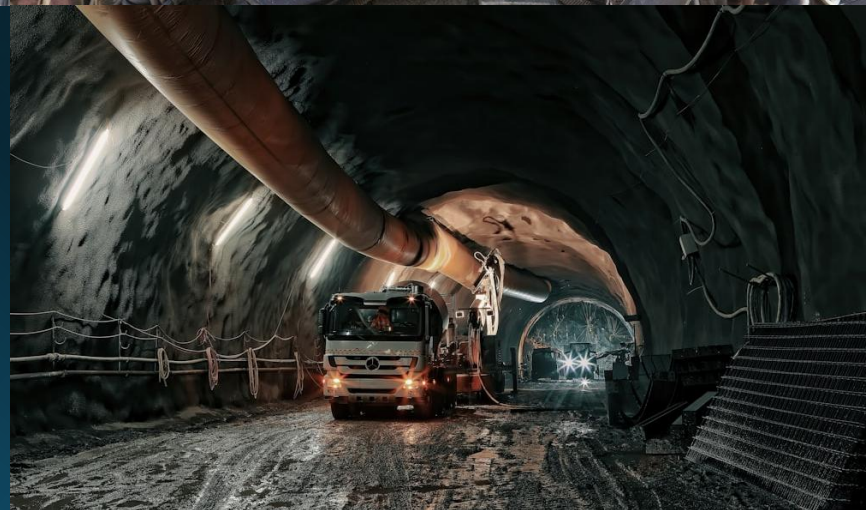
Centre of Excellence

Security of Supply




SECURITY OF SUPPLY
CENTRE OF EXCELLENCE


SECURITY OF SUPPLY
CENTRE OF EXCELLENCE
KARLSKOGA
KOMMUN

Swedish ecosystem – critical stakeholders

FMV

FÖRSVARSMAKTEN

SAAB

BAE SYSTEMS

BOFORS

FOI


TRAFICOM
Finnish Transport and Communications Agency


[dstl]
The Science Inside


NATO ENERGY SECURITY
CENTRE OF EXCELLENCE


NSPA
NATO SUPPORT AND PROCUREMENT AGENCY


BUNDESWEHR


NATO
OTAN
Science & Technology
Organization


VTT


DIANA


NATIONAL DEFENSE UNIVERSITY


MITRE


MINISTÈRE
DES ARMÉES
Liberté
Égalité
Fraternité


Huoltovarmuuskeskus
Försörjningsberedskapscentralen
National Emergency Supply Agency


