implications for Planning, Programming, Budgeting, and Execution Processes*, RAND Corporation, PE-A2195-1, June 2024.

projects. Funding for specific acquisition activities remains subject to individual government approvals (referred to as *passes*), which are based on consideration of requirements documentation.

Therefore, the entry of a capability proposal into the IIP represents the initiation of the requirements process. Within Defence, this was referred to as *gate zero*, a term formally introduced in the First Principles Review.[155] The broader gate review terminology arose from a recommendation within the 2003 Defence Procurement Review, which imposed robust assessment arrangements onto requirements and acquisition processes.[156] These assessments were aligned with, and used to strengthen, the two-pass approval system for capability investments.

Prior to the recent reforms, a gate review would be undertaken prior to first-pass approval (gate one) and prior to second-pass approval (gate two). First-pass approval would provide the government with the opportunity to review the business case, including options under consideration and work required before final approval. Second pass was the final step in the requirements process, at which point the government would endorse a specific capability solution and approve funding for acquisition and in-service phases.[157]

Using various internal processes, including the use of independent advice and contestability activities, the gate reviews ensured that proposals considered all the factors, opportunities, and risks prior to being submitted for government approval. This approach was also applied to ensure rigorous assessment prior to IIP entry, especially through the Smart Buyer program, which provided independent perspectives, strategic views, broad stakeholder engagement, confrontation of risk, consideration of alternatives, industry perspectives, and senior officer guidance to defense capability projects and programs.[158] While Smart Buyer focused on capability projects in their initial stages, it remained relevant throughout the requirements and acquisition processes and was complemented by other activities, such as independent assurance reviews and contestability reviews, the latter of which provided scrutiny of capability proposals.

The IIP comprises both unapproved and approved projects. The unapproved portion of the program (those projects that have not yet received second-pass approval) represents a source of flexibility. That is, unapproved aspects of the IIP can be restructured (delayed, brought forward, canceled, or rescoped) to accommodate new priorities.

The ODCS reforms arising in 2023 and 2024 recognized that while the gate review and approval processes contributed to integrity of the system, they also could be detrimental to achieving speed to capability. The timelines associated with the various committees and supporting processes meant that progress was measured in years rather than months. Accordingly, the ODCS reforms allow for acceleration of capability by using fewer approvals and lower levels of approval, in the context of the cost, level of complexity, and risk of the associated proposal.

Instead of a two-pass process being the default, under the new approach most proposals will be progressed via a single pass and associated gate review (eliminating/combining the first-pass approval). Such proposals would be approved by the National Security Investment Subcommittee, rather than

[155] Andrew Davies, "Defence White Paper 2016: From Page to Photo Op (Part 1)," *ASPI: The Strategist*, April 19, 2016.

[156] ANAO, *Auditor General Report: Capability Development Reform*, October 30, 2013b.

[157] Australian Department of Defence, 2024a, Appendix A.

[158] Australian Department of Defence, 2025a, p. 55.

the full National Security Committee. Indeed, low-complexity proposals will be approved by an exchange of letters between the Minister for Defence and the Minister for Finance.[159] High-complexity proposals will continue to be considered via the two-pass process.

At IIP entry, the approval pathway for each capability proposal is identified (i.e., who approves and when). Delivery pathways are also assessed, with consideration of sourcing requirements (sole source, limited competition, open competition) and such strategies as off-the-shelf acquisition, delivery of MVC followed by upgrade paths, and the need for sovereign industry capability. These pathways determine the approach taken within the requirement and acquisition process for each proposal.

How Budget and Acquisition Decisions Are Influenced

Per the Section 811 report,

> At IIP entry, capability proposals are allocated a scope, nominal budget, timeline, and delivery pathway, derived from the Integrated Capability Assessment and other pre–gate zero analysis. The capability manager, supported by the lead program delivery manager, develops documentation that captures information about the capability, project execution, costs and associated risks. This documentation is then reviewed on the basis of value for money, options analysis, and programmatic risk.[160]

The Requirements Planning Process

In Australia, CMs (primarily the three service chiefs, as well as joint commanders with responsibility for other domains, such as space, cyber, and intelligence) are responsible for developing requirements for future military capabilities. Under previous doctrine, the CMs were responsible for an end-to-end capability development process, including identification of capability gaps and definition of requirements to address these gaps. However, the ODCS reforms reduce CM involvement in the initial stages of gap identification and IIP entry. The CMs remain engaged in the associated force design processes and resume the lead through the rest of the capability life cycle.

The CM responsibilities in the requirements process are articulated in Australian defense capability doctrine at the program and project levels. At the program level, CMs are expected to undertake planning that addresses both the force-in-being and the objective force, using centrally provided integrated capability directives as guidance, elaborating on interoperability and preparedness expectations, and identifying activities required to maintain and develop the future force. The outcomes of program planning are captured in strategies, concepts, and plans relevant to the specific domain program.

These program-level activities are coordinated with the Force Design Division within VCDF Group. Given that VCDF will have a greater lead in centralized capability planning, the extent to which this will affect CM program planning is unclear. It is likely that CMs will periodically recast

[159] Australian Department of Defence, 2024b.

[160] U.S. Department of Defense, 2025b, p. 170.

their program plans so that objective force assumptions align with the centrally conducted ICAs and associated implications for the IIP.

The project level of the requirements process is led by CMs through capability proposal and capability realization planning. These activities are addressed in the following sections.

Capability Proposal Planning

The way that new projects are raised in the IIP has fundamentally changed. Under the old system, the process would be led by CMs, whose delegated program sponsor would present a business case, a needs statement, and project execution strategy for consideration by the Investment Committee. The new capability doctrine classifies CM-originated IIP entries (gate zero) as an exception associated with unforeseen requirements, with the vast majority of new projects in the IIP to be centrally managed through the ICA process.[161] Whichever way new IIP entries are originated, they are subject to an internal consideration within Defence, with decisionmaking power vested in the VCDF-chaired Investment Committee.

Prior to a capability proposal being approved by the government, a suite of requirements documentation must be developed, which is first assessed through a gate review and then endorsed by the Investment Committee. The specific artifacts required for a proposal will be tailored dependent on the project's context and the proposed delivery pathway but will typically include a draft cabinet submission; updates to the business case, needs statement, and project execution strategy; workforce plans; test and evaluation plans; capability definition documents; source evaluation reports; and a cost model.[162]

The CM does not lead the preparation of all these artifacts. The CM's program sponsor will work in close collaboration with the delivery agency during the requirements process. For large or complex projects, this will often be within a formally established integrated project team. As projects undertake tender evaluation activities, the development of associated artifacts (such as a source evaluation report) will typically be led by the delivery agency.

At each pass, the proposal is examined to determine whether it should progress further based on consideration of value for money, options analysis, and risks/maturity. To support rigorous assessment, these examinations include the non-Defence representatives of other departments (such as Finance and Prime Minister and Cabinet) via briefings, presentation to the Investment Committee, use of the Contestability function[163] and the Smart Buyer framework,[164] and the analysis of technology readiness levels (TRLs).

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[161] Australian Department of Defence, 2025a, pp. 90–91.

[162] Australian Department of Defence, 2024a, p. 43.

[163] Cynthia R. Cook, Emma Westerman, Megan McKernan, Badreddine Ahtchi, Gordon T. Lee, Jenny Oberholtzer, Douglas Shontz, and Jerry M. Sollinger, *Contestability Frameworks: An International Horizon Scan*, RAND Corporation, RR-1372-AUS, 2016.

[164] The Contestability function is a mechanism that supports Defence decisionmakers by providing independent review of capability proposals to ensure they are aligned with strategy and resources and can be delivered in accordance with government direction. The Smart Buyer framework is a mechanism that supports Defence decisionmakers by providing independent review of capability proposals to ensure that a suitable acquisition strategy is being pursued that involves manageable risks.

Capability Realization Planning

Concurrent with progression of capability proposals, in Australia the CM also progresses capability realization plans. This activity recognizes that a range of other fundamental inputs to capability (FIC), similar to DOTmLPF (doctrine, organization, training, materiel, leadership and education, personnel, and facilities), are critical to the successful implementation of new capabilities. There are ten currently recognized FIC: workforce, individual training, collective training, facilities, supplies, support, industry, command and management, organization, and data. Emphasis is given to elements of FIC that are outside the scope of the prime contract for the capability proposal. This includes test and evaluation activities required to introduce the capability safely and effectively.

The CMs engage with FIC leads from across the Defence organization to coordinate activities and provide assurance that FIC will be in place to support the capability to be introduced. The FIC leads are either members of, or closely engaged with, integrated project team arrangements. Capability realization planning begins in the requirements phase, with risks and costs being considered at each pass, but continues through acquisition until the capability is introduced into service.

Program Delivery: Handover to the Delivery Organizations

Program delivery is undertaken by several organizations in Australia's Defence organization.[165] These include the Capability Acquisition and Sustainment Group, the Naval Shipbuilding and Sustainment Group, the Digital Data Group, and the Security and Estate Group. In addition, FIC providers will support program delivery. For each capability program, a lead program delivery manager will be established, often as a continuation or transition of arrangements during the requirements phase.

The lead program delivery manager is responsible for coordinating activities on behalf of the CM to achieve introduction into service. This includes reporting on progress against capability, schedule, and cost outcomes. To improve program delivery, the ODCS reforms include measures to

- reduce time and complexity of industry engagement, solicitation, and source selection, thereby reducing cost on industry and Defence
- update the contractual framework so that it facilitates speed to delivery, enabling continuous capability development and innovation, and progressing delivery of the capability
- increase the commercial acumen and procurement skills and knowledge of Defence's workforce responsible for conducting procurements
- define paths for efficiency, including key initiatives to streamline capability delivery paths; supporting initiatives include digital engineering, industry intelligence, workforce and professionalization, project management uplift, independent reviews, reporting, and earlier engagement inputs

[165] In December 2025, the Australian Minister for Defence announced that the Capability Acquisition and Sustainment Group, the Guided Weapons and Explosive Ordnance Group, and the Naval Shipbuilding and Sustainment Group would be consolidated under a single Defence Delivery Agency, headed by a National Armaments Director, who will report directly to government.

- allow earlier involvement of delivery organizations in the Force Design and Assurance Cycle.[166]

Rapid Acquisition: Developing Urgent Capability Requirements

Not all requirements neatly fit into the ODCS process. At one end of the spectrum are requirements that are operationally urgent and demand a streamlined process. In Australia, these processes are well established. At the other end of the spectrum are requirements that require innovative approaches. Australia's approach to such innovation has evolved in recent times.

Operational Procurement

Although the ODCS reforms aim to facilitate speed to capability delivery through streamlined processes, the realistic time frames for requirements, approvals, and acquisition activities mean that even accelerated delivery is measured in years. However, Australia has an established mechanism for operational procurement of capabilities in support of operations. Operational procurement is progressed within weeks and is undertaken either as a rapid acquisition (RA) or as an urgent operational procurement (UOP).

An RA procurement is used to acquire a new capability for a defined and approved operation. The capability must be operationally urgent, not previously planned, and approved by the Prime Minister, but the capability is funded within the Defence portfolio. RA would normally be confined to readily available commercial off-the-shelf (COTS) and military off the-shelf acquisitions. A UOP is another mechanism to provide support to operations but is delivered within baseline funds by the CM.[167]

Such operational procurements are concerned with acquiring proven systems rather than optimizing cost and capability trade-offs,[168] and have benchmark time frames within days or weeks.

Innovation

The recent strategic guidance (and ODCS reforms) aims to facilitate speed to capability delivery through a stronger focus on off-the-shelf procurements; this raises the question of what the *need for speed* means for defense innovation. Australia has long valued innovation as an enhancement to its defense capability, especially given the criticality for a small force to achieve such an offset. Moving away from that would be a significant culture change for the Australian Defence organization, which has viewed such innovation, design changes, and modifications as critical to achieve military advantages over potential adversaries.

The priority for speed of acquisition, however, is balanced within the 2024 NDS by the commitment to pursuit of asymmetric advantage. Specifically, the 2024 NDS highlights collaboration,

[166] Australian Department of Defence, 2024b.

[167] Australian Department of Defence, *CASG Operational Procurement (Version 2.0)*, 2022.

[168] Australian Department of Defence, "Investment Portfolio Management Branch [Internal Protected Network Page]," webpage, undated.

