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ACCELERATING AUKUS INNOVATION EFFORTS: LESSONS LEARNED FROM NATO COLLABORATIVE STRATEGIES

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INTRODUCTION

In June, experts across government, industry, and academia gathered at the University of Oxford to consider paths to advance AUKUS, the Australia, United Kingdom (U.K.) and United States (U.S.) trilateral partnership. Participants from all three partner nations' public and private sectors focused their discussions on mechanisms for harnessing investment into activities and initiatives that would collectively enhance AUKUS Pillar II priorities, most notably the development of innovative capabilities. Panelists also discussed key barriers and frictions to capital flows, such as defense trade controls and information sharing restrictions between governments and across public and private sectors that are collectively impeding collaboration and limiting start-up formation and growth.

This paper highlights three key themes that emerged from the conference: how public and private attention and efforts can be more focused, the need to continuously break down barriers between countries and sectors, and how to drive integration of public and private capital flows. This paper also explores how AUKUS parties can enhance trilateral innovation ecosystem pathways through learning from and/or adapting current NATO innovation efforts, in particular NATO's Innovation Fund (NIF) and NATO's Defence Innovation Accelerator for the North Atlantic (DIANA).

Key Themes

Theme One: Focusing Attention and Effort

Across the three nations, there are numerous innovation and investment efforts, projects, and entities in both the public and private sectors. These efforts can achieve more substantial impact by cohering their respective resources and attention, which can be fostered through a shared sense of purpose and urgency and specificity on gaps and requirements. A previous successful example of the public and private sector rapidly joining forces was in the effort to fight the proliferation of improvised explosive devices (IED) in war zones, where both sides achieved operational urgency through adopting a "warlike" pace and mindset.[2] The solutions developed to address the changing IED threat were developed quickly because governments had sufficiently defined the problem and provided consistent and clear demand signals. A specific problem statement enables the application to combine ideas, approaches, and technology to develop an innovative solution. Below are specific recommendations for enhanced cohesion.

- Government agencies should collaboratively develop priorities for target technologies and define a shared vision of success—including providing more specific technological requirements beyond lists of critical technologies and procurement priorities.
    - Build on lessons learned from various challenge-based approaches to technology development. For example, NATO DIANA, the U.S.'s Defense Innovation Unit, Australia's Advanced Strategic Capabilities Accelerator, the U.K.'s Defence and Security Accelerator, and others all play a role in highlighting critical technology gaps and mission requirements.
    - Leverage existing challenge platforms from the above examples but focus on AUKUS-specific competitions.
- Consider building a system that jointly develops specific requests for proposals and delivers consistent and clear demand signals to the private sector—including technologists and private equity. Deal flow among AUKUS entities will allow for greater investments into urgent gaps and can help stave off adversarial investment attempts.
- Ensure the existence of sizable, non-committed defense and security funding through the defense planning process and wider civilian budgets (federal and regional), both on yearly and multi-annual cycles, to create a coherent and quantifiable public sector market for rapid adoption and to corroborate with speedy and reformed procurement cycles.

AUKUS is a trilateral security partnership established in 2021.[1] Its intent is to strengthen existing alliances and deepen the integration of U.S., Australian, and U.K. militaries to increase deterrence in an increasingly contentious global order, and to support a combined training, interoperability, and deployment of military capabilities.[1] The premise is that only by coming together and sharing technology and integrating our industrial base can we more effectively compete and prevail in a fight against emerging and persisting threats. Within the AUKUS framework, Pillar I focuses on building conventionally powered nuclear submarines using the combined expertise of AUKUS partners. The second pillar centers on accelerating critical technologies to quickly become shared advanced capabilities. Pillar II will succeed if all parties—the start-up ventures and researchers developing new technology, the end users with critical mission requirements, the defense industrial base, and the holders of private capital—can connect and work together with the government at the pace of relevance to meet significant global threats.

- Develop agreed-upon systems for sharing information from government to the private sector (including start-ups), while balancing due security concerns. Enhanced information exchange between the public sector and industry drives impact through technology innovation and private capital infusion to achieve AUKUS Pillar II requirements.

