



NORTH ATLANTIC TREATY ORGANIZATION SCIENCE & TECHNOLOGY ORGANIZATION

Technical Activity Proposal

Scientific and Technical Committee (STC)	SAS	Activity Title A Research Roadmap To Determine Nato-wide Gaps And Synergies In The Broader Defence And Technological Industrial Base	
Reference Number	SAS-220		
Activity Type	Research Task Group	Cross-Committee	
STC Approval Date 12 Jun 2026	Board Approval Date	Activity Start Date 01 Sep 2026	Activity End Date 01 Sep 2029
Related Activity			
Projected Meeting Locations		Virtual meetings starting in September 2026, in-person meetings TBD	
Lead Nations		United States, Romania	
Team Leaders		DUPUY, Arnold (Dr.), RAICU, Gabriel (Assoc. Prof. Dr.)	
STC Mentor		HOFFMAN, Douglas (Mr.)	
Nations/Orgs. Invited to Participate			
Non-NATO Nations/Orgs. Invited to Participate		STEP	
Non-NATO Nations Justification			
Nations/Orgs. Committed to Participate		Finland, United States, United Kingdom, NCIA - NATO Communication Information Agency, ACT - Allied Command Transformation	
Security Classification Level of the Activity		NATO Unclassified (NU)	
Keywords		critical mineral acquisition processing, Defence and Technological Industrial Base, legislation investment analysis, operations research and industrial security policy, strategic resilience, supply chain, supply chain analysis	
Field Trials and Cooperative Demonstrations of Technology Planned			
NATO and National Resources Required		All participating Nations will need to provide subject matter experts who have time and budget to contribute and attend	

	meetings. Support from NATO CSO requested to facilitate the team's kick-off meeting, set-up virtual co-ordination meetings (Teams) and routes to collaborate (e.g. file shares etc.).
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Background

In the last decade the world has endured a variety of geopolitical shocks, ranging from Covid-19, wars in Ukraine and the Middle East, environmental disasters and rising tensions in Africa and East Asia. These events have exposed significant gaps in the global supply chain and industrial capacities in many nations' defense and technological industrial bases (DTIB), that which comprises the enterprises and institutions that provide the materials, products, and services vital to national defense. More specifically, it has become clear the NATO Member and Partner DTIBs, lack the capabilities and capacity to deter and prevail against a near peer adversary. This has recently been made apparent by challenges in accessing strategic minerals and critical technologies used in modern weapons systems. Indeed, a protracted conflict, across multiple domains and geographic theaters, would require much greater capacity to fund, produce, maintain and replenish weapons and munitions. In other words, the Members must maximize speed, scale, and sustainment across the DTIB.

The changing geopolitical and economic environments now finds the Alliance challenged to innovate and deploy higher-capability platforms, software, and munitions; and develop new operational concepts to effectively employ them. The private sector's portion of defense production, the backbone of the industrial base, has consolidated over the last thirty years, and lacks surge capacity. These uncertainties require greater scrutiny of this multi-faceted and complex problem, and begs an overarching research question: "How well positioned is NATO's DTIB in its ability to mobilize in the event of a major conflict?"

In late 2024, an Exploratory Team (ET) was authorized to analyze this vital question and develop a high-level roadmap to pave the way for broader and deeper analysis. Therefore, the primary goal of the ET is to identify gaps and synergies in the Member States's DTIB, outline general course of action and engender greater engagement cooperation among NATO Members and partners. This demands a comprehensive approach to identify industrial base risk, address vulnerabilities, enhance resilience and deliver greater capabilities to the Warfighter.

Activity to be transferred to SAC.

Military Relevance

A DTIB that is innovative, resilient and capable of producing and deploying a variety of systems and munitions, will positively impact Member State readiness, deterrence and Warfighter survivability. This creates a need to understand the industrial capabilities on defense-related procurement, production and surge capacity and supply chain vulnerabilities, particularly in the areas of munitions, critical technologies and strategic minerals. Moreover, there is the need to address the impact of information technology, to include cyber security and artificial intelligence as a component of the DTIB. Another area of relevance is workforce development and education and training support. Finally, there is the need to inform investment allocation and provide decision support to NATO's civilian and military leadership

Scientific Objectives

The objective of this research technical group (RTG) is to establish a roadmap that will provide decision support to NATO and partner civilian, military and private sector stakeholders into the 21st Century. The team will initially conduct an analysis of the legislation, policy papers and implementation directives/guidelines, which will determine the current geopolitical environment, concentrating on short-, mid-, and long-term priorities and positions. This RTG will also identify gaps and commonalities between Members. Additionally, it is expected this body of knowledge will lead to

a better overview of Member State organizational efforts and determine NATO's readiness and deterrent posture.