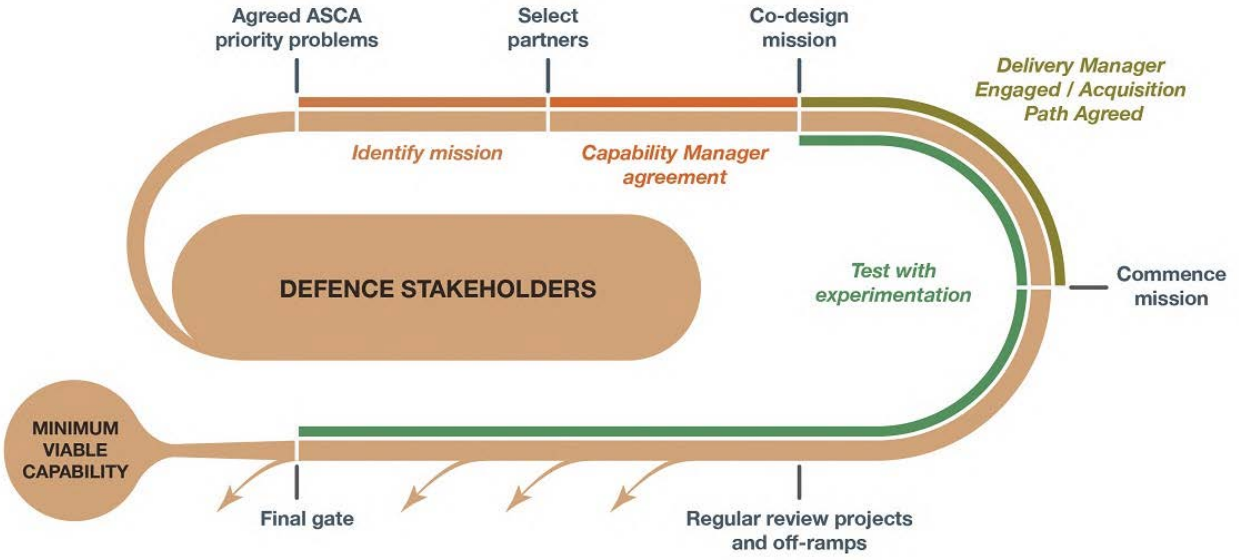
such as the Australia, United Kingdom, and United States Security Pact (AUKUS), as a means by which technological development might provide a source of asymmetric advantage.[169]

The promise of such advantage may lead to friction between imperatives to enhance capabilities and the required speed to capability, which both need to be managed within the requirements process. There are three ways in which Australia is balancing these competing imperatives:

- achievement of MVCs, with the prospect of further enhancing capabilities through parallel innovation activities and upgrade paths
- up-front assessment (at gate zero) of required capabilities and available solutions, to inform the definition of MVC and delivery pathways
- tasking of innovation ecosystems with specific problem statements to guide and optimize innovation efforts.

Australia has used various mechanisms to foster defense innovation, including the Capability and Technology Demonstrator program; the Rapid Prototyping, Development and Evaluation program; and the Defence Innovation Hub. Each of these programs superseded the previous program over the past two decades, with the most recent supersession being the establishment of the Advanced Strategic Capabilities Accelerator (ASCA) program, announced in 2023. ASCA identifies priorities and funds associated development efforts as shown in Figure 4.3.

Figure 4.3. Australia's Process for Rapid Acquisition of Innovative Technology



SOURCE: Reprinted from ASCA, "ASCA Mission 1 Co-Design and Delivery Market Briefing," December 14, 2023.

Following the commission of several challenges and missions, ASCA was refocused after 18 months of existence. ASCA was moved from the Defence Science and Technology Group, which has

[169] Australian Government, 2024a, p. 64. It should be recognized, however, that technological advances are one of a number of sources of potential asymmetric advantage (see Dowse, 2024, p. 8).

the lead for innovation, to be placed directly under VCDF. The primary reason for this move was to give ASCA greater authority to direct CMs to support the introduction of innovation-driven capability. However, the move also recognized the centrality of the force design process in understanding priorities for innovation and potential delivery pathways. It also reflected that VCDF may help to overcome criticisms of the early ASCA organization in relation to the pace of achievement and the importance of industry engagement.

Whereas ASCA is largely focused on innovation through the development of emerging technologies under AUKUS Pillar II,[170] there is recognition that other developments may contribute to asymmetric advantage.[171] Indeed, there are other sources of asymmetry that deserve attention.[172]

How Does the United States' Requirements Process Compare with Australia's Process?

While the U.S. process includes centralized oversight of joint requirements, the Australian process involves more than oversight and applies to all military requirements, not just those at the joint service level. Effectively, all new requirements are centrally validated and prioritized, based on a joint service assessment of strategic priorities.

Another substantial difference arises from Australia's recent shift from a balanced force to a focused force, which narrows and concentrates requirements priorities to select operational scenarios.

One further difference is that Australia does not have an equivalent to the National Defense Authorization Act. In Australia, budgets are allocated each year, including the investment program; however, funding for each individual project is triggered by its second-pass approval. The Australian Department of Defence then manages the aggregate spend by approved projects each year within its investment program allocation.[173]

Strengths and Opportunities for Improvement

In this section, we examine strengths and opportunities for improvement. These assessments may be informative in the considerations of prospective improvements to U.S. defense requirements processes. However, three factors are relevant to such considerations of the Australian case study.

First, there is the matter of scale. Australia has a significantly smaller, albeit capable, force, as well as a smaller industry base. The smaller industry base leads to Australia's greater reliance on imported weapon systems. Australia does seek a level of self-reliance through its Sovereign Defence Industrial Priorities program, although much of the focus of that program is on the ability of industry to

[170] Pillar II of the AUKUS security partnership between Australia, the United Kingdom, and the United States is focused on cooperation to develop and field advanced capabilities. The initial list of advanced capabilities was undersea capabilities, quantum technology, artificial intelligence and autonomy, advanced cyber, hypersonic and counter-hypersonic capabilities, electronic warfare, innovation, and information-sharing.

[171] Defence stakeholder, interview with the authors, February 2025.

[172] Dowse, 2024, p. 8.

[173] U.S. Department of Defense, 2025b, p. 171.

effectively support and enhance imported systems. For some sovereign priorities, Australia's acquisition strategy is to import initial systems, then establish industry capability for a local build program (e.g., the Mogami frigate program and long-range weapons, such as the High Mobility Artillery Rocket System [HIMARS]/Guided Multiple Launch Rocket System [GMLRS]).

Moreover, the recent shift to a force that is focused on the most significant threats has a profound impact on the requirements process. This focus effectively narrows the mission set and the associated capability requirements.

Second, many of the ODCS reforms are aspirational and have yet to realize outcomes. Thus, there are several aspects of the Australian approach that can be considered strengths, in terms of their intent, but currently require further improvement, as the aspirations have yet to be fully realized.

Third, interoperability is an important outcome for Australia and the United States, as well as the UK and other partners. The I-JROC and AUKUS cooperation provide the means by which interoperability can be further enhanced. Future changes to national requirements processes therefore should account for the important outcome of optimizing interoperability.

Strengths

In analyzing the Australian defense requirements processes and their implications to inform U.S. requirements processes, we note the following strengths.

Jointness First

A succession of changes to legislation, authorities, and processes has reduced the power of the three ADF services, with subordination of the service chiefs to VCDF in relation to capability decisions, and more responsibility for design of the future force vested in joint organizations. This has led to positive outcomes in terms of alignment of priorities and capabilities with strategic policy, as well as a general primacy of Defence-wide priorities over service-specific ones.

Centralized Capability Planning

Australia's ODCS, as suggested by its name, emphasizes centralized planning (and decentralized execution) for capability acquisition. The centralized process ensures that requirements are prioritized to align with military needs and strategic objectives. This contrasts with the U.S. process, which involves a more fragmented approach to requirements-setting.

Adaptation to Strategic Changes

The shift to a two-year cycle for defense strategy has ensured that the requirements process remains current and relevant. This approach, in combination with the new policy for a force focused on the most significant strategic threats, has enabled difficult but necessary investment choices to be made. Lower-priority projects were removed or delayed in the 2024 IIP in order to accelerate key programs in response to dynamic changes in the strategic environment. Adaptation was also enabled by recent reforms of the ODCS to centralize plans and accelerate delivery, and to continuously conduct ODCS planning rather than stand up teams to progress a sequential process, as has been past

practice. Reactions to the ODCS reforms appear to be positive,[174] which is in contrast to criticism of reform efforts of the U.S. Department of War (DOW) requirements process over the past two decades.[175]

Streamlined Processes

Under the Australian approach, the IIP is updated through the biennial cycle, while the government endorses the IIP and approves funding through annual appropriations and forward estimates. However, the progression of capability proposals through the requirements process is not tied to these timelines but instead is achieved through approvals. The reformed ODCS includes an ICA that not only ensures that the right projects are included in the IIP but also classifies each project entry according to its operational priority, cost, risk, and complexity—which allows most proposals to progress with fewer approvals at lower levels of government. This approach, combined with changes to sourcing processes, reduces the time to deliver a capability. The classification of approval and delivery pathways based on the nature of the proposal allows capability requirements to be met while ensuring that administrative resources are directed efficiently to more complex acquisitions. Although the effectiveness of these reforms in the Australian context cannot yet be fully evaluated, they represent a potentially useful avenue for balancing risk minimization and speed to capability. DOW reforms might focus on a similar goal of streamlining processes to achieve speed to capability.

Focus on Minimum Viable Capability

The need for speed to capability is being achieved in Australia by defining the MVC for each capability proposal. The MVC approach shifts focus to acquiring the lowest acceptable mission performance within required time frames. It facilitates options of pursuing off-the-shelf and sole-source acquisition strategies and discourages design and customization strategies that offer only marginal advantages. The United States could also look to understand how MVC requirements, and potentially off-the-shelf solutions, could fill gaps in current capabilities to avoid overreliance on custom solutions, which take more time and resources to implement. This recommendation aligns with DOW's recently released National Defense Industrial Strategy, which placed emphasis on developing and deploying flexible acquisition pathways for COTS capabilities.[176]

While much of the impact of the MVC approach will largely depend on the particular project and where the determined acceptable minimum mission performance is set, setting the relevant criteria to which a process may be assessed as a minimum rather than a maximum shifts focus away from unhelpful optimization at the margins, reducing the extent to which "tinkering" with capability programs may inflate acquisition timelines—a problem that plagued Australia's defense acquisition pre-reform. This problem is not alien to the United States: One report highlights how a minor change

[174] Derived from a review of online feedback and questions at the Australian Defence Capability Symposium on March 5, 2025. There was inherent bias in this feedback, which was primarily from defense industry members who stood to benefit from accelerated ODCS processes.

[175] Bill Greenwalt and Dan Patt, *Required to Fail Beyond Documents: Accelerating Joint Advantage Through Direct Resourcing and Experimentation*, Hudson Institute, February 2025, p. 7.

[176] U.S. Department of Defense, *National Defense Industrial Strategy*, January 11, 2024.

in the F-35 Joint Strike Fighter caused a dip in "combat radius . . . from 590 to 584 nautical miles (nm). . . . Instead of becoming a trivial technical footnote," this shortfall threatened a key performance parameter, slowing down the project despite the marginal nature of the deviation.[177] In some contexts, DOW has acknowledged the value of similar concepts. For example, in the context of software engineering and acquisition, a DOW directive advises project managers to "consider establishing a software factory with multiple pipelines to deliver capability in a series of manageable, minimum viable products."[178]

However, beyond this, uptake of the concept appears limited. A greater focus on and adoption of an MVC approach to requirements may help reduce administrative delays and costs while maintaining the ability to acquire the requisite battlefield capabilities.[179] It is important to acknowledge that acquiring an MVC-based capability quickly does not exclude the case to further develop and optimize systems. In many cases, the Australian defense approach will involve the initial fielding of an off-the-shelf capability, with parallel development activities facilitating capability enhancements through subsequent upgrades.

Exploitation of Emerging Technologies

Through various attempts at fostering innovation, Australia has experienced challenges associated with the so-called *valley of death*, in which promising developments do not have access to funding to bridge the gap from high technology readiness to introduction into service. ASCA was established, and then refocused, to help pull through technology developments into service for specific capability challenges. Cooperation with the U.S. Defense Innovation Unit (DIU) and the UK Defence and Security Accelerator will help bring momentum and interoperability considerations to these challenges and will benefit from arrangements under AUKUS Pillar II. While these efforts are early, their success will depend not only on the realization of capability outcomes but also on the ability to engage effectively with broader capability programs that the innovations may affect. For DOW, a continued commitment to DIU similarly would be advantageous in accelerating the exploitation of emerging technologies.