Theme Two: Breaking Down Barriers and Reducing Frictions

With or without formal investment vehicles, it is essential to support the flows of investment into start-ups and growth-scale ventures in the countries that are supporting the goals of the AUKUS agreement. This is especially significant as engagement within an AUKUS framework has the potential to attract larger markets (in all three nations) while at the same time enhancing interoperability. Specific recommended actions include:

- Finalize the International Traffic in Arms Regulations (ITAR) and defense trade controls reform efforts to support AUKUS members. Ensure ITAR reforms allow not only easy export of mature technologies but also trilateral co-development of early-stage products and services and seamless testing and demonstrations to support rapid adoption and near real-time crisis response.
- Enhance the potential for AUKUS to effectively become a free trade agreement for defense materials, thus enabling allies to achieve interoperable and interchangeable systems and solutions.
- Employ co-production and co-sustainment as a key pathway to maximize asymmetric national security advantages for AUKUS—for example, to ensure continuous production lines for shared AUKUS systems, such as submarines.
- Enable the mobility of the collective talent pool to support the AUKUS trilateral ecosystem through a specific visa mechanism that allows for the movement of trained individuals with unique skill sets that support AUKUS Pillar I and II growth to move between the three nations.
- Limit the barriers to the flow of private capital between countries to harness start-up ventures by allowing for more seamless investment security, including with a formal certification from one government on "strategically aligned" private investors to be accepted by another.
- Use trilateral government resourcing to achieve AUKUS policy and guidance, including information sharing for holistic situational awareness.
- Achieve a common operating picture that includes technology maps, resources, relevant companies, risk areas (including supply chain), and available capital from strategically aligned entities.
- Mitigate supply chain risks by engaging with strategically aligned industrial and private capital investors to identify alternatives that make end products fit for adoption by defense and security customers.

Theme Three: Driving Integration of Public and Private Capital Flows

The challenges associated with funding ventures that start, grow, and scale the critical technologies that support capabilities for AUKUS highlight the need to increase the flow of capital into all stages in all three countries. While a range of economy-wide approaches are required to solve these issues more generally, there are specific actions that can be taken to support capital flows into the defense sector and into critical technologies across AUKUS.

- Government investment arms should be more effectively integrated and coordinated with each other and with the private sector at all stages—i.e., from research and development, through early-stage venture capital, to growth venture capital, and through to project financing—learning from the Office of Strategic Capital (OSC) and In-Q-Tel (IQT) in the U.S. and the National Security Strategic Investment Fund (NSSIF) in the U.K.
    - Specifically, OSC is the capital arm within the Department of Defense that seeks to develop, integrate, and implement partnered capital programs to attract and scale private capital investment to meet national security objectives. It is modeled after NSSIF and used in partnership with allies. As one example, OSC and the Small Business Administration launched a joint venture, the Small Business Investment Company (SBIC) Critical Technologies Initiative to provide capital to SBIC fund managers and encourage private sector investment.
    - IQT is a separate not-for-profit entity, which receives government funding on an annual basis with a mandate to make equity-like investments and to undertake work programs.
    - In contrast, NSSIF is a government program wholly configured inside governmental structures with a dual reporting line into national security and the British Business Bank. Like IQT, NSSIF undertakes work programs and equity positions in areas where there is clear demand from across national security, defense, and other government customers. Cooperation between these entities has been strong and provides the foundations for wider conversations on capital flows.
- Government-led fund of fund (FoF) activities allow countries the opportunity to promote their own capital markets in areas of particular interest. For example, NSSIF has made more than a dozen such investments. In doing so, the U.K. government is strengthening its capital markets. This approach also allows the government to certify that FoF recipients are "trusted" by combining investment with commitments regarding the character of other limited partners in the fund. The NIF follows a similar approach. An AUKUS-led FoF program could focus on supporting venture funds that support defense, security, and resilience grounded in critical technologies.
- Leveraging capital beyond equity, or work programs, allows for the construction of contractual pathways that enable firms to scale their critical technologies. Contract pathways, as noted above, are particularly important for start-ups and subject matter experts, who can easily struggle with securing trusted funding as they move through the technology readiness level (TRL) process. Beyond contracts, it is helpful to consider the role of debt instruments such as loans to build out supply chains and manufacturing facilities. The potential to share debt financing across all three AUKUS countries is worth exploring in more detail.
- While public funding of private markets through sovereign-backed financial instruments including direct investments, FoF investments, and debt financing create a positive signal and entice a positive crowd-in effect, more can be done to fully leverage sovereign instruments.
- Aligned capital communities can allow for protection from adversarial influence and can include processes that provide efficient and effective vetting to safeguard against third party investments of concern. This requires

agreement on standards for acceptable risk and processes to allow for the creation of these communities where they are bound not simply by a desire to pursue common goals, but by a shared approach to trust and intent.