vti


UNITED STATES
ARMY

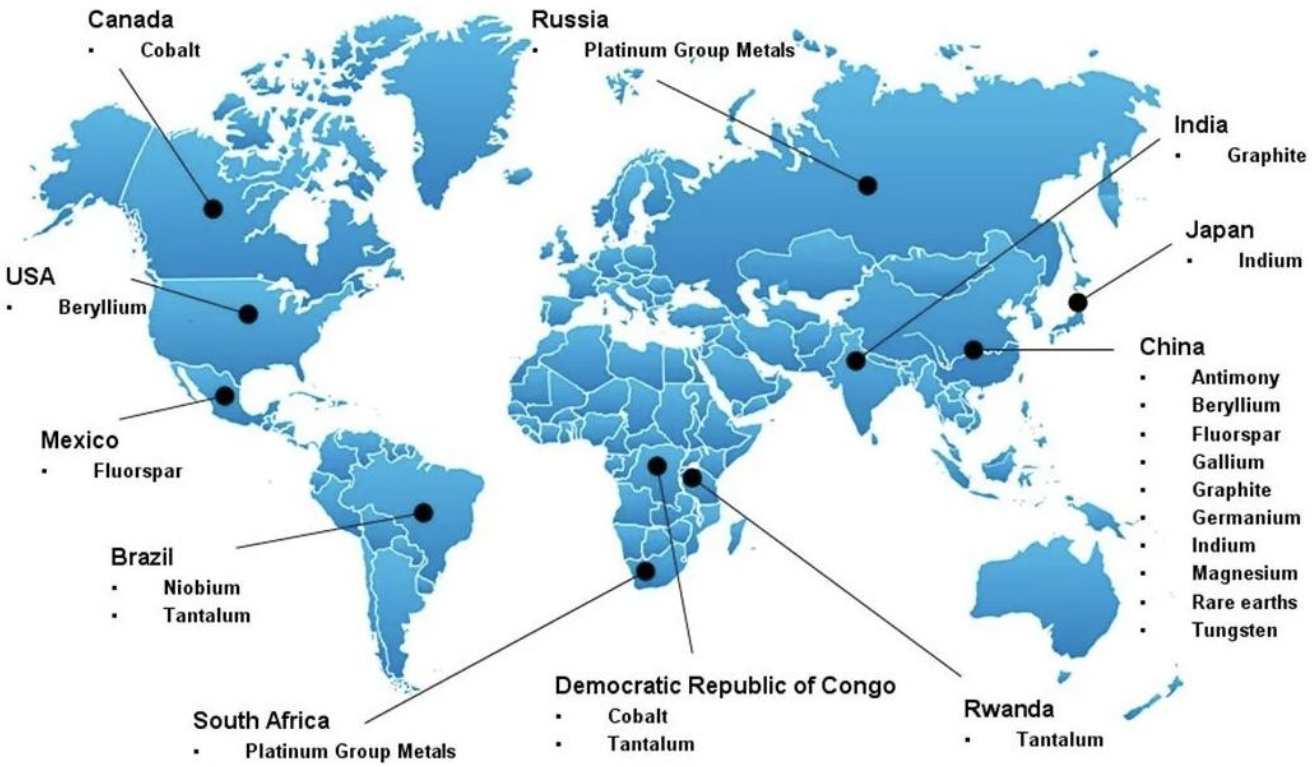

UNITED STATES
MARINE CORPS


NPS
PRAESTANTIA PER SCIENTIAM
1909


FOI

Scope

- ~~From the factory to the foxhole~~
- From raw materials to recycling



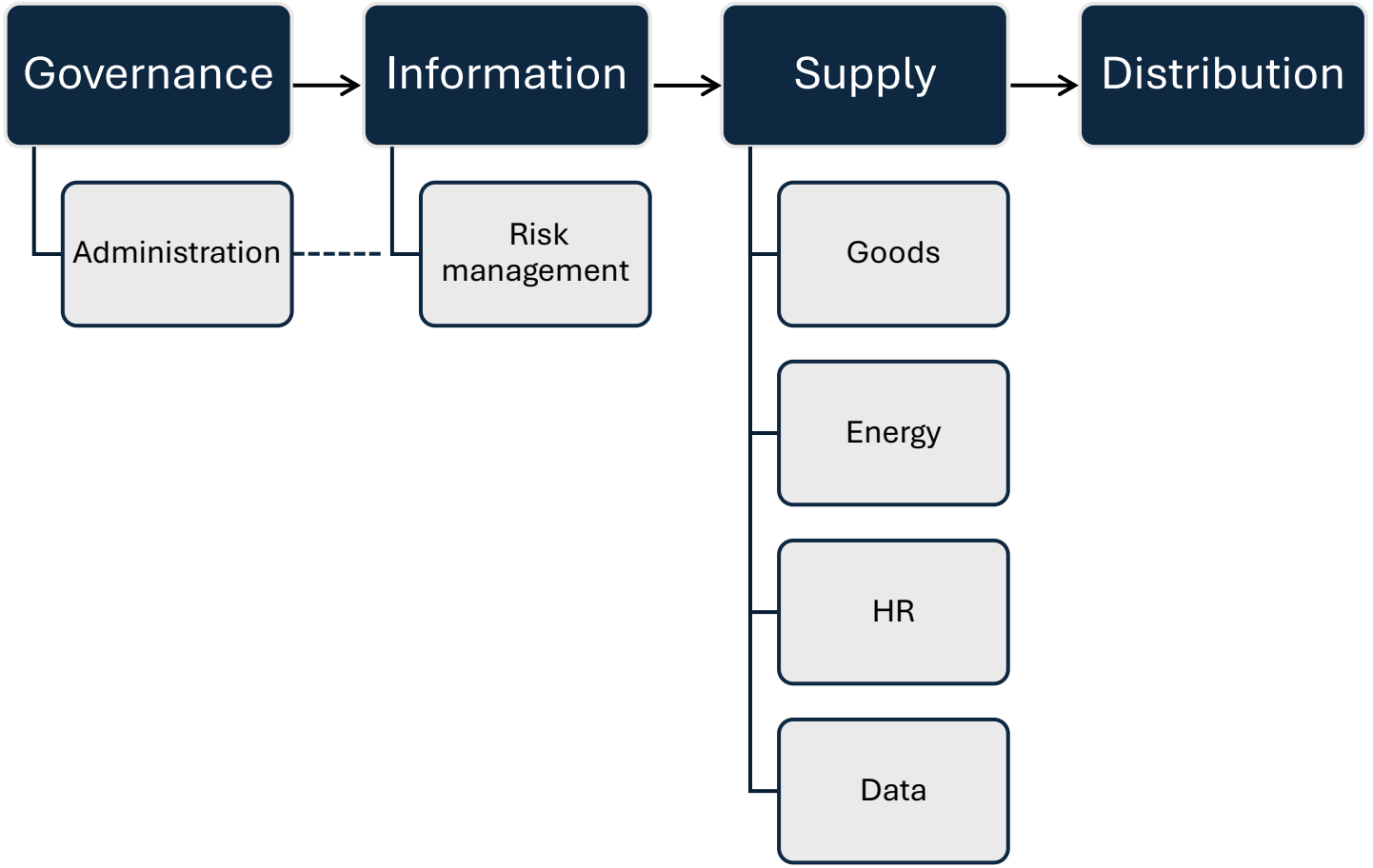
Purpose

Security of Supply Center of Excellence gathers the most prominent experts and stakeholders in the NATO and the EU to develop the next generation methods ensuring security of supply.

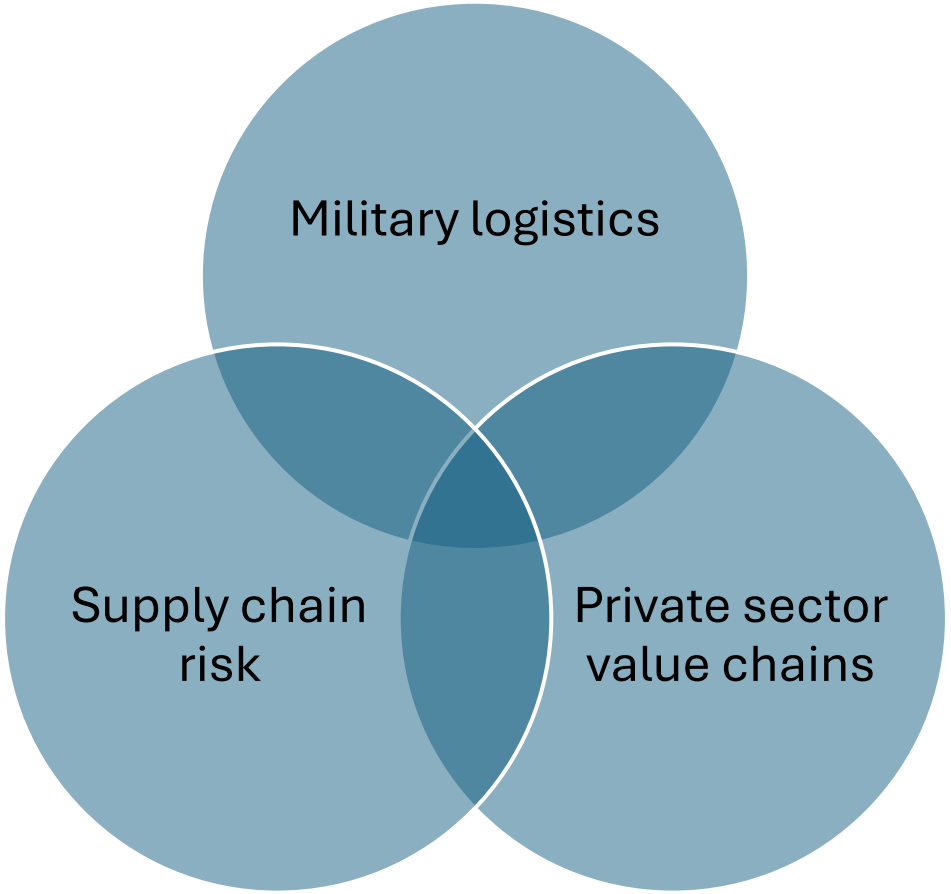
Areas of expertise

Transport, modalities and transport nodes	Warehouse and logistics	Industry and manufacturing	Procurement and contracting
ICT-systems managing security of supply	Innovation (AI, nano, 3DP, route optimization, autonomation)	Sustainment surge, consumption frequency calculations	Energy production and distribution *supporting* security of supply

Security of supply from a NATO perspective

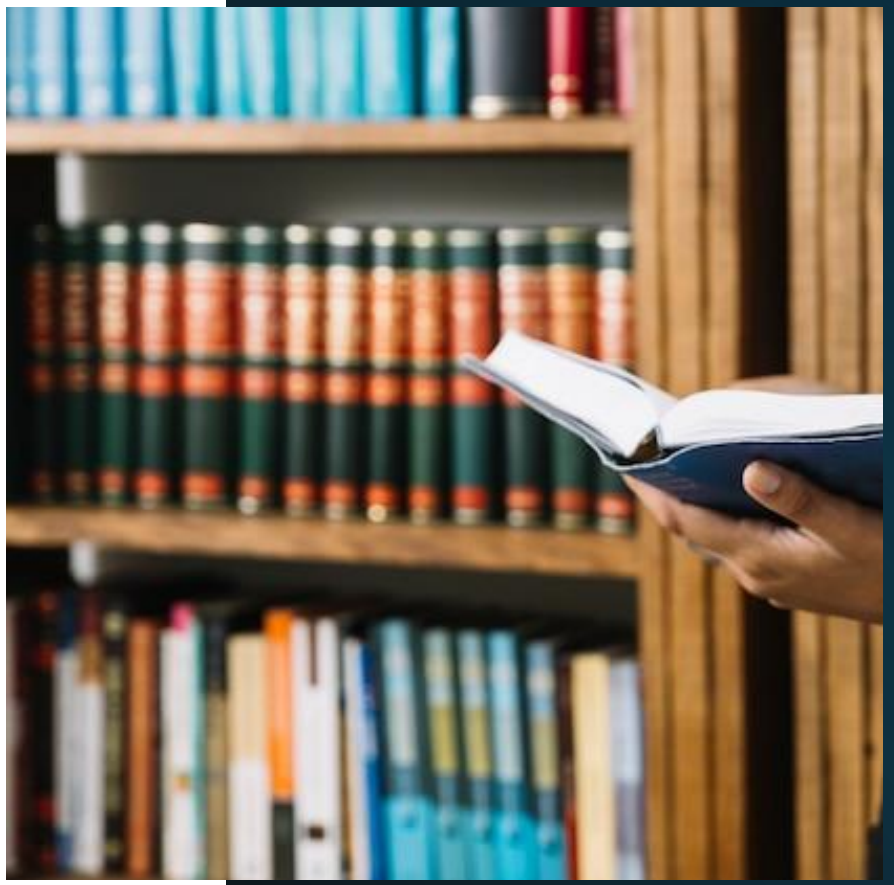


Challenge – marrying cultures



Centre of excellence

A center of excellence (COE) is a team, a shared facility or an entity that provides leadership, best practices, research, support, or training for a focus area.



You need to *be* a center of excellence…

…to become a *NATO-accredited* center of excellence

Challenge

NATO Centre of Excellence

A NATO-accredited Centre of Excellence (COE) is a *multi-nationally or nationally* established and sponsored entity, which offers recognized expertise and experience within a defined subject matter area to the benefit of the Alliance within the four pillars of NATO's COE program.

A COE is not a part of the NATO Command Structure (NCS) or of other NATO entities, but forms part of the wider framework that contributes to the functioning of the Alliance.