Harnessing Industry

The reformed ODCS attempts to encourage early interactions with industry partners, via such initiatives as the Industry Intelligence capability, the Defence Digital Engineering Strategy, and secure cloud capabilities for industry, to enhance collaboration and innovation. Although these initiatives will be useful in the context of the Australian Department of Defence and its domestic industry, the real strength of such arrangements will be in the pursuit of an allied approach to such initiatives—hence, these initiatives should be an important consideration for reform of the U.S. requirements process. Achieving transparency of industry capabilities across the combined defense industrial base will

[177] Greenwalt and Patt, 2025, p. 38.

[178] Department of Defense Instruction 5000.88, *Engineering of Defense Systems*, U.S. Department of Defense, November 18, 2020. Also see Peter Whitehead, Thomas Light, Adrian Luna, and Jim Mignano, *A Framework for Assessing the Costs and Benefits of Digital Engineering: A Systems Approach*, RAND Corporation, RR-A2418-1, 2024.

[179] Greenwalt and Patt, 2025, p. 48.

inform acquisition strategies across the allied nations. Adopting a standardized approach to digital engineering will promote speed to capability and improved interoperability.

These strengths indicate that the Australian Department of Defence has adopted processes that are more centralized and streamlined, focusing on rapid acquisition and strategic alignment that may serve as useful lessons for U.S. modernization efforts.

Opportunities for Improvement

While Australia's reformed ODCS presents potential ideas to inform DOW requirements processes, there are risks and other aspects of the Australian approach that represent opportunities for improvement.

An Undernourished Innovation Ecosystem

Australia lags most nations in economic complexity,[180] and the nation's investment in research and development (R&D) has fallen to 1.68 percent of gross domestic product.[181] Exacerbating this situation, Australian universities' research funding is under pressure by government caps on international student numbers, and Defence has reduced funding for fundamental and low-TRL research to fund ASCA. In this light, there is the prospect that there may be even less defense research conducted in Australia, which will hurt the quality of development work that could be pulled through into service through ASCA. If not redressed, such inadequacies will affect the ability of R&D to enhance future advanced capabilities for military advantage, and Australia's ability to contribute to allied partnerships, such as AUKUS Pillar II, will suffer.

Immaturity of Net Assessment Processes

The 2023 Defence Strategic Review suggested that Australia should be undertaking net assessments to inform force design and acquisition decisions; in 2025, it is still unclear how these assessments will be implemented, with Defence having limited net assessment expertise and capacity. The immaturity of the capability assessment processes could expose the ADF to situations in which it may be unprepared for unexpected conflicts or surprises. There could be value in cooperation with the United States and allies on net assessment, to help lift the Australian efforts and to achieve the benefits of alignment through shared net assessments.[182]

Slow Progress of Modernization

Australia's approach to requirements and acquisition is driven by a recognition of the need for urgency. Yet there has been public criticism that the budget and timelines of the IIP do not reflect the urgency of modernization articulated in recent strategies, especially within the immediate timeline

[180] Brandon How, "Australia's Economic Complexity Ranking Now Behind Uganda," InnovationAus, July 31, 2023.

[181] Robyn Prior and Tim Brennan, *R&D and Innovation in Australia: 2024 Update*, Parliamentary Library, Parliamentary Services Research Paper, February 12, 2025.

[182] Dowse et al., 2024, pp. 12, 13, 18.

referred to as the *forward estimates*.[183] This criticism has been reinforced by calls by the U.S. government for Australia to lift its level of defense expenditure.[184] The Australian government is directing Defence to cease the practice of overprogramming the IIP (which helped manage the impact of project schedule slippage), but, with the issue of poor schedule performance not improving as yet, there is a real prospect that defense modernization will be far slower than the pace needed.

Although the two major political parties generally take a bipartisan approach to defense policy, one point of difference is in the level and urgency of defense spending. The main opposition party has reiterated its intent to increase the defense budget earlier,[185] and it has even advocated for specific enhancements, such as procurement of additional F-35 aircraft[186]—although such rhetoric may not necessarily translate into actual changes in budget if and when the opposition wins government.

Complex Defense Organizational Structure

The Australian Department of Defence is structurally complex and bureaucratic, which can lead to inefficiencies and delays in decisionmaking. The complexity of the bureaucracy slows down decisionmaking, which is likely to reduce the effectiveness of the reformed ODCS. This is exacerbated by a concentration of decisionmaking capability within a top cohort that is significantly larger (in relative terms) than DOW, with only 260 personnel under each star-ranked ADF officer.[187] Calls are growing from critics for a rationalization of Defence headquarters,[188] both to improve effective and efficient decisionmaking and to redirect resources to defense capabilities.

In recognition of the impact on defense acquisition, in late 2025 the Australian government announced changes to the structure of Defence acquisition organizations.[189] These changes will involve consolidation of three groups (Capability Acquisition and Sustainment Group, Naval Shipbuilding and Sustainment Group, and Guided Weapons and Explosive Ordnance Group) into a unified Defence Delivery Agency. This new group will be headed by a National Armaments Director, in a similar arrangement to the UK's, reporting directly to the government minister rather than through the Secretary of Defence.

The Australian government has noted that this new structure, to be implemented in 2026, will increase speed to capability and result in better project management, as well as direct accountability to

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[183] For example, Greg Sheridan, "Why Labor Won't Face Reality on Defence Spending," *The Australian*, May 21, 2024.

[184] See U.S. Department of Defense, "Readout of Secretary of Defense Pete Hegseth's Bilateral Meeting with Australia," June 1, 2025a.

[185] Michelle Grattan, "Dutton Promises Coalition Would Increase Defence Spending to 3% of GDP 'Within a Decade,'" *The Conversation*, April 22, 2025; Stephen Kuper, "Opposition Outlines Commitment to Increased Defence Spending, Emphasis on Enhanced Capabilities," *Defence Connect*, November 20, 2025.

[186] Brett Worthington, "Coalition Pledges $3 Billion to Acquire Extra Joint Strike Fighter Jets," ABC News, March 2, 2025.

[187] Andrew Greene, "Growing Number of Senior Officers in 'Top-Heavy' Australian Defence Force Despite Falling Overall Personnel Numbers," ABC News, December 1, 2023.

[188] Mick Ryan, "Whoever Wins the Election, Stop the Rot in Defence. We're in Peril as Never Before," *Sydney Morning Herald*, March 30, 2025.

[189] Australian Government, "Reforming Defence Capability Development and Delivery," Department of Defence website, December 1, 2025b.

government.[190] While there are potential advantages in such an independent acquisition arrangement, success will depend on implementation of the arrangement (including associated changes to the ODCS), including coordination of capability realization planning and an appropriate balance between this independence and responsiveness to CMs.

Potential for the Minimum Viable Capability Approach to Constrain Interoperability

While the emphasis on MVC addresses the urgent need for timely delivery of capabilities, if applied inadequately, the approach might lead to solutions that lack the necessary interoperability with allied forces—at least initially, if such interoperability is not appropriately weighted in the assignment of the MVC level. The recent selection process for a General Purpose Frigate has drawn skepticism in its MVC approach, as critics point out the potential for interoperability, armament, and legal problems if the ship's systems follow the guide of "minimal changes to an existing ship."[191] The counterargument to such criticism is that the MVC capability that provides acceptable mission performance in an early time frame, with enhancements including interoperability at the earliest upgrade opportunity, is preferable to not realizing any capability until the later time frame.

Workforce Limitations and Risks

Australia currently struggles to retain and recruit necessary personnel for most defense functions. Defence faces a high risk of being unable to recruit personnel with the right skill sets to implement the changes that the ODCS reforms demand. As Defence looks to revitalize the requirements process using digital systems, attracting employees with the necessary aptitude for innovation and technology will be challenging, as the science, technology, engineering, and mathematics workforce in Australia is already in high demand across multiple sectors, such as finance and mining. Moreover, as a key FIC element of the future capabilities, the lack of suitably qualified and experienced workforce to operate those capabilities is a significant risk to capability realization.

What Practices Can the United States Leverage from Australia?

Australia sees value in a strong coupling between its defense strategy and the validation and prioritization of requirements. While Australia's smaller scale and tighter strategic focus make this centralized and strategy-to-task approach easier, there could be value in DOW introducing more of a top-down approach to requirements. Additionally, the strengthened role of VCDF as the Joint Force Authority is key to the alignment of requirements to strategic objectives and could be a useful construct within DOW.

Australia's poor record of project delays does not sit well with the urgency to modernize the force, motivating the emphasis on delivering MVC. There may be some value in DOW also embracing the

[190] Comments attributed to the Minister for Defence Industry in Australian Government, "Press Conference, Parliament House," Department of Defence website, December 1, 2025a.

[191] Michael Shoebridge, "General Purpose Frigates: Avoiding Failure by Fixing a Troubled Start," Strategic Analysis Australia, May 23, 2024.

pursuit of MVC-oriented acquisitions in some situations. Australia's approach to tailoring approval and delivery pathways to suit the project context is also a practice that DOW might leverage.

Although aspirational, Australia's intent to exploit industry intelligence and digital engineering to support more efficient and effective acquisitions has merit. Such initiatives might be useful for DOW not only in its own right but also in the context of a broader defense industry base and in pursuing codevelopment and coproduction activities with its allies and partners.[192]

How Can the United States' Requirements Process Better Align with Australia's Process to Ensure Integration and Interoperability?

The I-JROC represents an opportunity for requirements harmonization with Australia and other allies. It has significant potential to synchronize plans and programs across allies, since the requirements determination process is a central planning, programming, budgeting, and execution (PPBE) activity. This point is elaborated in the RAND report *AUKUS Collaboration Throughout the Capability Life Cycle: Implications for Planning, Programming, Budgeting, and Execution Processes*.[193]

The I-JROC should consider not only common projects but also the implications of divergences. The new approach being taken by Australia could be a source of divergence, whether that be from the narrowing of requirements priorities in the focused force or in pursuit of MVC-oriented capabilities.

However, Australia is a partner that is pursuing advanced systems in terms of its air combat capabilities, strike weapons, and Aegis ships, not to mention the AUKUS partnership. Australia also has fought alongside the United States in every significant conflict since World War I and offers geographic advantages to agile combat employment. Accordingly, there are significant advantages in close coordination of requirements processes. While RAND's *AUKUS Collaboration Throughout the Capability Life Cycle* makes the case that such alignment should be throughout the capability life cycle,[194] there is particular advantage in alignment of activities in requirements validation and prioritization and especially through engagement in Australia's ICA function.

As addressed here, alignment may also be improved through cooperation across the capability life cycle, including in relation to net assessments pertaining to common threats—as these would represent shared assumptions that will influence the requirements process.[195]

[192] U.S. Department of Defense, 2025b, p. 171.

[193] Dowse et al., 2024.

[194] Dowse et al., 2024.

[195] U.S. Department of Defense, 2025b, p. 172.

Chapter 5

United Kingdom

Lucia Retter and Harper Fine

Background

Defining and delivering military requirements involves an inherently complex set of tasks and processes undertaken by a range of different actors across the British Armed Forces, known collectively as UK Defence. Until March 31, 2025, the UK Ministry of Defence's (MOD's) Defence Operating Model was premised on the split of its internal planning, programming, budgeting, and execution (PPBE)–like process into eight top-level budgets (TLBs). These corresponded to the eight main MOD organizations: the Royal Navy, the British Army, the Royal Air Force, UK Strategic Command (UKStratCom), the MOD Head Office, Defence Equipment and Support (DE&S), the Defence Infrastructure Organisation, and the Defence Nuclear Organisation (DNO). The MOD Head Office functions would then negotiate with these organizations through "demand signals," against which the TLBs would each program the required outputs and effects. These proposed programs would then be fed into a centralized prioritization process to allocate resources.[196]

The return of war to the European continent with Russia's full-scale invasion of Ukraine in February 2022 prompted added scrutiny of UK MOD requirements and acquisition processes to identify opportunities for improving speed, resilience, and efficiency.[197] A 2023 review of the defense procurement system by the Public Accounts Committee of the UK Parliament identified numerous areas for improvement in requirements management and acquisition. Responding to the changes in the geostrategic environment and analysis of shortcomings of the current defense procurement system, the UK government announced a series of reforms to be implemented, starting on April 1, 2025, with full transformation completed by the end of fiscal year 2026 or beginning of fiscal year 2027.[198] These reforms, collectively referred to as the *Defence Reform*, are touted to represent the "biggest reforms in 50 years" and are explicitly geared toward driving greater coherence and integration, reducing onerous processes, cutting overheads, and increasing individual responsibility.[199] While only the headline changes have been publicly announced to date, it is clear that the Defence Reform is intended to shift the balance of responsibility from individual services toward a more centralized model—effectively reversing the decentralization reforms of 2011–2014 (the so-called Levene reforms, named for Peter

[196] For information on UK Defence budgeting and related processes, see the UK case study in McKernan et al., 2024a.