NATO INNOVATION EFFORTS

Acceleration

Connections are essential to moving these technologies and companies along the TRL to ensure they can transition to capabilities. Accelerators and test centers in the U.S., U.K., and Australia, managed by either government or private entities, can help with this process, particularly if "meta-accelerators" can help connect all the necessary parties as needed in a flexible manner. AUKUS parties can benefit from learning about established examples of meta-accelerators like NATO DIANA.[3] Each AUKUS nation has organizations that rapidly identify, develop, and/or integrate new technologies into the defense ecosystem that could be further integrated with one another.

In 2021, NATO leadership realized that they were not fully accessing the innovation available to the collective alliance from academia and industry. In response, they leveraged the existing partnerships across the NATO Alliance and established an independent body that could better access, mature, and field capabilities using an accelerator construct and test institutions across the alliance. This became NATO DIANA. DIANA's goal is to enhance and accelerate transatlantic cooperation on critical technologies and help NATO work more closely with—and build a network around—government end users, relevant private sector entities, academia, and other non-governmental entities. DIANA has a network of more than 200 innovators, accelerators, and test centers[4] in member nations. Each has been affiliated with DIANA to help the innovators advance their technologies, evolve their business models, and identify future customers and funders. Outreach days in Europe and North America brought together 200-300 participants at each, including innovators, end users, industry, and investors. The magnitude of interest expressed in the form of authentic engagement in this nascent community speaks volumes to the need it fulfills and perhaps indicates the pent-up demand for this type of construct. The meta-accelerator construct is, in essence, DIANA connecting related but disparate parties, ultimately hosting this connection on a novel platform that allows enhanced and secure information sharing and virtual training and connection opportunities.

The fundamental elements of the NATO DIANA model are:

1. Focusing on specific dual-use technologies (i.e., technologies that are well-placed to achieve sustainable commercial, civilian market revenue levels, but may also have defense and security applications).
2. Linking up existing and nascent accelerator and test sites in strategic partnership with academia and industry.
3. Working off-ramp fielding options to initiate joint development and procurement efforts or individual country acquisition programs.

Investment

The NIF is the first multi-sovereign capital fund and offers a model for AUKUS. It is a stand-alone venture capital fund backed by 24 NATO allies investing more than one billion euros over 10 years. These allies are focusing on dual-use deep tech and designing in interoperability from the beginning. NATO founded the NIF and DIANA as part of its NATO 2030 initiative to transform how start-ups bolster defense, security, and resilience in nations

and businesses across the alliance. To enable the growth of innovators at every stage, the NIF is also backing venture capital fund managers who invest in early-stage deep tech with a focus on civilian, defense, security, and resilience markets. Backing these funds will help grow capacity in regions where funding is in high demand to support the next generation of deep tech unicorns. The NIF has so far funded four start-ups, including a NATO DIANA start-up company.[5]

NATO DIANA, in coordination with the NIF, is establishing an Allied Capital Community (ACC), which could potentially be adapted for AUKUS capability areas. The ACC brings together a network of private investors across venture capital and private equity with shared values and common goals to identify, amplify, and scale dual-use innovations. The ACC core community will be comprised of the NIF and other state-owned dual-use investment funds and those venture capital funds that receive investment from them. The investors have access to DIANA's growing pipeline of deep tech innovators developing products that solve strategic problems across the Alliance and are removing barriers to rapid investments in national security. The ACC has the potential to unlock global private capital for critical technologies and ensure NATO innovation efforts can be sustainable and successful.

Both DIANA and the NIF provide valuable lessons learned, both positive and negative, on joint innovation efforts for AUKUS acceleration. Coupling these NATO lessons learned with specific recommendations stemming from a series of trilateral discussions could support AUKUS innovation acceleration efforts.

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