NATO-accredited Centres of Excellence

- Air Operations
- Civil-Military Cooperation
- Cold Weather Operations
- Combined Joint Operations from the Sea
- Command and Control
- Cooperative Cyber Defence
- Counter-Improvised Explosive Devices
- Counterintelligence
- Crisis Management and Disaster Response
- Defence Against Terrorism
- Energy Security
- Explosive Ordnance Disposal
- Human Intelligence
- Integrated Air and Missile Defence
- Joint Air Power
- Joint Chemical, Biological, Radiological and Nuclear Defence
- Maritime Geospatial information, Meteorology and Oceanography
- Maritime Security
- Military Engineering
- Military Medicine
- Military Police
- Modelling and Simulation
- Mountain Warfare
- Naval Mine Warfare
- Operations in Confined and Shallow Waters
- Security Force Assistance
- Stability Policing
- Strategic Communications
- Hybrid CoE
- Climate Change and Security
- Space

Benchmark

ENSEC CoE, Lithuania

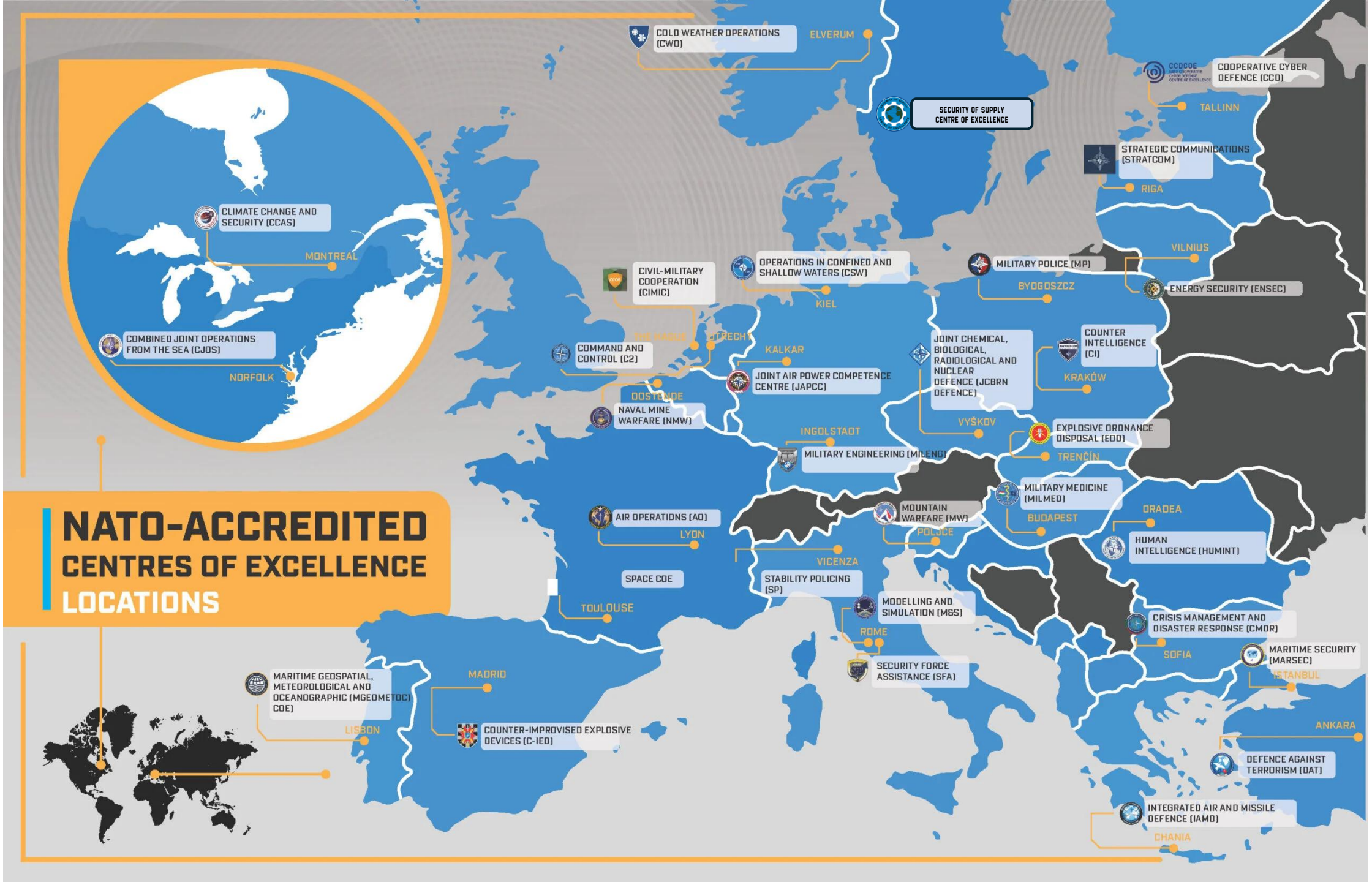
- ENSEC COE was initially founded as a national CoE to support and facilitate the transition away from Lithuanias dependence on Russian gas. It was established by the MFA. Initially it was hard to explain the connection between energy and security. Later it became obvious that Russia had weaponized energy export. The NATO ENSEC COE was created on July 10 and accredited on October 12, 2012.

Climate Change and Security, Canada

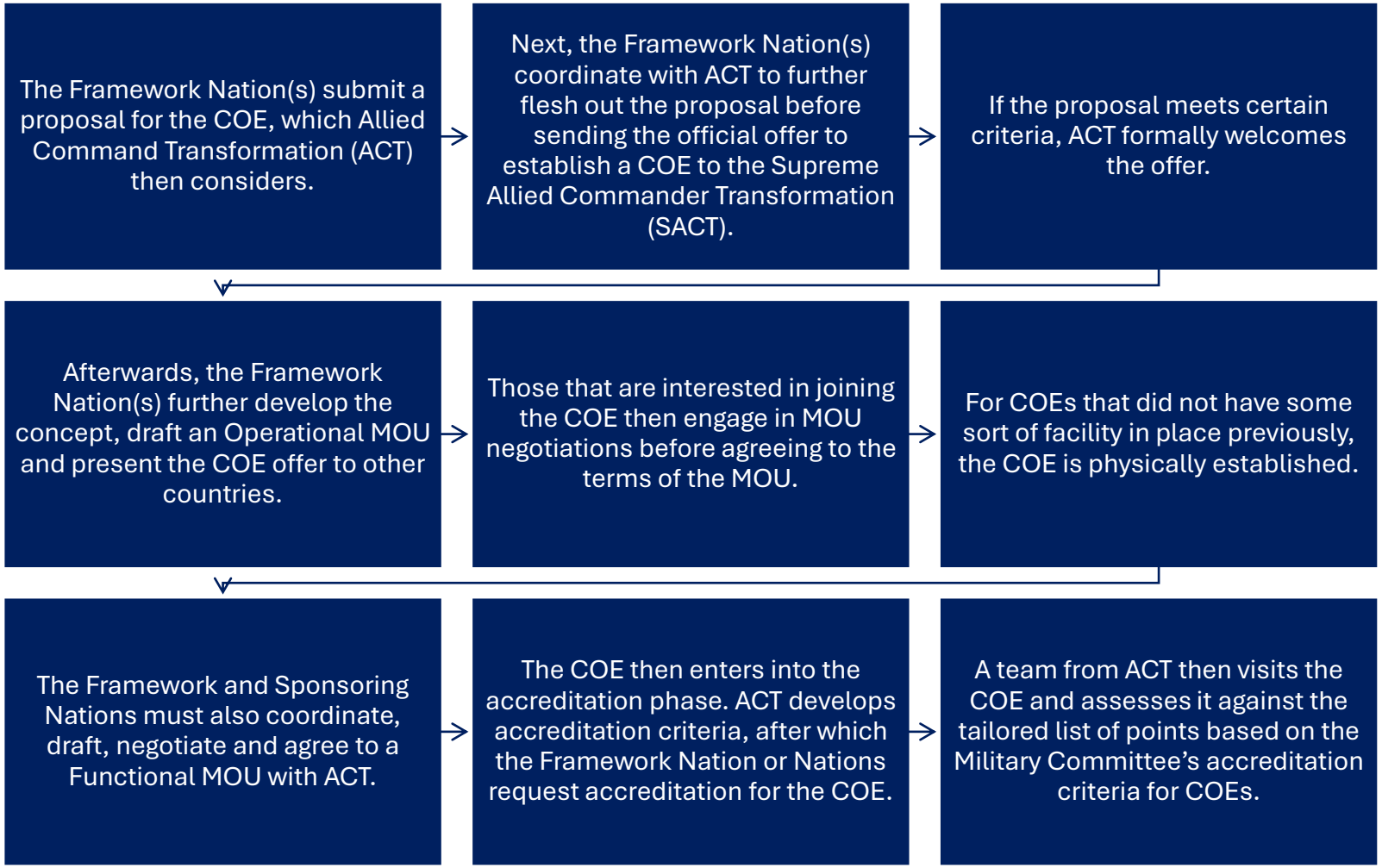
- In June 2021, the Canadian government proposed hosting the CCASCOE at a NATO Summit in Brussels. A year later it announced Montréal as the planned host city, with Canada providing $40.4 million in “direct support” for CCASCOE as host nation over five years. At the July 2023 NATO Summit in Vilnius, Canada’s Minister of National Defence and representatives from 11 other Sponsoring Nations signed the founding document of the NATO Climate Change and Security Centre of Excellence. The Centre opened in Montréal in 2023.

Hybrid CoE, Finland

- Finland is the host of the European Center of Excellence (CoE) for Countering Hybrid Threats, a facility officially inaugurated by NATO Secretary General and EU High Representative. The Centre’s annual core budget amounts to 4.3 million euros. Approximately half of this is covered by host nation Finland, and other half comes from participation fees paid by the 34 Participating States. Initiated in 2017.