Expected Achievements

Expected Achievements of this RTG are to:

1. **Develop a repository of legislation, strategic guidance and broader authorities.**
2. Identify actors/stakeholders of relevance (selected nations, supranational institutions) for outreach and engagement
3. Generate a final summary report containing

- o A gap analysis
- o Case studies of selected NATO and Partner nations
- o Initial findings on the key DTIB functions:

Acquisition and Lifecycle Sustainment

- Emphasis on Strategic Minerals and Rare Earth Elements

Planning and Distribution (Supply Chain)

- Explore supply chain modeling and transparency tools

Information Technology

- Cyber security
- Artificial Intelligence (AI)

Training and Education

- Emphasis on workforce development

Scientific Topics to be Covered

1. Strategic Guidance and Authorities: To establish the analytic foundation for this roadmap, it is necessary to identify, catalogue and analyze the legislation, guidance and strategic direction in the NATO Member States' DTIB.
 - a. The team will research NATO directives and guidance, as well as Member State government legislation, guidance and programs
 - i. This includes European Union guidance and select NATO partner states
2. Concurrent with the analysis of Strategic Guidance and Authorities, the RTG will conduct research and analysis into the following key DTIB functions:
 - a. Acquisition and Lifecycle Sustainment
 - i. Emphasis on Strategic Minerals and Rare Earth Elements
 - b. Planning and Distribution (Supply Chain)
 - i. Exploration of supply chain modeling and transparency tools

c. Information Technology

i. Cyber security

ii. Artificial Intelligence (AI)

d. Training and Education

i. Emphasis on workforce development

3. Explore the impacts of geopolitical, economic, and technological tensions on the NATO and Partner DTIB enterprise

a. Make preliminary assessments of gaps and synergies in the global DTIB supply chain

b. Determine surge capacity within the broader DTIB

c. Compare the DTIB of select Allies, partners and potential adversaries

i. Conduct case study analyses of select Member and partner nations

1. Specific analyses TBD

ii. Case study on the Ukraine war and its impact on NATO DTIB

4. Identify and cultivate NATO, Partner and private sector stakeholders for the purposes of consultation and advice

Synergies and Complementaries

A key element of this process will be to conduct outreach to individual nations and partners, to include security and defense-related organizations. As part of the outreach effort, the RTG team will continue to engage with the NATO Investment Division (NID). Moreover, the RTG team will engage with the Conference of National Armaments Directors (CNAD) and the NATO Industrial Advisory Group (NIAG), to analyze the challenges associated with increased or surge production needs. The RTG team will also research and engage with the European Union's efforts to streamline effort and limit redundancies.

Within 30 days of project approval, the RTG will begin regularly occurring online and in-person meetings of stakeholders and interested parties. Additionally, within 90 days of approval, the key functional teams will be identified and staffed.

Exploitation and Impact

The anticipated audience for this project ranges from NATO officials, Member States' civilian and military leadership, academics, private sector decision-makers, industry leaders, and security analysts. It can be expected there will be interest from the European Union, as well as non-NATO partners around the world.

The RTG will collaborate with the CSO, NID and other relevant entities to leverage media outlets to articulate and disseminate this analysis as widely as possible. We will also utilize the network available within NATO and its partners to reach as wide an audience as possible. This will be to recruit a diverse body of subject matter experts and stakeholders, as well as to inform NATO and partner leaders and decision makers. A formal report and searchable database will be developed for this RTG to better inform NATO leadership and stakeholders about existing legislation and guidance.

The RTG team envisions one conference dedicated to the collection and analysis of NATO Member State and partner legislation and strategic guidance, either online or in-person. These events will bring

together industry experts and legislative Members to facilitate public-private partnership when developing legislative guidance. Additionally, it is anticipated that RTG members will submit papers for publication to professional journals, with the goal creating intellectual capital to be disseminated to a wider audience