[197] UK Parliament, "It Is Broke—and It's Time to Fix It: The UK's Defence Procurement System," report summary, July 2023; James Black, Stuart Dee, Megan McKernan, Stephanie Young, Nicolas Jouan, Maxime Sommerfeld Antoniou, Clara Le Gargasson, Linda Slapakova, Theodora Ogden, Erik Silfversten, Mattias Eken, Charlotte Kleberg, and John P. Godges, *Resourcing Defense Cooperation in Europe Amidst Russia's War in Ukraine*, RAND Corporation, RR-A2195-8, 2024.

[198] UK MOD, "Major Defence Reforms Launched, with New National Armaments Director to Tackle Waste and Boost Industry," press release, October 25, 2024d.

[199] George Allison, "British Defence Undergoing Biggest Reforms in 50 Years," *UK Defence Journal*, 2025.

Keith Levene, Baron Levene of Portsoken, the author of the independent report that sparked this devolution). Major restructuring of defense leadership will be implemented with four key leaders (the "Quad") assuming primary responsibilities in support of the elected Secretary of State for Defence and their ministers. These four officials are

- the Permanent Secretary, head of the MOD civil service
- the Chief of the Defence Staff (CDS), the senior military officer of the UK Armed Forces
- the National Armaments Director (NAD), a new post
- the Chief of Defence Nuclear.[200]

In addition, the MOD will be reorganized into a Department of State to set policy and then a new Military Strategic Headquarters to deliver against it, with a recentralization of budgetary power away from the former TLB holders (e.g., toward the NAD), with a reform of procurement processes, and with the heads of the single services reporting directly to CDS for the first time. Implementation of these new changes had just begun at the time of research for this case study, and it was unclear what exact impact these changes might have on the requirements processes.

In addition to the Defence Reform, the UK government undertook a Strategic Defence Review (SDR) that reported in June 2025, setting out the wider strategic direction for UK Defence for the coming parliamentary term and hence shaping requirements at the strategic level. In combination, therefore, the recently released SDR and Defence Reform efforts mean that changes are being implemented over the 2025–2026 period to the current requirements definition processes. **Therefore, the findings in this case study should be caveated by the fact that the MOD system as a whole is in flux, undergoing significant change across all stages of the requirements definition, prioritization, and delivery life cycle.**

The UK's Capability Acquisition Process: The Strategic-Level Underpinning of Military Requirements

In the UK context, the military requirements process sits within a much broader process of Defence Force Development (DFD), which is iterative insofar as it begins with the strategic direction, translates that into policy and capability, and integrates lessons learned from the current force and operations to inform development of the future force. At the beginning of the requirements process is the strategic direction set out by the government of the day.

The UK government's national security priorities are set out in two key documents: the National Security Strategy (NSS) and the Strategic Defence and Security Review (SDSR) or equivalent (the latest iteration being the 2025 SDR).[201] The most recent SDR marks an important turning point in the UK's strategic direction, notably through its emphasis on (1) increasing defence spending to 2.5 percent of gross domestic product (GDP) by 2027 (from the current 2.3 percent of GDP), (2) adopting a "NATO First" and European security focus, (3) moving to warfighting readiness, (4) driving prosperity through defense investment, (5) learning lessons from Ukraine to enhance defense

[200] UK MOD, 2025c.

[201] UK National Audit Office (NAO), *Defence Capabilities—Delivering What Was Promised*, March 18, 2020.

innovation at wartime pace, and (6) emphasizing a whole-of-society approach to resilience and preparedness.[202]

The NSS and SDSR are generally published around every five years, or following major political changes, and are developed under the leadership of the National Security Council, which serves as the primary cross-government forum for collective discussions on national security objectives.[203] These two documents form the overarching framework under which the MOD delivers its outputs.[204] Once developed, these strategies are approved by the Prime Minister, and unclassified versions are published. Reflective of the rapidly changing geopolitical environment, most recent strategic reviews were conducted with greater frequency: in 2021 (Integrated Review of Security, Defence, Development, and Foreign Policy[205]), in 2023 (Integrated Review Refresh[206]), and in 2025 (Strategic Defence Review[207]).

SDSRs (or equivalents) often lead to the creation or update of the Defence Strategic Direction (DSD).[208] The DSD is a set of documents that outline how the MOD intends to build the "Future Force" by refining and evolving existing military capabilities where possible and building new ones where necessary.[209] The DSD serves as the foundation for the MOD's long-term planning and adaptation of military capabilities.[210] It identifies specific Defence Tasks that guide how the MOD should conduct its activities to meet its objectives.[211] The DSD document is typically used to inform the Defence Plan and individual Command Plans nested underneath it.

The Defence Plan, developed within the MOD Head Office,[212] translates the DSD's Defence Tasks into clear and actionable outputs across the entire department, including the Front Line Commands (FLCs) (the single services plus UKStratCom) and the DNO.[213] By outlining priorities across Defence, the Defence Plan informs the creation of Command Plans prepared by individual FLCs and the Corporate Plans of enabling organizations (e.g., DE&S or Defence Infrastructure Organisation).[214]

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[202] UK MOD, 2025c.

[203] UK NAO, 2020.

[204] UK MOD, *How Defence Works: The Defence Operating Model*, Version 6.0, September 2020d.

[205] UK Cabinet Office, *Global Britain in a Competitive Age: The Integrated Review of Security, Defence, Development and Foreign Policy*, July 2021.

[206] UK Cabinet Office, *Integrated Review Refresh 2023: Responding to a More Contested and Volatile World*, March 2023.

[207] UK MOD, "How Defence Works: The Defence Operating Model," updated March 31, 2025b.

[208] UK NAO, 2020.

[209] UK MOD, 2020d.

[210] UK MOD, 2020d.

[211] UK MOD, 2020d.

[212] UK MOD, 2020d.

[213] UK MOD, 2020d.

[214] FLCs in the UK context encompass the British Army, the Royal Air Force, the Royal Navy, and UKStratCom. There are currently 12 enabling organizations providing support services to the military commands, the DNO, and the Head Office. These include DE&S, which is responsible for procurement and through-life equipment support; Defense Digital, which delivers core digital systems and services for Defence; and the Defense Science and Technology Laboratory, which delivers science and technology products and services from research and development (R&D) to specialist advice and operational support.

Command Plans, in turn, translate the tasks of the DSD and the required outputs from the Defence Plan into actionable objectives to be achieved for each military command.[215] They detail how each command will generate, develop, and deploy military capabilities to meet these objectives. The development of Command Plans involves the professional heads of the military commands—i.e., the First Sea Lord, the Chief of the General Staff, the Chief of the Air Staff, and the Commander of Strategic Command—and the DNO, in collaboration with the MOD Head Office. Each professional head, who oversees both the *budget* and *strategic direction* of their service, leads the creation of their Command Plan.[216] Input from broader defense policy, strategic assessments, and guidance from the MOD Head Office further inform the process.

When developing Command Plans, the heads of respective FLCs are supported by Capability Management Groups (CMGs). CMGs set the strategy and oversee military capability development within each command. They are, in turn, assisted by Capability Planning Groups (CPGs) that explore *specific* capability areas and identify capability gaps.[217]

At the pan-Defence level, underpinning the implementation of the Defence Plan and the individual Command Plans is the DFD process. This involves FLCs and the Head Office working together to create strategic options for force structure and capability enhancements.[218] The DFD process is "the way in which the main parts of the future force structure and capability needs are defined and tested against strategic assumptions."[219] The DFD process is iterative, relying on combining lessons learned from current operations and capabilities with insights from horizon scanning, wargaming, net assessment, and strategy, policy, and concept development.[220]

The MOD Head Office directs TLB holders (principally FLCs) to refine existing capabilities while simultaneously evolving toward the defined Future Force.[221] FLCs, then, develop specific capability options that also entail proposals for investments in capability changes and advancement, including through further R&D.[222]

The Requirements Planning Process

Having described the key strategic-level inputs and drivers for military requirements, in this section we outline the steps involved in requirements-setting and approvals.

In the UK, FLCs (Navy, Army, Air Force, and UKStratCom) are responsible for developing requirements for future military capabilities. UKStratCom (formerly known as the Joint Forces Command) exists to develop and operate such joint capabilities as cyber, medical, and special forces and is responsible for multidomain integration. Effectively, UKStratCom should act as the integrator

[215] UK MOD, 2020d.

[216] UK MOD, 2020d.

[217] UK MOD, 2020d.

[218] UK MOD, 2020d.

[219] UK NAO, 2020.

[220] UK MOD, 2020d.

[221] UK MOD, 2020d.

[222] UK MOD, 2020d.

between the remaining three commands, explicitly in charge of developing requirements for joint capabilities and of performing a range of central functions, such as developing joint concepts and doctrine via Futures and Force Design and the Integrated Warfare Centre and overseeing joint professional military education via the Defence Academy. Since 2023, and until the Defence Reform changes of 2025, UKStratCom also housed the Integration Design Authority, which was set up to provide "integration as a service" to advise on and support commands (and others within the MOD) in adopting a more integrated approach, including to development of requirements.[223]

The commands and DNO are responsible for identifying capability gaps and defining the necessary requirements to address these gaps. Each command operates within its own budgetary constraints, meaning that their requirements must be both operationally relevant and financially feasible.[224] Commands are responsible for considering interoperability and ensuring that future equipment will become part of a broader military capability (defined in terms of Defence Lines of Development [DLODs], the MOD equivalent to the U.S. Department of War's DOTmLPF [doctrine, organization, training, materiel, leadership and education, personnel, and facilities]).

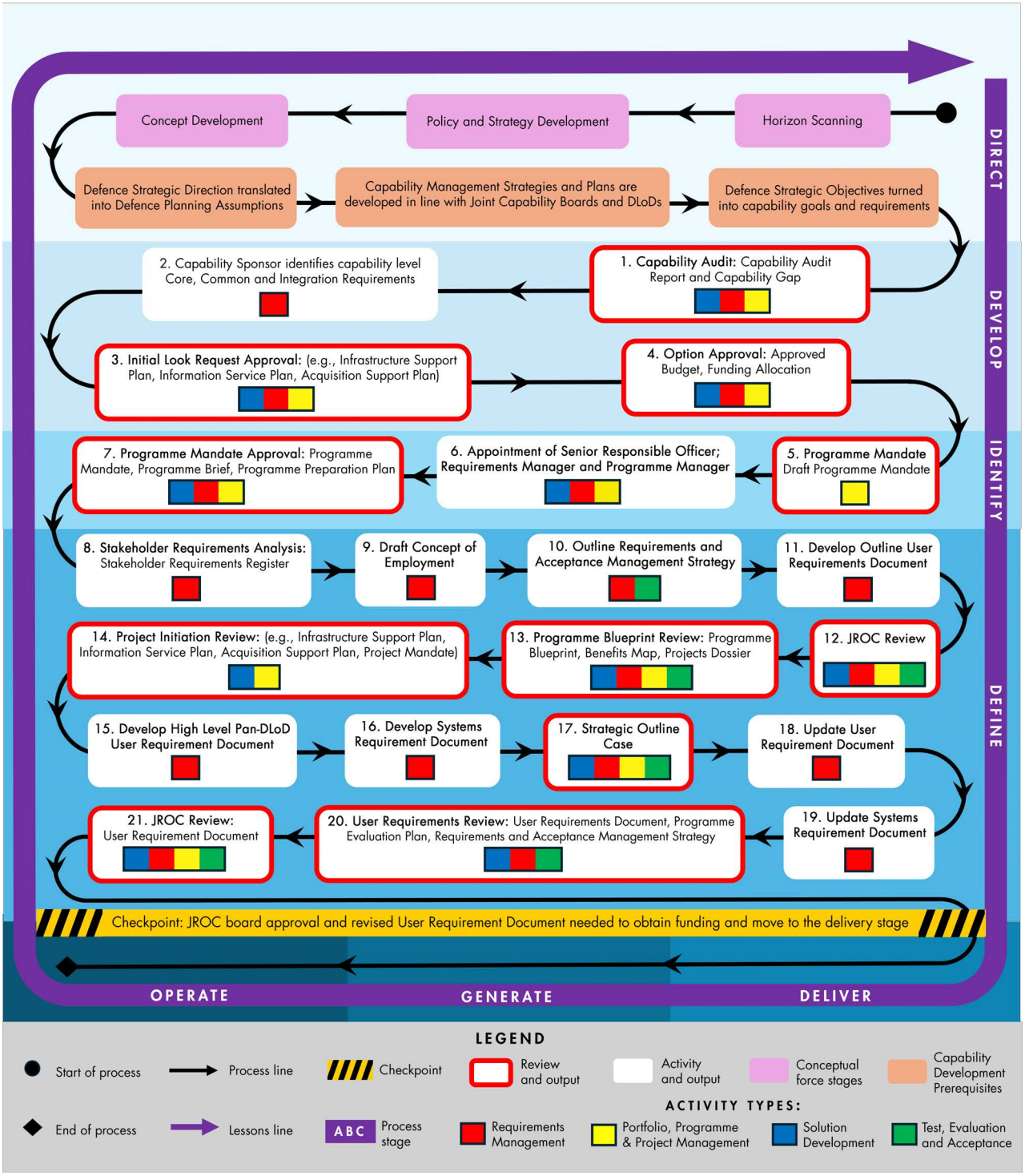
In Figure 5.1, we provide a visual overview of the requirements process from strategic direction through to completion of requirements definition. This is a simplified depiction of a significantly more detailed "Tube Map" available to MOD employees within the internal Knowledge in Defence resource. While simplified and zooming in on only the first stages of the requirements development (before the requirements are handed over to the delivery organizations to procure), the figure still shows that the process is very complex, has multiple layers of approvals, and involves dozens of documents and sign-offs—with sometimes duplicative scrutiny reviews at the command level and the joint level (e.g., the Joint Requirements Oversight Committee [JROC] for major programs).