NATO-ACCREDITED
CENTRES OF EXCELLENCE
LOCATIONS
COLD WEATHER OPERATIONS (CWO)
ELVERUM
SECURITY OF SUPPLY CENTRE OF EXCELLENCE
CCDCOE
COOPERATIVE CYBER DEFENCE (CCD)
TALLINN
STRATEGIC COMMUNICATIONS (STRATCOM)
RIGA
CLIMATE CHANGE AND SECURITY (CCAS)
MONTREAL
COMBINED JOINT OPERATIONS FROM THE SEA (CJOS)
NORFOLK
CIVIL-MILITARY COOPERATION (CIMIC)
THE HAGUE
UTRECHT
OPERATIONS IN CONFINED AND SHALLOW WATERS (CSW)
KIEL
MILITARY POLICE (MP)
BYDGOSZCZ
VILNIUS
ENERGY SECURITY (ENSEC)
COMMAND AND CONTROL (C2)
KALKAR
JOINT AIR POWER COMPETENCE CENTRE (JAPCC)
JOINT CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR DEFENCE (JCBRN DEFENCE)
COUNTER INTELLIGENCE (CI)
KRAKÓW
OOSTENDE
NAVAL MINE WARFARE (NMW)
VYŠKOV
EXPLOSIVE ORDNANCE DISPOSAL (EOD)
INGOLSTADT
MILITARY ENGINEERING (MILENG)
TRENČÍN
MILITARY MEDICINE (MILMED)
BUDAPEST
ORADEA
AIR OPERATIONS (AO)
LYON
MOUNTAIN WARFARE (MW)
POLJCE
HUMAN INTELLIGENCE (HUMINT)
VICENZA
SPACE COE
STABILITY POLICING (SP)
TOULOUSE
MODELLING AND SIMULATION (M&S)
ROME
CRISIS MANAGEMENT AND DISASTER RESPONSE (CMDR)
SOFIA
MARITIME SECURITY (MARSEC)
ISTANBUL
SECURITY FORCE ASSISTANCE (SFA)
MADRID
MARITIME GEOSPATIAL, METEOROLOGICAL AND OCEANOGRAPHIC (MGEOMETOC) COE
LISBON
COUNTER-IMPROVISED EXPLOSIVE DEVICES (C-IED)
ANKARA
DEFENCE AGAINST TERRORISM (DAT)
INTEGRATED AIR AND MISSILE DEFENCE (IAMD)
CHANIA

Receiving NATO accreditation



NATO Strategic Concept

"We will work towards identifying and mitigating strategic vulnerabilities and dependencies, including our critical infrastructure, supply chains and health systems. We will enhance our energy security and invest in a stable and reliable energy supply, suppliers and sources."

NATO STRATEGIC CONCEPT

JUNE 22, 2022, § 26

NATO Baseline requirements

- assured continuity of government and critical government services;
- ***resilient energy supplies;***
- ability to deal effectively with uncontrolled movement of people;
- ***resilient food and water resources;***
- ability to deal with mass casualties;
- resilient civil communications systems;
- ***resilient civil transportation systems.***

NATO Warfighting Capstone

LAYERED RESILIENCE

- The military instrument of power must support the Alliance's ability to anticipate and resist strategic shocks or surprises, manage consequences, fight through and ultimately out-last and prevail against adversaries.
- This requires a layered approach, comprising mutually reinforcing 'layers' of military resilience and *civilian resilience*.
- The approach supports NATO's comprehensive resilience agenda (whole-of-society-approach).

Pillars of the COE program

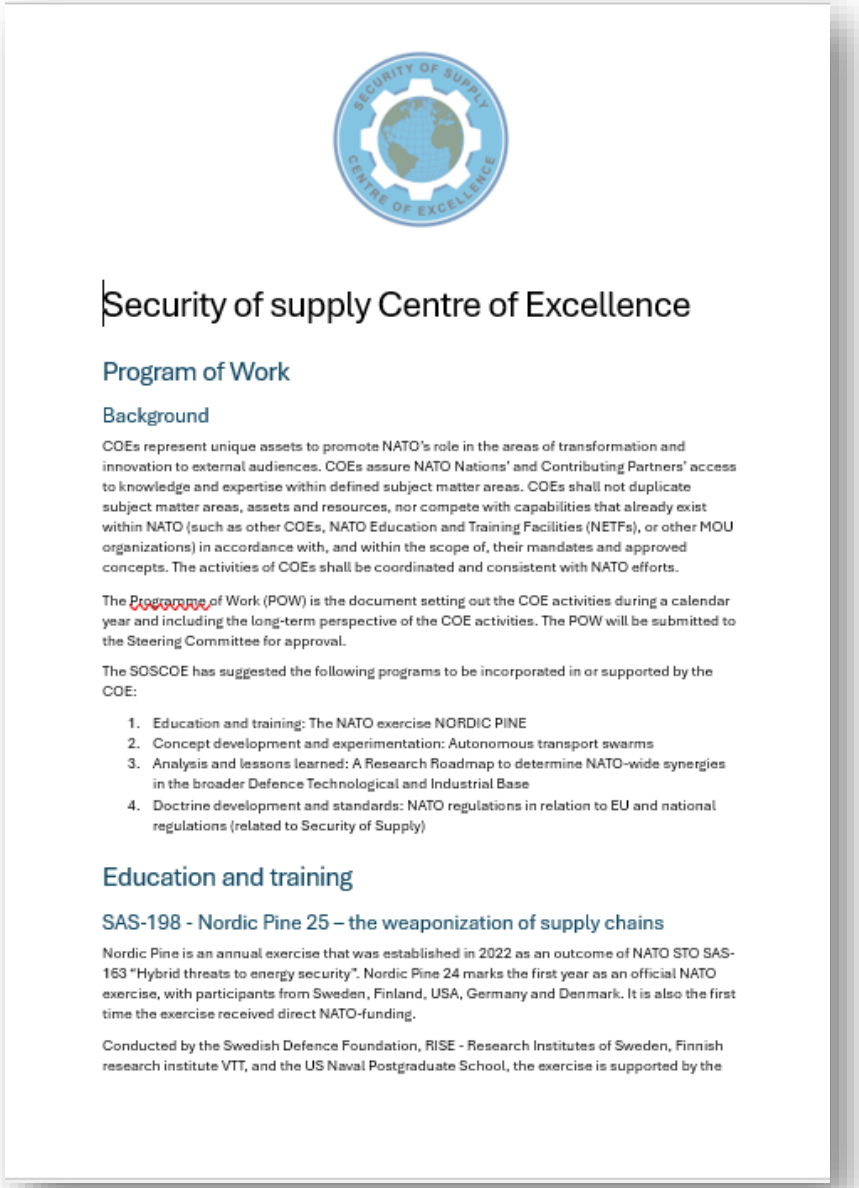
Not every organization can become a NATO-accredited COE.

To become a COE, expertise must be demonstrated in the four transformation pillars:

- Education and Training
- Analysis and Lessons Learned
- Concept Development and Experimentation
- Doctrine Development and Standards

Program of Work

- Decided by the Steering Committee
- All four pillars covered
- Sent to NATO ACT yearly



Security of supply Centre of Excellence

Program of Work

Background

COEs represent unique assets to promote NATO's role in the areas of transformation and innovation to external audiences. COEs assure NATO Nations' and Contributing Partners' access to knowledge and expertise within defined subject matter areas. COEs shall not duplicate subject matter areas, assets and resources, nor compete with capabilities that already exist within NATO (such as other COEs, NATO Education and Training Facilities (NETFs), or other MOU organizations) in accordance with, and within the scope of, their mandates and approved concepts. The activities of COEs shall be coordinated and consistent with NATO efforts.

The Programme of Work (POW) is the document setting out the COE activities during a calendar year and including the long-term perspective of the COE activities. The POW will be submitted to the Steering Committee for approval.