Given the wider defense transformation taking place, *Figure 5.1 should be regarded as a snapshot of the requirements process as of December 2024*; it is likely to require amendments in the future as the changes resulting from the Defence Reform become embedded across UK Defence.

[223] UK MOD, "The Launch of the Integration Design Authority," September 27, 2023.

[224] UK Parliament, 2023.

Figure 5.1. Simplified Requirements Process for Major Programs (as of December 2024)

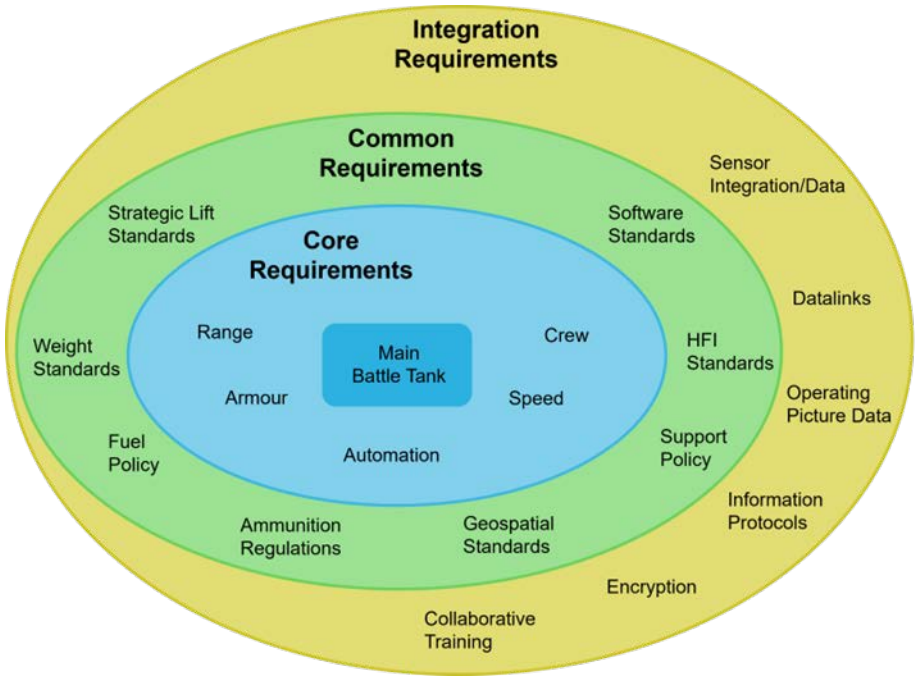


SOURCE: Adapted from UK MOD, "Requirements and Acceptance: End-to-End Process," Knowledge in Defence, 2024a, "End-to-End Process Tube Map."

Drawing on broader strategy, concepts, lessons from the present and past, and analyses of potential futures (e.g., through horizon scanning, scenarios), the CPGs within the four commands conduct annual capability audits, assessing how well current and planned capabilities align with this wider strategic direction and what risks there may be to achieving desired outcomes. Through these audits, the CPGs identify potential capability gaps. The resultant Capability Audit Reports are submitted to the MOD Head Office.

When a capability gap is identified and a decision is made to pursue new investment in addressing that gap, a capability sponsor is nominated, typically from the FLC, that oversees the initial definition of three fundamental types of military requirements in the UK system; i.e., core, common, and integration requirements.[225] Examples of each are shown in Figure 5.2.

Figure 5.2. Types of Military Requirements: Illustration Using the Example of a Main Battle Tank



SOURCE: Adapted from UK MOD, *Defence Equipment and Support: Framework Document*, August 17, 2022d.
NOTE: HFI = human factors integration.

When setting requirements, commands can choose between outlining broad, open-ended objectives—referred to as *cardinal points*—that define what the system or equipment should achieve and issuing more detailed and prescriptive requirements.[226] Previous studies noted that the MOD as an organization often opts for highly specific requirements, a strategy that has often led to overly costly or "gold-plated" proposals from industry and may not have enabled innovative alternative

[225] UK MOD, 2022d.

[226] Ron P. Smith, *Defence Acquisition and Procurement: How (Not) to Buy Weapons*, Cambridge University Press, 2022.

proposals or cost savings.[227] To address these shortcomings, part of the ongoing Defence Reform centers on identifying and implementing measures to engender greater agility into the capability development process, with the aims of reducing prescriptive requirements-setting and enhancing the solution space (e.g., via greater focus on defining missions and use cases rather than specifying exactly how a new system should address those).

In the next stage (program identification), the program concept needs to be developed into a Programme Mandate with a defined scope, objectives, and outcomes. At the same time, key individuals are appointed to drive the program through the next stages, specifically the Senior Responsible Owner (SRO),[228] who is ultimately accountable for successful program delivery; the Requirements Manager, who reports to the SRO and oversees the development of and adherence to the core requirements, as well as any evolution throughout the program; and the Programme Manager, who leads on overall program delivery. If the Programme Mandate receives Programme Mandate Approval, it can enter the next stage, Programme Definition, which corresponds to the first stage of the defense capability acquisition process: the Concept stage.[229]

Following Programme Mandate Approval, the requirements process tends to gather momentum, driven by the Requirements Manager, with inputs from capability desk officers, the Programme Manager, and stakeholders.[230] The Requirements Manager and Programme Manager develop an outline Requirements and Acceptance Management Strategy (RAMS), which provides a direction for all requirements and acceptance activity. In effect, the RAMS communicates the strategy for managing a coherent capability change program and is endorsed by the SRO.

For major programs, requirements need to be approved by the JROC. Documents that are needed to support the JROC review include the User Requirements Document (URD), which captures key user requirements; the Risks, Assumptions, Issues, Dependencies, and Opportunities (RAIDO) document; and a draft Concept of Employment (CONEMP) for the capability. In addition to these requirements-centered documents, the JROC review also requires submissions of the Programme Blueprint, the System of Systems Solution Architecture, and the Integrated Test, Evaluation, and Acceptance Plan.

The JROC is chaired by the Vice Chief of Defence Staff with representatives from across the Head Office and FLCs. The JROC plays a critical role in prioritizing resource allocation for *major projects only*. The committee reviews and reconciles the budget priorities across the different TLBs, ensuring that the requests from each command align with the MOD's overall portfolio of requirements. The JROC ensures that investment decisions support current and future defense capabilities by assessing submissions from TLBs against operational needs, strategic priorities, and

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[227] Smith, 2022; Lucia Retter, Julia Muravska, Ben Williams, and James Black, *Persistent Challenges in UK Defence Equipment Acquisition*, RAND Corporation, RR-A1174-1, 2021.

[228] An SRO comes from DNO or one of the four commands that is acquiring the capability and oversees the capability program as a whole (UK Parliament, 2023a). SROs ensure that programs align with approved requirements, reach key milestones, and are delivered on schedule and within budget (UK Parliament, 2023). SROs, usually at a one- or two-star level, are ultimately accountable to the Permanent Secretary (the Principal Accounting Officer) within the MOD and to Parliament for the delivery of programs (UK Cabinet Office, *Giving Evidence to Select Committees: Guidance for Civil Servants*, October 2014).

[229] UK MOD, "Overview of the Requirements Line Through the Process Map," Knowledge in Defence, 2022b.

[230] UK MOD, "Activity: Conduct Stakeholder Requirements Analysis," Knowledge in Defence, 2022a.

fiscal constraints.[231] In relation to military requirements, the JROC checks that requirements do not generate high levels of technical risk, with excessive costs and schedules, at a low overall capability benefit. The JROC is a subcommittee of the Investment Approvals Committee (IAC) and supports the IAC's reviews by ensuring that the requirements-setting process is rigorous.[232]

Following the first JROC review, the Requirements Manager, with support from the DLOD owner and the MOD Integrated Logistics Support Manager, develops high-level pan-DLOD User Requirements. The output of this process is the creation of the System Requirements Document.[233] With user requirements and systems requirements developed to sufficient maturity, the program goes through the Strategic Outline Case (SOC)—the first of three approval stages for UK government investment programs.[234]

The SOC defines the program scope, assumptions, and a high-level plan. It is presented during the pre-concept phase, and its clarity of need is validated by the JROC or other bodies.[235] To include additional considerations raised by the SOC and other project activities, the Requirements Manager and Programme Systems Engineer will carry out further iterative development of pan-DLOD user requirements, which will go through the User Requirements Review (URR) and another JROC Review. The URR, led by the command project sponsor, ensures that all stakeholders have been identified, with their needs captured and risks accepted, before the MOD formally commits funds to the assessment of solution options. Additionally, the URR ensures a quality and complete URD that maintains consistency and satisfies the needs of its target audience. The Programme Manager leads on the URR and is supported by the Requirements Manager or Engineer. This further JROC review follows similar processes as the first but, distinctively, culminates in a revised URD.

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[231] Defense Acquisition University, "Joint Requirements Oversight Council (JROC)," webpage, undated.

[232] The IAC is responsible for overseeing and approving major investment proposals. The IAC operates as a senior decisionmaking body within the MOD to ensure that capital investments, such as in military equipment, infrastructure, or new technology, align with the Defence Plan's strategic priorities. The IAC sets policies and guidelines for major investments, ensuring consistency in how decisions are made across the department. It provides final approval on significant expenditure proposals and oversees how these investments are executed. The IAC reports to the Defence Board through the Defence Management Group and advises Defence ministers on a course of action. The IAC is a four-star-level committee, chaired by the Director General Finance and also including the Vice Chief of the Defence Staff; the Chief Scientific Adviser; the Chief of Defence Material; the Deputy Chief of the Defence Staff Military Capability; the Director, Legal; and the Director, Commercial.

[233] UK MOD, "Activity: Allocate User Requirements to Non-Acquire Projects," Knowledge in Defence, 2020a.

[234] Requests for expenditure by UK government departments have to be processed through three stages: SOC, Outline Business Case, and Full Business Case. The MOD adopted the governmentwide three-stage approvals process in 2020. Passing each stage is necessary to proceed to the next stage of the program per the investment approvals guidance by the Treasury, summarized in the so-called Green Book. Business cases comprise five aspects:

- the strategic case that should support the case for change
- the economic case that articulates how the program or solution seeks to achieve value for money
- the commercial case that establishes whether and how the program is commercially viable
- the financial case that sets out financial affordability analysis and identifies any funding gaps
- the management case that details how the program or project will be managed.

Each of these five cases is matured throughout the three-stage approval process, with the Full Business Case achieving final approval drawing on the final versions of the five cases of support.

[235] Requirements can also be validated by the capability sponsor, relevant TLB Requirement Oversight Committee, or Transformation Board, as appropriate.

This latest JROC review concludes the concept stage and defines the program, laying the groundwork for program delivery and preparation of the Outline Business Case, which represents the second of the three stages of approval required for government investment.[236] Passing each approval stage is critical for the program to access funding.

Once military capability requirements are defined and approved, they are handed over to the relevant delivery organization(s). For most requirements, DE&S acts as the delivery organization. (The major exceptions are information systems and services, delivered through Defence Digital, and the UK's fleet of nuclear-powered submarines, delivered through the stand-alone Submarine Delivery Agency.) Effectively, DE&S operates as a service provider to the FLCs and the Director of Strategic Programmes within the MOD Head Office.[237] DE&S takes responsibility for the procurement and delivery of the required military equipment and support solution.[238] In this role, DE&S manages the entire procurement process and oversees commercial negotiations, contractor management, and through-life support.[239]

The relationship between DE&S and each FLC is formalized through Command Acquisition Support Plans (CASPs), which serve as an annual contract between the two. CASPs detail the specific outputs that DE&S is expected to deliver.[240] Similar arrangements are also in place to coordinate delivery with other enabling organizations, including the Defence Infrastructure Organisation and Defence Digital, which is responsible for the delivery of software and information technology services across Defence.

Rapid Acquisition: Developing Urgent Capability Requirements

In circumstances of urgent operational need, the requirements process described above is adapted to expedite delivery of capabilities to the warfighter. Here, the MOD uses so-called Urgent Capability Requirements (UCRs) (formerly known as Urgent Operational Requirements [UORs]).[241] The key to delivery of UCRs is to compress or bypass certain steps of the requirements development and acquisition cycle to deliver solutions at pace. UCRs prioritize the purchase of mature, off-the-shelf equipment or capabilities over projects requiring extensive research, development, and testing.[242] UCRs used to be funded by His Majesty's Treasury Reserve rather than the MOD's budget—for example to meet the emerging requirements of operations in Afghanistan and Iraq. However, funding

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[236] UK MOD, "Review: User Requirements Review (URR)," Knowledge in Defence, 2020c; UK MOD, "Review: Joint Requirements Oversight Committee (JROC) Review," Knowledge in Defence, 2020b; UK MOD, 2022d.

[237] UK MOD, 2022a.

[238] UK Parliament, 2023.

[239] House of Commons Committee of Public Accounts, *Improving the Performance of Major Defence Equipment Contracts: Twenty-Second Report of Session 2021–22*, November 3, 2021.

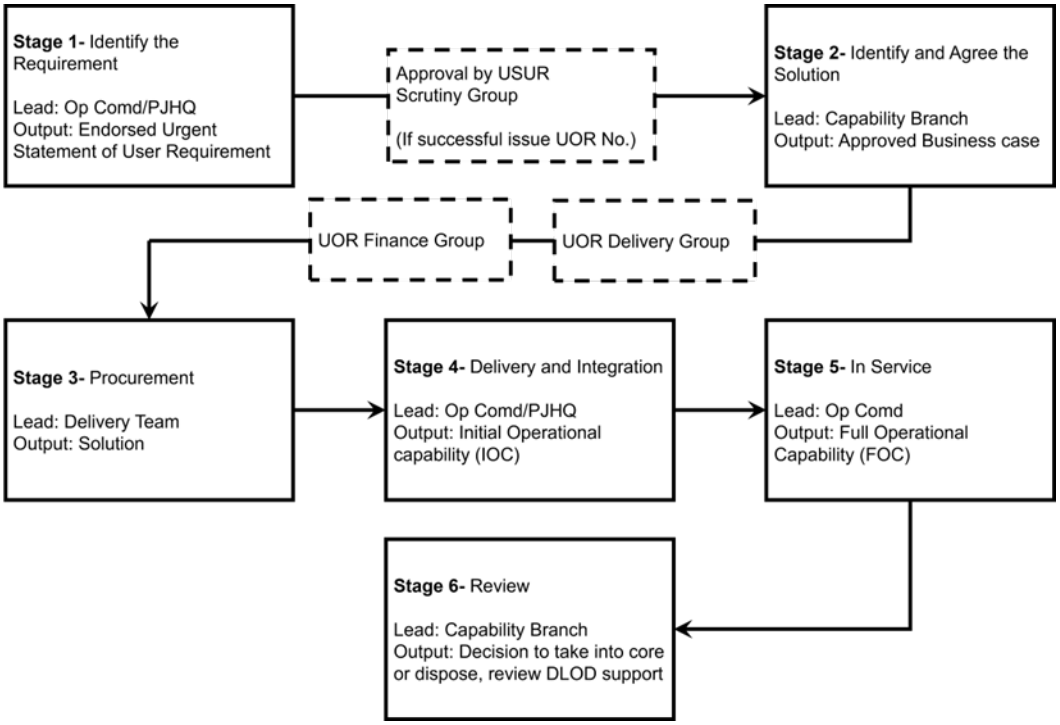
[240] UK MOD, 2020d; UK Parliament, "Memorandum Submitted by the Ministry of Defence," October 17, 2016.

[241] UK MOD, "Guidance: DSPCR Chapter 9: Procuring Urgent Capability Requirements (UCRs)," *Defence and Security Public Contracts Regulations (DSPCR) 2011*, updated February 27, 2025a; UK Parliament, 2023. In this text, UCRs and UORs are used interchangeably.

[242] Subject-matter expert on the United Kingdom, interview with the authors, 2024; UK Parliament, 2023. The timeline for the UCR process is nonetheless often context dependent. In previous cases, the UCR process ranged from 13 weeks to several months.

responsibilities have shifted to FLCs, which must now rely on their own budgets unless UK Defence is engaged in government-mandated operations, in which case the Treasury resumes funding. As of March 2025, it was not clear whether or how the funding conditions or procedures for UCRs were likely to change as a result of the ongoing Defence Reform effort. The process for delivering UCRs typically takes place in six stages, shown in Figure 5.3.

Figure 5.3. Schematic Depiction of Urgent Capability Requirements



SOURCE: Adapted from UK MOD, "The Urgent Operational Requirement (UOR) Process," Knowledge in Defense, undated.
NOTE: PJHQ = Permanent Joint Headquarters; Op Comd = operations command; USUR = Urgent Statement of User Requirement (USUR).

Another example of enhanced efficiency and speed is illustrated by Operation Scorpius—the provision of UK military equipment assistance to Ukraine since 2022. According to a 2024 National Audit Office (NAO) report on military support for Ukraine, the rapid need meant that even the relatively fast UCR timelines (of approximately 18 months) were still too slow.[243] Operation Scorpius involved a redesign of several procurement processes, introduction of exceptions for noncompetitive procurements, and reduced testing requirements for weapons assembly with bespoke liability provisions. The NAO report gave the example of wheeled anti-aircraft equipment supplied to Ukraine within a record six weeks, compared with the year or two it would typically take using UCRs.[244] Additional enablers included restructuring of DE&S teams to deliver procurements at speed and use

[243] UK NAO, *Investigation into Military Support for Ukraine*, September 11, 2024.

[244] UK NAO, 2024.

of a central "gateway" to keep track of and audit requests while cutting administrative steps to a minimum. As with the case of UCRs used to support operations in Afghanistan, the case of rapid provision of equipment to Ukraine demonstrates that, in times of crisis, the UK system is capable of mobilizing and delivering at speed against both relatively simple and more complex requirements. However, the challenge remains how to apply these lessons at greater scale across the MOD's mainstream DFD processes and under peacetime conditions, where attitudes about risk, cost, and approvals are necessarily different.

How Does the United States' Requirements Process Compare with the UK's Process?

Given the differences in the scale and nature of the requirements and acquisition systems in the UK and the United States, it is not possible to extract one-for-one comparisons or directly applicable lessons. However, our analysis does allow us to offer several reflections on what we observe to be the key high-level similarities and differences:

- Despite the order-of-magnitude difference in the sizes of their defense budgets, the U.S. and UK requirements processes experience similar challenges to ensuring that warfighters are provided with relevant capabilities at pace while also promoting value for money. The **persistent back and forth between greater centralization and more devolution** has characterized the requirements and acquisition systems in the UK and the United States for decades, and in both cases has resulted in scrutiny and approval systems that are often duplicative at the service and joint levels, without adding value.
- The ongoing Defence Reform effort is seeking to reduce heavy process requirements and approvals, drive more individual accountability, and centralize more of the early-stage requirements-setting with the intention of driving greater coherence across Defence. The Defence Reform aims to streamline scrutiny processes to embed more bespoke scrutiny mechanisms for different projects to reduce the administrative burden entailed with production of requirements documentation and approvals. It also seeks to drive a more problem-focused (rather than solutions-driven) approach to requirements-setting to open opportunities for suppliers to propose a wider range of innovative solutions. In these ways, **Defence Reform pursues similar objectives to the U.S. requirements process reform**.
- Further similarities are found in the **effective implementation of more ad hoc or crisis-driven requirements processes**. In times of crisis, during which speed of delivery is paramount, both the U.S. and the UK requirements systems have shown adaptability, efficiency, and the ability to innovate—as witnessed in the UK's use of the UOR and UCR mechanisms during the wars in Afghanistan and Iraq, or in providing military aid to Ukraine. While these expedited arrangements cannot be adopted as "business as usual," because of their shortcomings in terms of overreliance on commercial and military off-the-shelf solutions, pan-DOTmLPF integration challenges, or increased operating risks, they offer valuable lessons on key enablers for a more efficient system and show where excessive administrative burden can be reduced.

- **The two systems differ the most in the strong connection that exists in the UK between requirements/plans and budgets.** Even at the earliest stages, programs in the UK require budget estimates to proceed, and major program reviews consider both requirements and the estimated cost together (e.g., at the Option Approval, in JROC reviews). Given that commands are responsible for both budgets and requirements, this **joint treatment of budgets and requirements** is a necessity to ensure coherence between individual Command Plans and the top-level budget allocations.[245]

What Practices Can the United States Leverage from the UK?

We did not find published research examining in detail the different parts of the requirements-setting process in the UK. Similarly, we did not find publicly available research that would holistically consider the requirements process's relative strengths and opportunities for improvement. On the other hand, significantly more research and commentary is available on the challenges and opportunities present in the broader defense acquisition system, which has been the subject of large independent reviews since the 1960s.[246] Recognizing the lack of published research on the requirements process specifically, we therefore engaged with eight experts from across academia, think tanks, government, and industry to capture high-level reflections on the perceived strengths and areas for improvement.

Strengths

The stakeholders we consulted for this study reported several strengths within the UK defense requirements process. Several interlocutors perceived the capability audit process, the UCR process, and the JROC review mechanism, as well as the wider rollout of the Treasury's three-stage approval process and the three business cases required therein, as effective. The Treasury's approval process not only encourages greater consistency across government investments more broadly but also avoids situations in which projects would start informally, with money allocated but no clear plans in place.[247]

Given the perennial budget constraints experienced by the MOD, the need to drive affordability through each investment has driven the need for a robust audit, scrutiny, and review. As shown in the simplified graphic in Figure 5.1, requirements planning now involves dozens of steps, approvals, and reviews, underpinned by numerous documents and committee meetings. While accountability is important, there are now too many different stages and reviews, requiring significant amounts of paperwork to be produced; this hampers speed and can insert additional back and forth between different actors within the requirements system.[248] One interviewee noted that, as the threat environment becomes ever more complex and fast evolving, the lengthy nature of the scrutiny process

[245] U.S. Department of Defense, 2025b, p. 174.

[246] Some of the most prominent reviews include Smart Acquisition/Acquisition Organisation Review in 1997–1998; the Gray review in 2009; the Levene review in 2011; UK NAO, 2020; and UK Parliament, 2023.

[247] Subject-matter expert on the United Kingdon, interview with the authors, 2024.

[248] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

can contribute to delivering something that is out of date or needs further evolution, ironically leading to the opposite outcome from what the scrutiny intended.[249] We understand that efforts are underway as part of the Defence Reform to identify how different scrutiny regimes can be applied in a more tailored fashion to different types of programs—e.g., depending on program risk (rather than a "one-size-fits-all" approach)—but the exact characteristics and impact of any reforms are not yet known.