The SOSCOE has suggested the following programs to be incorporated in or supported by the COE:

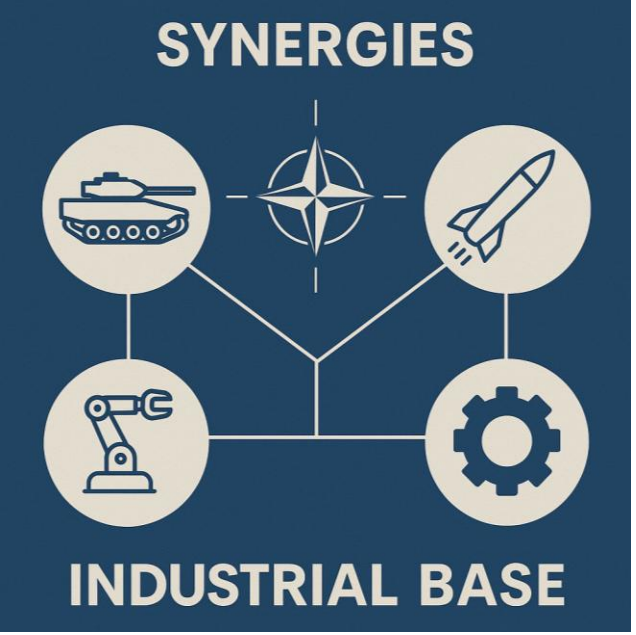
1. Education and training: The NATO exercise NORDIC PINE
2. Concept development and experimentation: Autonomous transport swarms
3. Analysis and lessons learned: A Research Roadmap to determine NATO-wide synergies in the broader Defence Technological and Industrial Base
4. Doctrine development and standards: NATO regulations in relation to EU and national regulations (related to Security of Supply)

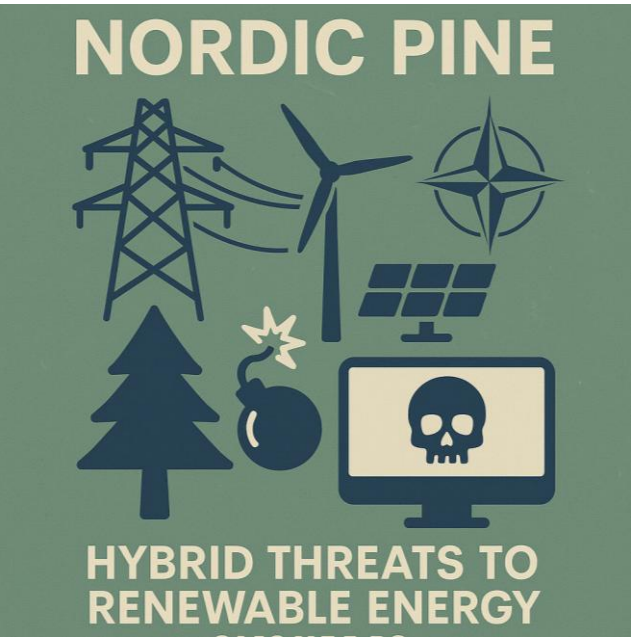
Education and training

SAS-198 - Nordic Pine 25 – the weaponization of supply chains

Nordic Pine is an annual exercise that was established in 2022 as an outcome of NATO STO SAS-163 "Hybrid threats to energy security". Nordic Pine 24 marks the first year as an official NATO exercise, with participants from Sweden, Finland, USA, Germany and Denmark. It is also the first time the exercise received direct NATO-funding.

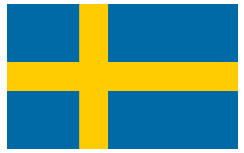
Conducted by the Swedish Defence Foundation, RISE - Research Institutes of Sweden, Finnish research institute VTT, and the US Naval Postgraduate School, the exercise is supported by the



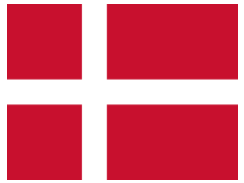


SOSCOE PoW

- Education and Training
  - NORDIC PINE 25
  - SUPPLY CHALLENGE 26
- Analysis and Lessons Learned
  - Synergies defence tech/industrial base
  - NATO and batteries
- Concept Development and Experimentation
  - Autonomous Transport Swarms
  - Autonomous Charging stations for Drones
- Doctrine Development and Standards
  - DBS, CER, NIS2 visavi NATO Doctrines and STANAGS
  - NATO Commander’s handbook Sweden



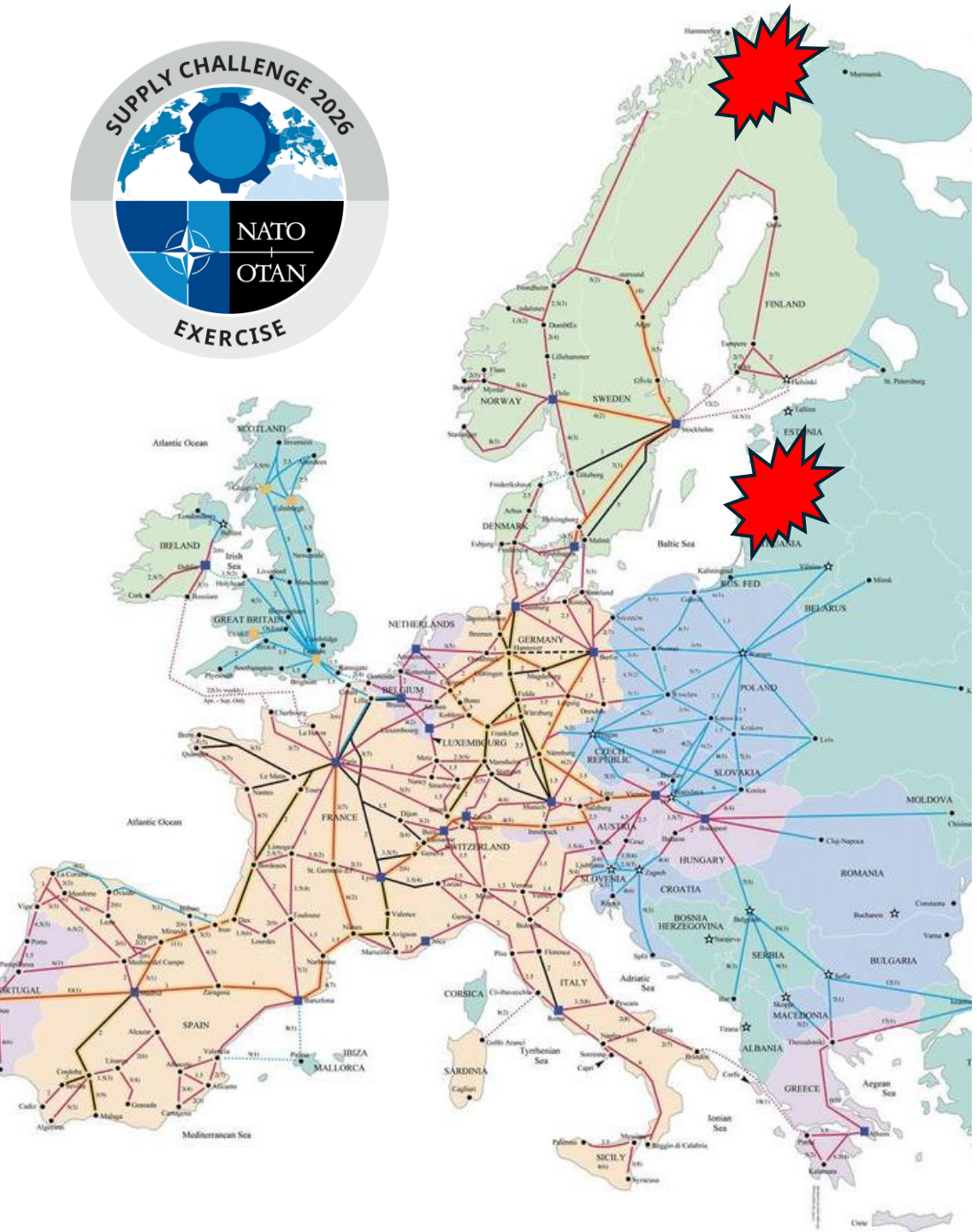




2025

SEPTEMBER



SUPPLY CHALLENGE 26

- Attacks on the Cap of the North and the Baltic states
- ***Civilian*** contribution to ***consequences*** of NATO missions
- Rotterdam, Esbjerg, Trondheim
- All modalities, Prepositioned stock
- Energy, medical, food, transport, military supplies
- Civilian rules and regulations
- Economic security as frictions or enabling
- Reslience Committees, NSPA and NATO Joint Support and Enabling Command
- 12 nations

Analysis and LL

NATO-wide Gaps and Synergies in the Broader Defence and Technological Industrial Base

- Strategic Guidance and Authorities
- Acquisition
- Lifecycle Sustainment
- Planning and distribution
- Information Technology
- Training and Education
- Outreach / Strategic communication

Concept Development and Experimentation

Autonomous transport swarms

Autonomous charging stations for drones

Doctrine Development and Standards

- US/UK/EU/NATO/National
- CER & NIS
- DBS & IMDG
- ADR & RID
- ICAO-TI
- AJP 4 (2018)
- Baseline requirements (4/7)

Why Sweden?