Two interviewees highlighted what they saw as the strengths of the UK's capability audit process, particularly its ability to integrate operational lessons and insights into requirements for new or upgraded capabilities.[250] The broader requirements process was deemed successful in its early identification of capability shortfalls and in developing costed options for improvement. Interviewees noted a contrast between the efficiency of the capability audit process and the later stages of requirements-setting. However, one interviewee noted that, to maintain successful capability audits, the process must become more adaptable amid an increasingly complex threat environment and quickening pace of change and speed of war.[251]

Three interviewees recognized the JROC as an effective mechanism for scrutiny and a useful aid in requirements reviews. Ensuring an early-stage review of major programs (by budget and risk) at the three-star level helps ensure that the requirements are rigorous and pitched at the right level, and that they seek to meet wider defense objectives, including the drive toward integration. The JROC helps integrate capability requirements arising from a single service or domain with activities and capability development plans of other commands; it seeks to ensure that pan-DLOD requirements are sufficiently accounted for, and it seeks to challenge myopic or parochial thinking that can sometimes be present among single-service sponsors.[252] Additionally, the JROC benefits from an independent, non–domain-specific scrutiny team, which assesses compliance and informs recommendations for funding. By making major program investment contingent on the satisfaction of JROC recommendations, the review should help endorse high-value, high-risk programs early in the process and help prevent costly mistakes later.[253] Furthermore, the JROC receives informed guidance via ad hoc consultations with subject-matter experts from across defense and industry—though one of our interviewees noted that the JROC should seek such input more systematically, particularly on matters requiring specialized technical knowledge.[254] A notable challenge for the JROC, however, is its inability to consider multiple related capability programs together in a more holistic way as the timelines for capability development across FLCs often do not align.[255] Improving the JROC's ability to consider links between programs and projects more holistically would add to its ability to drive greater integration at the portfolio level.

Half of the interviewees commended UCRs as a proven mechanism for acquiring equipment or digital solutions quickly, enabled by a reduced need for extensive scrutiny processes that often delay

[249] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[250] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[251] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[252] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[253] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[254] Subject-matter expert on the United Kingdom, interview with the authors, 2025; Dowse et al., 2024.

[255] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

projects.[256] UORs carried out during the war in Afghanistan and Iraq and the measures adopted to support Ukraine in recent years are testaments that the system can mobilize well in times of crisis and that, more broadly, collaborative relationships between different communities within the MOD and industry are strong when needed.[257] However, the UCR process should not be seen as a panacea for fixing the challenges of the mainstream requirements and acquisition systems. UCRs can easily become myopic and trigger longer-term, pan-DLOD challenges, because wider aspects of capability, such as training, logistics, maintenance, and support requirements, are often insufficiently taken into account in an effort to deploy equipment into theater at the greatest possible speed.[258] It is also worth noting that the UCR process is generally ill-suited for large, complex systems requiring extensive training, maintenance, and infrastructure, as these projects demand thorough planning and integration beyond what UCR timelines and methods can accommodate.[259] It is also important to distinguish, in a more structured way, where speed should be the determining factor for particular capability development—one size does not fit all in this context.

Opportunities for Improvement

Our consultation with experts also made it clear that the requirements process is marked by numerous challenges and thus opportunities for improvement. Some of these are purportedly being tackled as part of the ongoing Defence Reform. Key issues highlighted in our research include (1) the need to rebuild the skill and expertise in DFD, particularly at the early stages of requirements development, (2) the need to deliver on a more constructive engagement with the industrial base during pre-competition stages to identify innovative solutions to defense problems, coupled with less prescriptive requirements-setting, (3) the need to better understand and implement spiral acquisition, including its implications for requirements, and (4) the opportunity that the Defence Reform provides to examine in what cases the multiple layers of committee reviews and approvals are necessary and where there may be opportunities for greater efficiency and speed, avoiding a one-size-fits-all approach for all projects and programs.

Several interviewees cited the loss of knowledge and skills across Defence as a particular challenge in defining requirements, particularly at the early stages of the process.[260] One interviewee observed that, over the past decade or so, the MOD has lost many experienced professionals in future requirements definition fields, hollowing out the capability to systematically consider different future implications for early-stage capability development (e.g., via variation testing, experimentation).[261] Without sufficiently qualified and experienced personnel, the links implicit in DFD that should exist between different parts of Defence have been weakened and need to be rebuilt: For example, more-robust connections are needed between R&D communities; strategy, policy and concepts; and future

[256] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[257] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[258] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[259] Trevor Taylor, "Defence Committee's Report on UK Defence Procurement: A Missed Opportunity," Royal United Services Institute for Defence and Security Studies, August 4, 2023.

[260] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[261] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

capabilities.[262] In a similar vein, two interviewees suggested that Defence staff need training in force development that goes beyond a narrow focus on capability development for each individual command and training in through-life capability management, which genuinely considers capabilities holistically and as they interact with each other.[263] Also, Defence faces the perennial challenge of institutional memory loss, with frequent rotation of staff and the need for staff to cover multiple areas at once (*double-hatting*) without the ability to delve in sufficient depth into any of them. To build up the requisite expertise, it will be important to strategically consider how to recruit, train, and retain personnel to support the requirements process and build up a cadre of career professionals with expertise in requirements-planning.

Most of our interviewees reported a disconnect between the requirement and what is feasible, particularly because of the frequent disconnect between the requirements-setting and delivery communities, but also because of the disconnect with industry. The MOD has made progress in establishing a more open and constructive engagement with the industrial base (including through the 2022 release of the Defence Capability Framework outlining priorities for capability development)[264] and has explicitly recognized the role of defense industry as a "strategic asset" in its own right.[265] However, this has often been through ad hoc engagements, and there are still areas for improvement. Although there are exceptions, collaborating with industry is still often transactional, centered on setting out the right contracts rather than on building trust and strong relationships.[266] The MOD can naturally be anxious about how it engages with industry early in the requirements-setting process, for fear of industry wanting to shape the requirements to its advantage or influencing the competition at later stages.[267] The MOD can also end up inundated with numerous technical solutions to military problems, which can be difficult to assess robustly without firm boundaries of what the requirement is (and is not). However, if industry is kept too much at arm's length, then the requirements-setting process misses out on the opportunity to characterize the art of the possible or to better capture the most-recent technologies and innovative solutions.[268] Navigating this relationship is a balancing act, but it is notable that there are emerging positive examples of engagements with industry to help shape early-stage requirements—for example, through inviting industry to participate at high-level, pre-concept strategic wargaming and testing assumptions (e.g., on stockpiles, supply chains).[269] The newly established Defence Industrial Joint Council as the MOD's key strategic mechanism for engaging a broad defense industrial base also indicates the UK government's ambition to strengthen constructive engagement with industry.[270]

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[262] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[263] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[264] UK MOD, "The Defence Capability Framework," policy paper, July 6, 2022c.

[265] UK Secretary of State for Defence, *Defence and Security Industrial Strategy*, CP 410, March 2021; UK MOD, *Defence Industrial Strategy 2025: Making Defence an Engine for Growth*, last updated September 18, 2025d.

[266] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[267] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[268] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[269] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[270] UK Government, "Defence Industrial Joint Council," webpage, undated.

Relatedly, there are opportunities to improve how requirements are formulated. Several of our interviewees described the requirements process as prescriptive and procedural, with one referring to it as a "box ticking exercise."[271] The rigidity of requirements-setting leaves too little room for subject-matter expertise and limits prospective suppliers' ability to propose alternative or outside-the-box solutions. Several of our interlocutors cautioned that Defence should avoid overspecifying requirements and, instead, provide industry a problem statement at which they can look to propose different solutions.[272]

Additionally, the process of setting, prioritizing, and delivering requirements is characterized by numerous layers of procedures, as described earlier in this chapter. This involves multiple boards, committees, and reviews, which impose significant administrative burdens on those involved in both the requirements-setting and solutions-identification phases, as well as on those participating in the reviews themselves. These procedures also create opportunities for disagreement, potentially slowing down processes that drive toward consensus. Most interlocuters viewed the long duration of the requirements process and the "many layers between the need and the delivery of the need" as a challenge—with one expert likening the complexity of the process to a "Frankensteinian monster."[273] Furthermore, despite the UK's strategic emphasis on embedding acquisition with greater agility, one expert asserted that the requirements-setting process has "no agility."[274] While these numerous steps aim to ensure value for money and broad utility, balancing these with the speed of relevance and efficient use of time and resources is challenging. The ongoing Defence Reform effort presents opportunities to revise these processes to reduce overhead and administrative burden, starting with an assessment of the value added by each step, review, or committee.

In an effort to accelerate the delivery of military capabilities, the MOD began in 2024 to introduce the so-called Integrated Procurement Model (IPM) with a default approach to procurement using "spiral acquisition."[275] This focuses on achieving a Minimum Deployable Capability (MDC)—a functional, operational solution—within three years for digital systems or five years for equipment.[276] The approach should encourage requirements-setting communities to develop initial requirements based on existing market solutions or available technologies, with iterative enhancements developed over time to continuously address the evolving threat.[277] More-recent evolutions of procurement reforms are seeking to embed a "segmented" procurement model, differentiating between timelines and complexity of process for contracting for major modular systems (contracting within two years); modular and spiral upgrades (contracting within one year); and rapid commercial exploitation (contracting within three months).[278]

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[271] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[272] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[273] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[274] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[275] UK MOD, "Spiral Navigation Guide," Knowledge in Defence, 2024c.

[276] UK MOD, "Review: Initial Look Request (ILR) Approval," Knowledge in Defence, 2024b.

[277] UK MOD, 2024b; Louisa Brooke-Holland, *Defence Procurement: Challenges and Reform*, House of Commons Library, 2024.

[278] UK MOD, 2025c.

Although the terminology has evolved, the idea of incremental capability development has been around since the Smart Acquisition reforms of the late 1990s and early 2000s. While spiral acquisition should enable more iterative requirements evolution that is faster and more current, its implementation requires the right incentives and decisions to be made to be effective. In the past, those requirements outlined for a 60-percent solution (that would eventually spiral to 80 percent and then to 100 percent) would risk not being fully funded throughout the spirals, disincentivizing requirements communities from adopting the spiral approach, in the fear of receiving a capability that does not meet their needs and that they may not be funded to upgrade.[279] Securing approvals throughout the requirements process has also proven more difficult with a solution that can be perceived as less mature, even if that is so by default.[280]

Finally, three of our interviewees noted that spiral acquisition should not be seen as the right approach for all capabilities, as there are capabilities for which an 80-percent solution is nowhere near good enough.[281] Consequently, where spiral acquisition is pursued, it will be necessary to set up the right incentives and structures that enable the benefits of spiral acquisition to materialize, including secure funding and review and approval processes that enable appropriate examination of less mature solutions. The requirements community will also need training and tools to appropriately develop requirements for each spiral, as well as their wider pan-DLOD implications, cost, time, and performance.[282]

How Can the United States' Requirements Process Better Align with the UK's Process to Ensure Integration and Interoperability?

- As the UK and the United States undergo their respective reforms of the requirements process, there are opportunities to **share the lessons** from the UK's ongoing Defence Reform with the U.S. Department of War—for example, through the forums of the International Joint Requirements Oversight Council (I-JROC), the Australia–United Kingdom–United States Partnership (AUKUS), or other extant bilateral avenues.
- The **I-JROC also represents the most appropriate avenue** through which the United States and the UK can **better align requirements and enhance interoperability**. Although the establishment of the I-JROC in 2023 coincided with the commencement of AUKUS, its mandate extends beyond the trilateral partnership, and it can potentially incorporate a wide range of capability programs or invite additional members. The I-JROC is designed to support joint and combined warfighting concepts through pursuit of interoperability and interchangeability and is explicitly geared to focus technology development on capabilities that are most needed to respond to emerging threats (starting with those pursued under AUKUS Pillar II). The I-JROC has concrete potential to drive greater coherence between requirements

[279] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[280] Subject-matter expert on the United Kingdom, interview with the authors, 2024.

[281] Subject-matter experts on the United Kingdom, interviews with the authors, 2024.

[282] U.S. Department of Defense, 2025b, pp. 174–175.

set by the three allies (and potentially beyond), as well as better consideration of wider capability implications (e.g., for training or infrastructure) of major programs.