- One of the most innovative countries in the world
- Centuries of industrial development, mainly mining and forestry
- Long distances demanded intelligent logistic solutions
- Home of some of the most successful large corporations in the world
- Strong mining, steel, energy, defence and ICT industry

SAAB

SSAB

VATTENFALL

VOLVO

LKAB

ERICSSON

Sweden & Sustainability

ENERGY TRANSITION

This country is leading the charge for renewable energy generation in the EU

Jan 9, 2024

Key Highlights

1. Global average ETI scores increased by 10% since 2014, but showed only marginal growth in the past three years.

2. Only 18% of countries in 2023 have balanced the imperatives of the energy triangle

3. Equity was compromised as the transition centered on secure and sustainable

4. The top 10 countries account for only 2% of global CO2 emissions from fuel combustion and 4% of total energy supply

5. Only 41 countries have made steady progress in the past decade

Of the 120 countries, 113 have made progress over the last decade but only 55 have improved their scores by more than 10 percentage points.

- **Sweden** leads the global rankings, followed by **Denmark** and **Norway**.

Why Karlskoga?

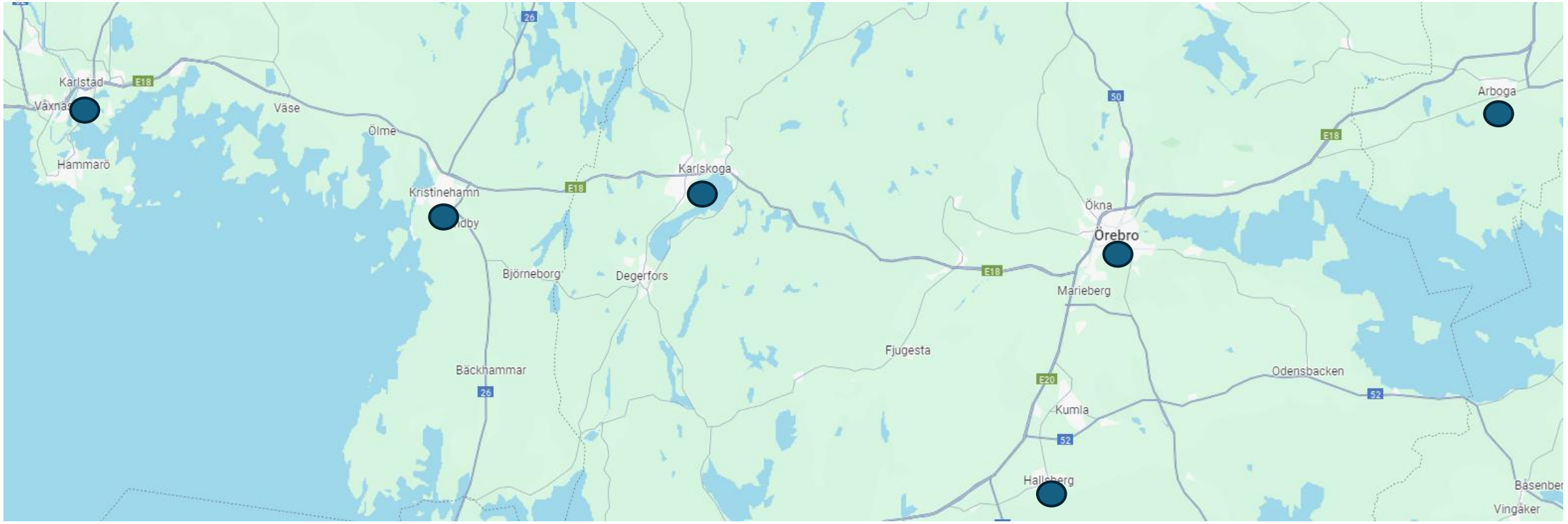
- Bofors was one of the worlds largest arms manufacturers for over a century.
- The company originates from the hammer mill "Boofors", which was founded as a royal state-owned company in 1646
  Bofors was owned by Alfred Nobel
- Fortified production facilities est. during WWII
- Strong R&D, close cooperation between government, civil society and industry, spin-out innovations (dental products)
- Later decades, strong academic presence

History repeating

- In 2023 a doctoral thesis was published by the researcher Cecilia Beckman at Örebro university named ”*Diversification and strategic, long-distance partnerships: Bofors' struggle through times of crisis and uncertainty”*.
- The thesis demonstrates how Bofors' strategic partnerships evolved from a focus on diversification and collaboration with its owner Alfred Nobel in the late 19th century, to an increasing reliance on long-distance partnerships and different dimensions of proximity during times of crisis and uncertainty in the 20th century. This allowed the company to reinvent itself and maintain its innovative capacity over several decades.
- The vertical disintegration of Bofors also led to the development of a local knowledge infrastructure in Karlskoga, as Bofors-related companies emerged from the parent company.
- One of the most critical factors to create a robust concept for security of supply is *to manage the long term* (30+ years).

“Säkerhetsstråket”

- The Swedish Security Cluster
- Karlstad, Kristinehamn, Karlskoga, Örebro, Hallsberg, Arboga



The Swedish Security Cluster

Karlskoga Municipality
Saab AB
BAE Systems Bofors AB
Saab Dynamics AB
Karlskoga Automation AB
Karlskoga automatsvarvning AB
Eurenco Bofors AB
PartnerTech Karlskoga AB
Nammo AS
SAAB-Bofors Test Center
Outdoor Experience
KCEM (Competence Center Energetic Materials)
Automatsvarvning AB
CNC Quality AB
Amexci AB
Lasertech AB
Kebni AB

Arboga Municipality
SAAB
Armed Forces Logistics
Defence Material Administration
Combitech

Örebro Municipality
Örebro University
Nerikes Emergency Service
University Hospital of Örebro
Örebro Airport
Statistics Sweden SCB
Police Authority Region Bergslagen
Bergslagens Emergency Services
Region Örebro (Health Care)
Civil Defence Federation Örebro län
Armed Forces Communication Information System Command FMTIS
Armed Forces Western Military District
Civil Defence District of Central Sweden
Joint Alarm and Command Center in Örebro
National Transport Agency HQ

Hallsberg Municipality
National Transport Administration
Ahlsell

Karlstad Municipality
Swedish National Defence University
Karlstad University
Civil Contingency Agency HQ
The Psychological Defence Agency
The Swedish Defence Conscription and Assessment Agency HQ
Telia SOC
Karlstad Airport
Port of Karlstad
Emergency Services Karlstad Region
CGI
Civil Defence Federation Sweden and Värmlands län
Region Värmland (Health Care)

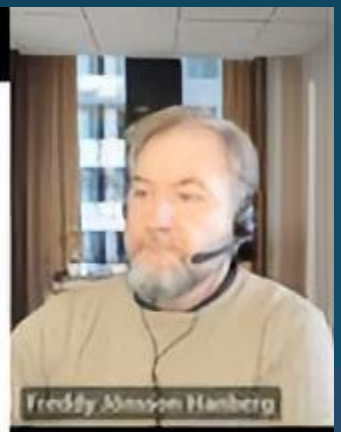
Kristinehamns Municipality
Aston Harald Mechanical Industry AB
Kongsberg Maritime Sweden AB
Björneborg Steel AB
The National Electrical Safety Board
The European Union Emergency Warehouse
Armed Forces Artillery Regiment “A 9”
Port of Kristinehamn