- In addition, the UK's **UCR process** and the lessons from Operation Scorpius (expedited provision of military aid to Ukraine) offer valuable insights for identifying key factors enabling greater speed. These include, for example, timely and effective interaction between different DFD communities (e.g., scientific, concepts, capability development) and greater risk tolerance. However, it is important to distinguish where greater speed is desirable from where it can drive perverse incentives and result in worse outcomes (e.g., suboptimal performance, excessive cost, safety risks, risks to security of supply, or interoperability issues).
- Effective requirements processes should rely on **constructive engagement and collaboration with defense suppliers and the science and technology community** to drive more-realistic requirements and more-innovative solutions. This involves a requirements-setting process that is oriented toward solving military problems rather than prescribing concrete solutions, providing space for prospective suppliers to offer innovative concepts and technologies. Both the UK and U.S. systems will require a degree of transformation to align incentives, culture, and information-sharing in ways that facilitate problem-focused (rather than overspecified) requirements-setting.
- Access to a s**ufficiently qualified, well-trained, and experienced workforce** is also fundamental to ensuring greater effectiveness of requirements-planning. This includes targeted education and training on defense force development, as well as structures that facilitate better requirements-setting and drive greater coherence.[283]

[283] U.S. Department of Defense, 2025b, p. 175.

Chapter 6

Conclusions

Amid the large-scale transformation happening within the United States', allies,' and adversaries' acquisition and requirements systems, we have provided a snapshot in time of how China, Russia, Australia, and the UK validate and prioritize defense requirements; how these requirements decisions influence budget and acquisition decisions; and how these systems compare with the U.S. requirements system. These case studies offer some practices for the U.S. Department of War (DOW) to leverage and also ways to outpace adversaries and align better with close allies to improve integration and interoperability.

China's Defense Requirements Process

For the past three decades, China has continued to pursue military modernization, leveraging its strong manufacturing base with an influx of new technologies and the ability to access civilian research entities. Although it is difficult, from public reporting, to gain a complete picture of the processes China uses to determine the requirements for its acquired systems—a stark contrast to the openness of the U.S. processes—we have pieced together a narrative from open-source documents that provides an overview of similarities to and differences from the U.S. system.[284]

Key takeaways include the following:

- The steps in China's acquisition processes are very similar to U.S. processes. However, the access the PLA has to China's entire innovation ecosystem is the key to China's ability to plan strategically and sustain funding over time, allowing China to streamline some processes and accelerate others.
- Manufacturing capacity across a wide variety of technologies and systems gives China a deep bench from which to draw, as well as surge capabilities.
- New PLA policies are focused on integrating developers with the warfighter to improve quality and deliver the tools the warfighter needs. These policies are supported by changes to the Equipment Development Department; State Administration for Science, Technology and Industry for the National Defense; and Ministry of Science and Technology.[285]

[284] Curriden, 2023.

[285] Ming Cheung, 2023; U.S. Department of Defense, 2025b, p. 161.

Russia's Defense Requirements Process

The current Russian military requirements process has been heavily influenced by historical practices of the Soviet Union but has had to adjust to the war in Ukraine and other recent involvements.

Military requirements development is centralized within the Russian Ministry of Defense (MoD); planners consider ongoing military-technical research, costs and economics, personnel and management science, and industrial capacity when developing requirements for ten-year modernization and procurement programs. Requirements specialists focus not on specific branches of the Russian Armed Forces per se but rather on the overall capabilities of the Armed Forces and the challenges inherent in integrating new military technologies, such as hypersonic weapons, to replace or bolster existing capabilities.

The war in Ukraine has accelerated the pace and prioritization of all military processes, including the recruitment of soldiers, the procurement of equipment, and the adoption of newer, commercial technologies. Planning has shifted to focusing only on the near term; the future is obfuscated by the war. It is difficult to ascertain from open sources which aspects of processes have been abandoned outright, paused, modified, or are still operating on a prewar basis, but some conclusions can be drawn.

Key takeaways include the following:

- Requirements are developed via a centralized process within the Russian MoD at the 46th Central Scientific-Research Institute (46th TsNII), which is a combined think tank, requirements shop, military science and technology (S&T) research outfit, and educational institution.
- The 46th TsNII works closely with other S&T and research and development (R&D) institutions to develop program options from requirements for MoD capabilities across the Russian Armed Forces for selection in the ten-year State Armaments Program (SAP) and to develop the funding needed via an annual State Defense Order (SDO).
- Requirements development considers a forecast of threats to Russian national security, the pace of scientific and technological change in Russia, the level of available fundamental and prospective military technologies, and the scientific readiness levels of prospective military technologies currently being developed.
- While requirements are developed at the 46th TsNII, the MoD does not alone dictate procurement and acquisitions: Funding and resources are agreed on by the president, his security council, the defense industry, economic ministries, and the Federal Assembly via passage of the Russian Federal Budget.
- The war in Ukraine has contributed to Russia's ability to shortcut the validation process and the adoption of foreign, commercial, and dual-use military technologies.
- While many elements of Russia's traditional requirements process will likely continue after the war in Ukraine ends and reconstitution begins, Russia has undoubtedly learned to be more

flexible in the development of requirements and the adoption of capabilities. A true test may be whether it cancels programs after the war ends that did not meet requirements.[286]

Australia's Defense Requirements Process

Australia's requirements processes are defined under the One Defence Capability System (ODCS), a key feature of which is centralized planning: Australia's ODCS is a set of processes across the capability life cycle that is intended to ensure that capability decisions optimize capability outcomes within resource limitations.

With an increase in schedule failures and delays inconsistent with the imperative for greater urgency in its military modernization, Australia has redesigned its requirements development process.[287] Key features of this redesign include the following:

- There is greater emphasis on centralized prioritization of the investment program, led by the Vice Chief of the Defence Force as the appointed Joint Force Authority.
- Priorities are driven by a shift in strategic direction from a balanced force to a more urgent acquisition of capabilities focused on the most significant risks.
- Capability managers (primarily service chiefs) are consulted in central prioritization and then lead capability realization planning for the progression of projects (and supporting planning of fundamental inputs to capability) through requirements and into service.
- The requirements undergo a one- or two-pass approval process in which proposals are scrutinized for value, money, options analysis, and risks.
- The ODCS reforms emphasize speed to capability, by pursuit of minimum viable capabilities, discouragement of requirements "tinkering," and prioritization of off-the-shelf acquisitions—thus enabling the rapid procurement of urgent capabilities.[288]

The United Kingdom's Defense Requirements Process

The return of war to the European continent with the full-scale Russian invasion of Ukraine in February 2022 prompted the UK Ministry of Defence (MoD) to reexamine its requirements and acquisition processes. In 2023, the Public Accounts Committee in Parliament issued recommendations for improvements in defense requirements-setting and acquisition to improve speed, resilience, and efficiency. As of April 1, 2025, the MoD has embarked on the implementation of what is touted as the biggest reform of UK defense in 50 years, referred to as the *Defence Reform*.[289]

Against the background of the MoD's ongoing and incomplete transformation, this case study describes the requirements-planning process as it existed prior to April 1, 2025, and principally

[286] U.S. Department of Defense, 2025b, pp. 164–165.

[287] Australian Department of Defence, 2025a.

[288] U.S. Department of Defense, 2025b, pp. 168–169.

[289] UK MOD, 2025b.

focuses on identifying key strengths and weaknesses that may have relevant lessons for DOW as it undertakes its own reform of requirements planning.

Key takeaways include the following:

- In 2023, Parliament's Public Accounts Committee recommended improvements in requirements and acquisition to increase speed, resilience, and efficiency.
- The Defence Reform shifts the balance of responsibility for the MoD's planning, programming, budgeting, and execution (PPBE)–like processes from individual services toward a centralized model.
- The U.S. and UK requirements processes experience similar challenges: persistent back and forth between greater centralization and more devolution.
- Both nations have similar ad hoc or crisis-driven requirements processes. For the UK, many lessons are coming from the use of Urgent Capability Requirements (UCRs) and the provision of military aid to Ukraine.[290]

Overall Practices That the U.S. Department of War Could Leverage

DOW should consider the following potential practices from these countries as it shifts to implementation of its requirements system modernization:

- The PLA has access to China's entire innovation ecosystem (albeit via different mechanisms from the United States), which helps with its strategic planning, requirements determination, and funding considerations. DOW needs that same knowledge of current innovation, connectedness, and understanding how innovation can be applied to military purposes within the United States, while also expanding to understanding allies' innovation ecosystems in support of the 2025 National Security Strategy's goal of security through strength.
- The war in Ukraine has forced Russia to come to a reckoning regarding its prior Soviet-era requirements and acquisition practices. Russia has exhibited some ability to shortcut the validation process and pursue adoption of foreign, commercial, and dual-use military technologies. There is an expectation that any future conflicts will require these same principles no matter where they happen globally. DOW has been tracking the war in Ukraine and what that will mean for the speed of its own processes and the need to continuously innovate and integrate new solutions to key operational problems.
- Australia's recent ODCS reforms emphasize speed to capability and prioritize off-the-shelf acquisitions, enabling the rapid procurement of urgent capabilities. DOW's requirements modernization must include these same principles. These were part of the conclusions of the Section 811 report and have been recently communicated to DOW and industry in Secretary of War Hegseth's Acquisition Transformation Strategy.

[290] U.S. Department of Defense, 2025b, p. 172.

- As the UK and the United States undergo their respective reforms of the requirements process, there are opportunities to share the lessons from the UK's ongoing Defence Reform with DOW—for example, through the forums of the International Joint Requirements Oversight Council (I-JROC), the Australia–United Kingdom–United States Partnership (AUKUS), or other extant bilateral avenues. The I-JROC also represents the most appropriate avenue through which the United States and the UK can better align requirements and enhance interoperability. In addition, the UK's UCR process and the lessons from Operation Scorpius offer valuable insights for identifying key factors enabling greater speed.

Abbreviations

46th TsNII	46th Central Scientific-Research Institute
ADF	Australian Defence Force
AI	artificial intelligence
ANAO	Australian National Audit Office
ASCA	Advanced Strategic Capabilities Accelerator
AUKUS	Australia, United Kingdom, and United States
CCP	Chinese Communist Party
CDG	Capability Development Group
CM	capability manager
CMC	Central Military Commission
COTS	commercial off-the-shelf
CPG	Capability Planning Group
CSTC	Central Science and Technology Commission
DE&S	Defence Equipment and Support
DFD	Defence Force Development
DLOD	Defence Line of Development
DNO	Defence Nuclear Organisation
DOTmLPF-P	doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy
DOW	U.S. Department of War
DSD	Defence Strategic Direction
EDD	Equipment Development Department
EW	electronic warfare
FIC	fundamental inputs to capability
FLC	Front Line Command
ICA	Integrated Capability Assessment
IIP	Integrated Investment Program
I-JROC	International Joint Requirements Oversight Council
JCIDS	Joint Capabilities Integration and Development System
JROC	Joint Requirements Oversight Council (United States); Joint Requirements Oversight Committee (UK)
KT/A	key technology or achievement
MC	military collaboration
MIIT	Ministry of Industry and Information Technology (China)

MOD	Ministry of Defence (UK)
MoD	Ministry of Defense (Russia)
MOST	Ministry of Science and Technology
MVC	minimum viable capability
NAO	National Audit Office
NDAA	National Defense Authorization Act
NDS	National Defence Strategy
NSS	National Security Strategy
NSSTF	National Strategic Science and Technology Force
ODCS	One Defence Capability System
PLA	People's Liberation Army
PPBE	planning, programming, budgeting, and execution
PRC	People's Republic of China
R&D	research and development
RA	rapid acquisition
RDA	research, development, and acquisition
S&T	science and technology
SAP	State Armaments Program
SASTIND	State Administration for Science, Technology, and Industry for National Defense
SDO	State Defense Order
SDR	Strategic Defence Review
SDSR	Strategic Defence and Security Review
SOC	Strategic Outline Case
SOE	state-owned enterprise
SRO	Senior Responsible Owner
TLB	top-level budget
TRL	technology readiness level
UAV	unmanned aerial vehicle
UCR	Urgent Capability Requirement
UK	United Kingdom
UKStratCom	UK Strategic Command
UOP	urgent operational procurement
UOR	Urgent Operational Requirement
URD	User Requirements Document
US$	U.S. dollars
VCDF	Vice Chief of the Defence Force
VPK	Military-Industrial Commission (Voeynno Promyshlennaya Komissiya)

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ANAO—*See* Australian National Audit Office.

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U.S. leadership has directed sweeping acquisition reform to address the mismatch between the Department of War's (DOW's) requirements system and evolving technology, emerging threats, and the speed needed to provide capabilities to operational forces. U.S. allies and adversaries are facing similar pressures, and their experiences in formulating defense requirements may suggest useful approaches for DOW to consider. The authors of this report examine the defense requirements processes of China, Russia, Australia, and the United Kingdom to better understand these systems, draw comparisons, and leverage potential practices for DOW.

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