Karlskoga

ALMEDALSVECKAN

Program of work webinar

Turn off your microphone

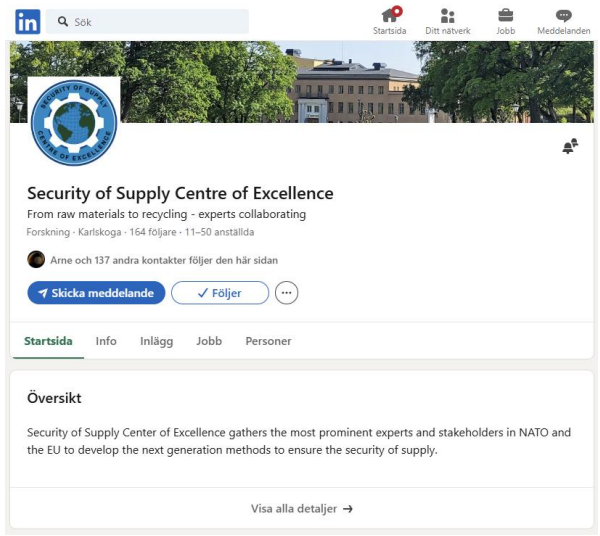


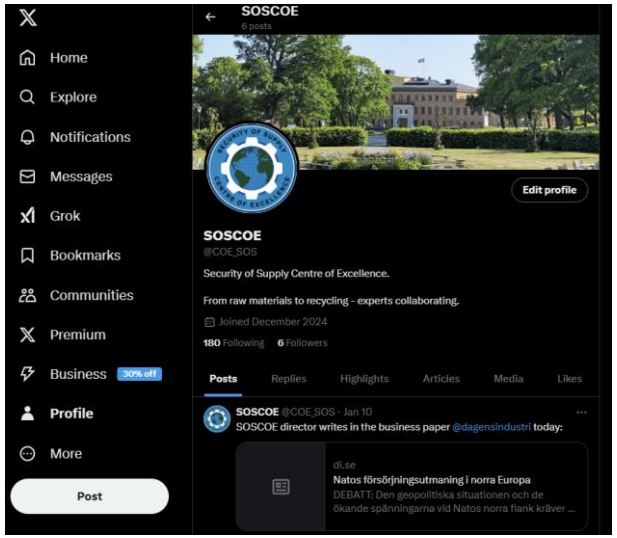
AD RS
CC JR
ET ML
PÖ BL
MA AW
PL +22

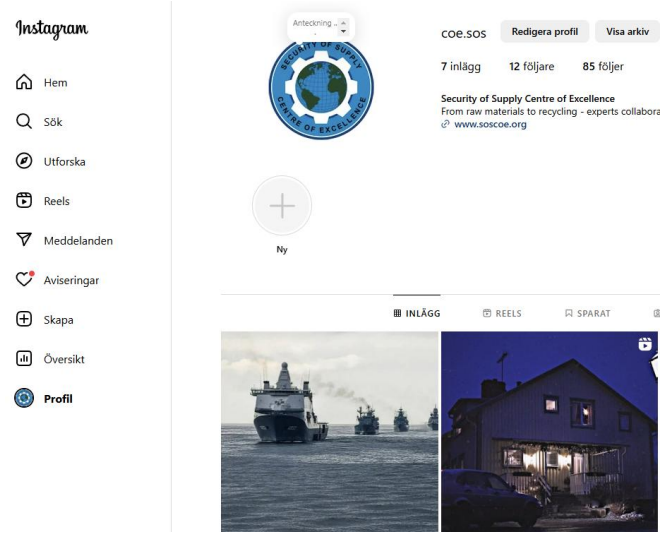

Centre of Excellence


NATO
OTAN
Science and Technology Organization
SAS
System Analysis and Studies Panel
NATO STO's expert panel for analytical advice

Social media







Organization

Establishment organization

2025-01-01—2026-12-31

- Steering committee
- International committee
- Academic advisory board
- Funding advisory board
- Interim director and administrative staff

Delivery organization

2026-07-01-

- Director
- Staff
- Head of Education and Training
- Head of Analysis and Lessons Learned
- Head of Concept Development and Experimentation
- Head of Doctrine Development and Standards

Estblishment organization

DRAFT

Steering committee

- **Chairman, Brigadier General Michael Nilsson**
- Göran Backlund, SAAB
- Clas Carpenfeldt, BAE
- Katarina Tolgfors, Swedish Parliament
- Petter Arneback-Hjulström, Region Örebro
- Kristina Jönsson, RISE
- Anna Waern, Karlskoga kommun
- Freddy Jönsson Hanberg, interim director (rapporteur)

Purpose

- Follow up the timeline
- Analyze reports from the interim director
- Strategic directives to the interim director
- Analyze minutes from the other committee meetings
- Inform the chairmen of the other committees about the progress
- Note the work of the Academic Advisory Board
- Decide upon funding proposals from the Academic Advisory Board and/or the Interim Director

Academic Advisory Board

- Professor Nicole Verrier Crain, Chair
- George Topic, US National Defence University
- Dr. Raphael Danino-Perraud, IRSEM, France
- Dr. Enrique Kremers, IABG, Germany
- Dr. Per Skoglund, Swedish National Defence University
- Dr. Frans Prenkert, Örebro university
- Dr. Alexander Wallace, DSTL UK

Purpose

- Build a stellar network with academia on Security of Supply with NATO nations and partners
- Assess suggestions for research and development projects together with the Financial Advisory Board
- Inform the Steering committee
- Coordinate with the International committee

International committee

- **Stefan Wallin, Finland, Chair**
- Christophe Mailhac, France
- Robert Cekuta, USA
- Axel Hagelstam, Finland
- Romuldas Petkevičius, Lithuania
- Aud[illegible] Brūzgienė, Lithuania
- [illegible] Rune Sødvåg, Norway
- Hans [illegible] Hansen, Denmark
- Sara Rose-Carswell, Canada
- Richard Dallington, UK
- Sylvie Martel, NL

UNDER CONSTRUCTION

Purpose

- Identify sponsors in their respective countries
- Introduce them to SOS COE, spread the word, be ambassador, increase awareness in their respective nation
- Prepare for the international funding
- Prepare for the installment of the COE as an international organization

Director

Freddy Jönsson Hanberg

- Daily operations
- Initiate and organize the establishment of projects
- Initiate and facilitate activities in the four pillars
- Leverage from the International committee and the Academic Advisory Board
- Report to the Steering committee

Funding advisory board

- **Freddy Jönsson Hanberg, Chair**
- Barbro Lagerholm, RISE
- Per Ödling, Lunds universitet
- Peter Rendius

Purpose: identify funding opportunities and facilitate applications for (public) project funding

Funding

Establishment organization
2025-2026

Operational budget	300 000 EUR / year
Project budget	300 000 EUR / year

Delivery organization
2027-

Operational budget	2 000 000 EUR / year
Project budget	5 000 000 EUR / year

NATO OTAN

Allied Command Transformation

TRANSNET

Transformation Network Portal

Home | Resources | Register | Login | Reset Password

TRANSNET enables experts to work together to further transformation within NATO and among Alliance Nations.

Primary TRANSNET collaboration methods

1. Maintain information in a Community
2. Maintain your own Community linked from this Portal
3. Submit information for posting on an existing Community

Who Can Join

Members of:

NATO
NATO Affiliates
Partners
International Organizations

What's Inside

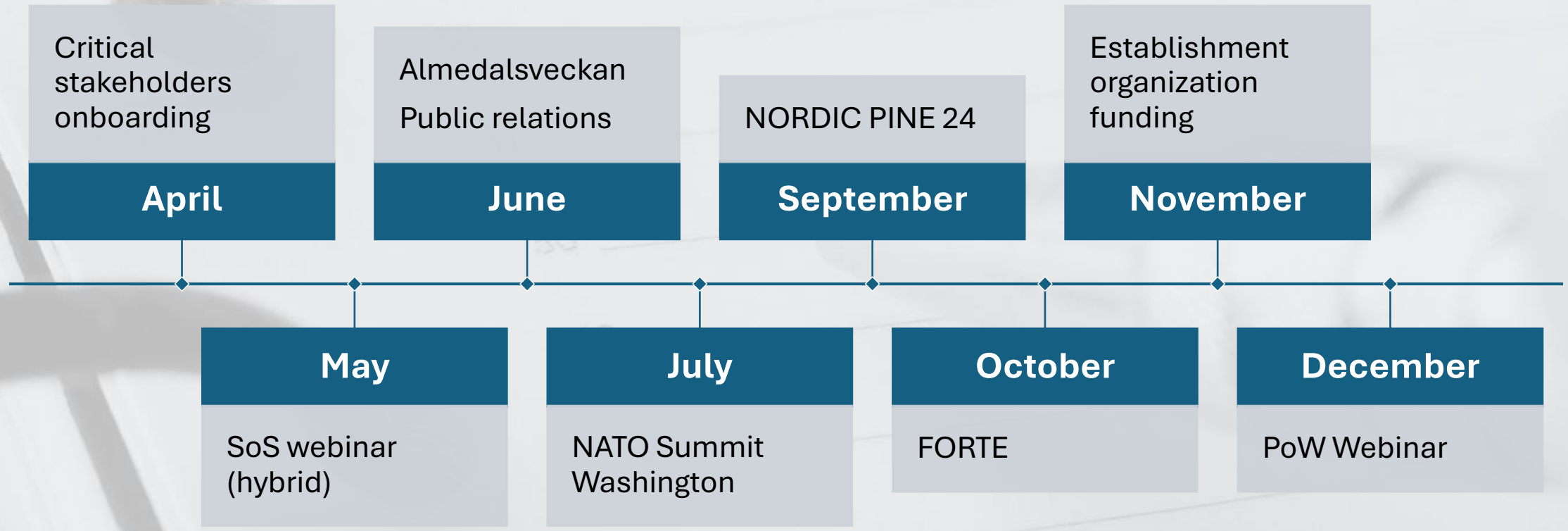
Centres of Excellence Information
Events
Lessons Learned
Nations' Transformational Projects
Points of Contact
Subject Matter Documents
Tranformational Initiatives

Available Tools

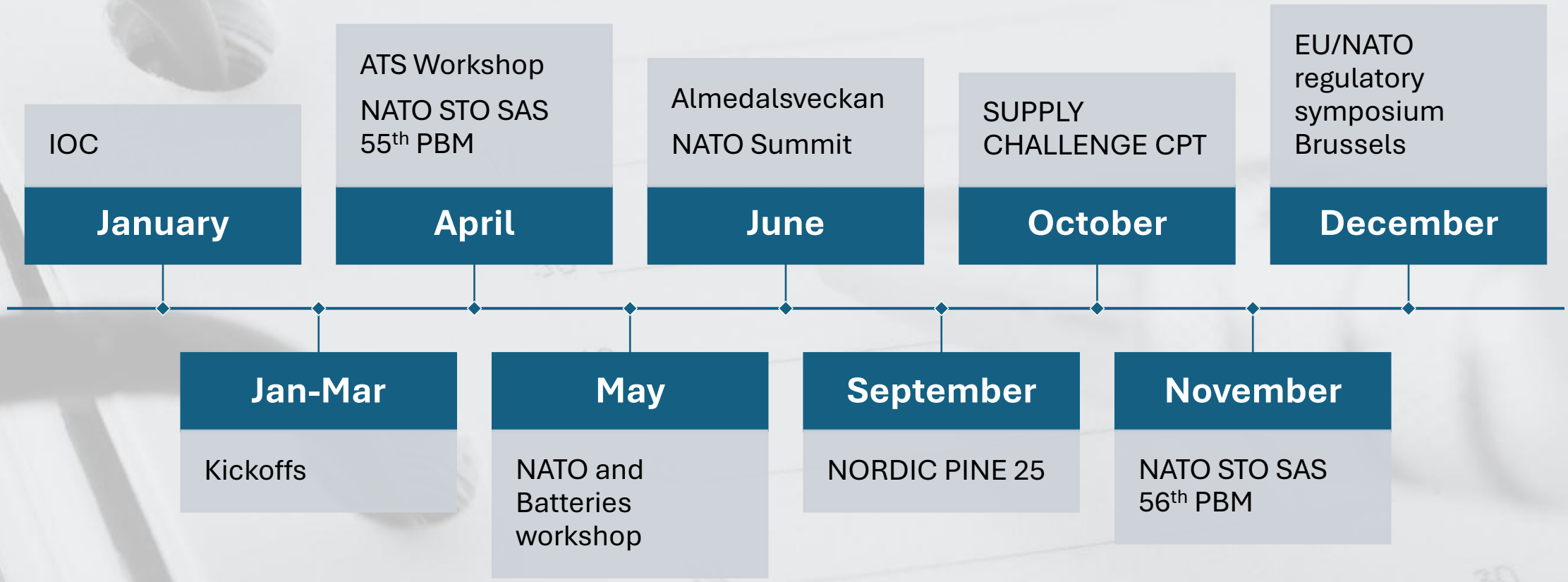
Shared Calendars
Shared Documents
Bulletin Boards
Discussion Boards

and more...

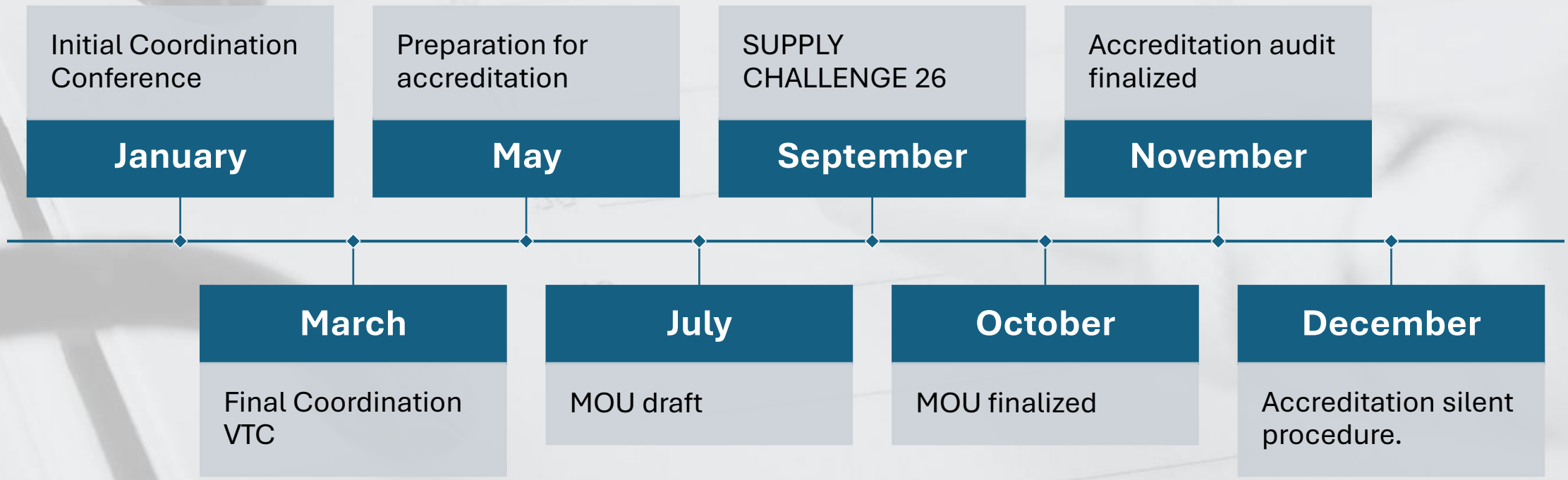
Review 2024


Critical stakeholders onboarding
April
May
SoS webinar (hybrid)
Almedalsveckan
Public relations
June
July
NATO Summit Washington
NORDIC PINE 24
September
October
FORTE
Establishment organization funding
November
December
PoW Webinar

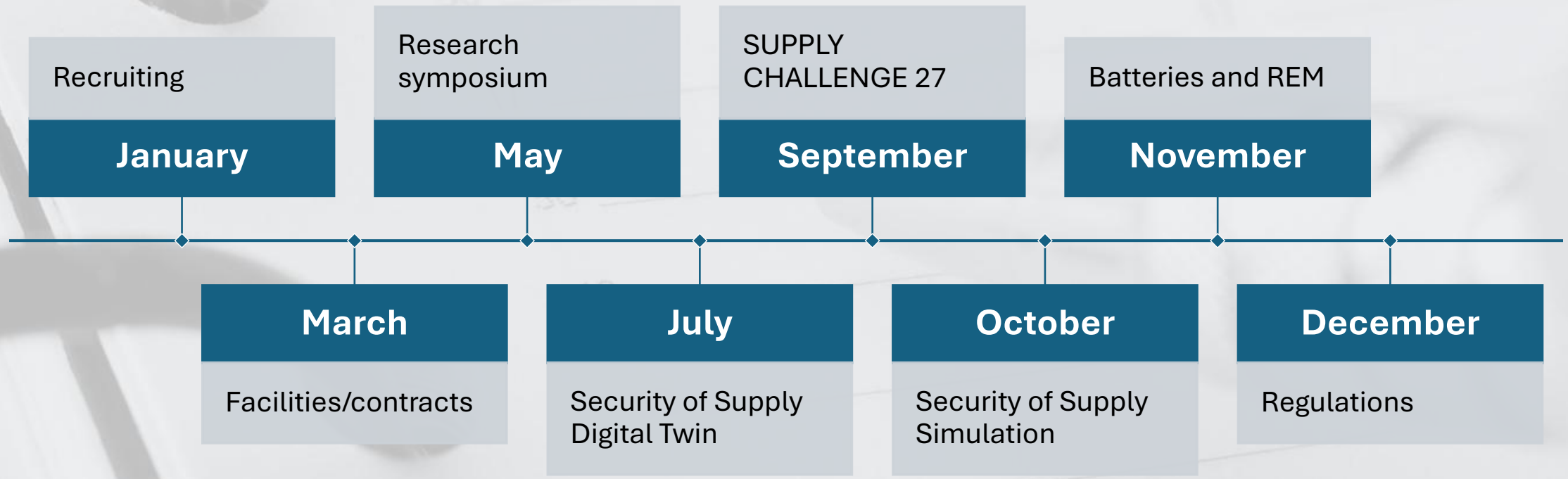
Planning 2025



Planning 2026



Planning 2027



Questions?