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ASOCIACIÓN ESPAÑOLA PARA LA CALIDAD

4º Encuentro de la industria nacional del sector de Defensa

Madrid, 30 de mayo 2024

Partners:

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"NATO Acquisition Quality Assurance"

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Chair of NATO AC327 WG 2 - Quality

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NORTH ATLANTIC TREATY ORGANIZATION
ORGANISATION DU TRAITÉ DE L'ATLANTIQUE NORD

AC327 Working Group 2 - Quality

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VERSION 27th May 2024

North Atlantic Council (NAC)

Conference of National Armaments Directors

Life Cycle Management Group

NATO Policy for Systems Life Cycle Management
C-M(2005)0108

POLICY STATEMENT

"It is Alliance policy that Nations and NATO Authorities apply the principles of Systems Life Cycle Management as elaborated in this policy document."

"The North Atlantic Council approves the NATO Policy for Systems Life Cycle Management. The Conference of National Armaments Directors (CNAD) is its custodian"

The CNAD Mission

"To enable multi-national co-operation on delivery of interoperable military capabilities to improve NATO forces' effectiveness over the whole spectrum of current and future operations."

AC/327 – Terms of Reference

"To be responsible for NATO policies, processes, procedures, methods and agreements in support of the conception, development, production, acquisition, use, support and retirement of defence and security systems, services and equipment to meet NATO life cycle, quality and interoperability requirements."

WG2 - Quality

- 28 Nations
- 5 NATO Agencies

- Plus OCCAR, NIAG and IAQG

Government Quality Assurance - definition

The process by which the appropriate National Authorities establish confidence that the contractual requirements relating to quality are met.

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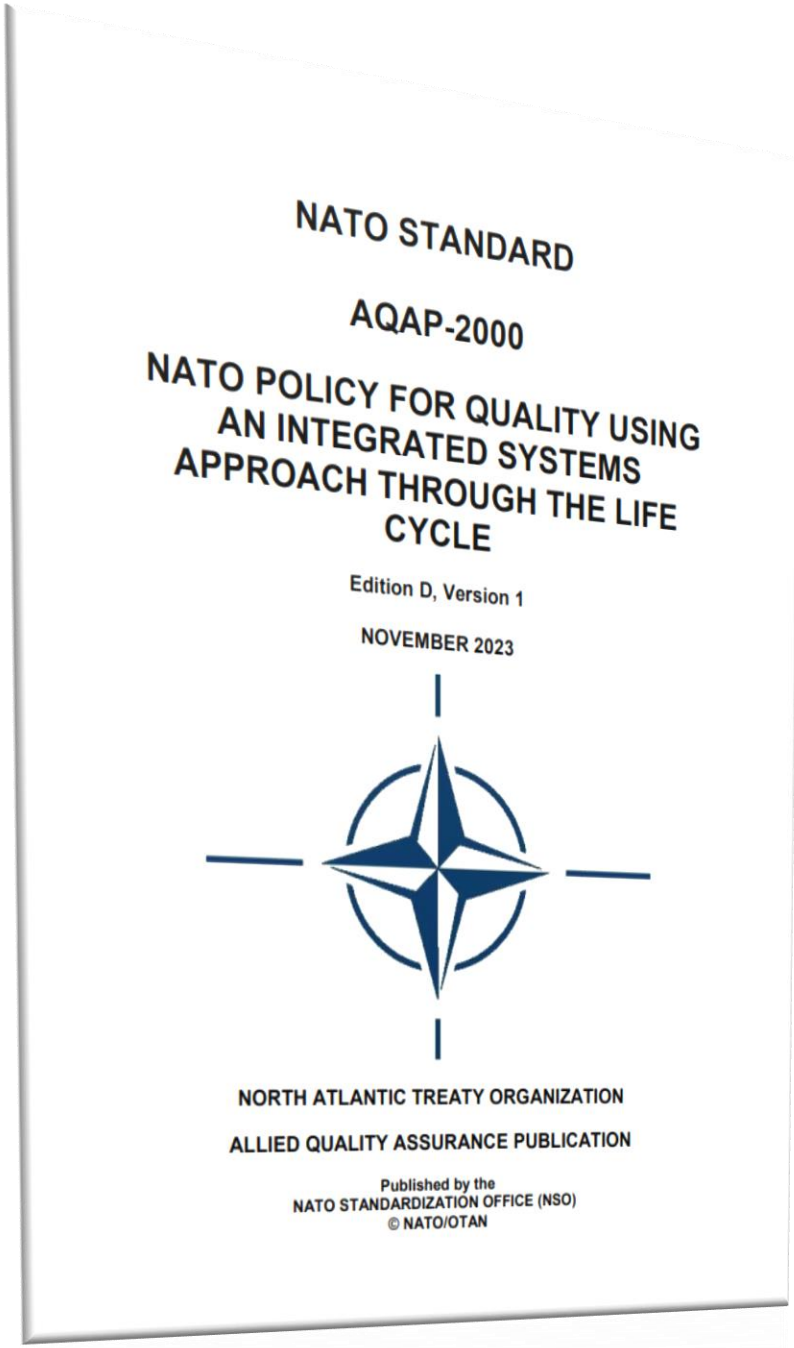

- Policy statement
- Quality fundamentals
- Quality management
- Quality assurance during acquisition
- Mutual Government Quality Assurance
- QMS certification
- Collaboration

NATO STANDARD

AQAP-2000

NATO POLICY FOR QUALITY USING AN INTEGRATED SYSTEMS APPROACH THROUGH THE LIFE CYCLE

Edition D, Version 1

NOVEMBER 2023

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED QUALITY ASSURANCE PUBLICATION

Published by the
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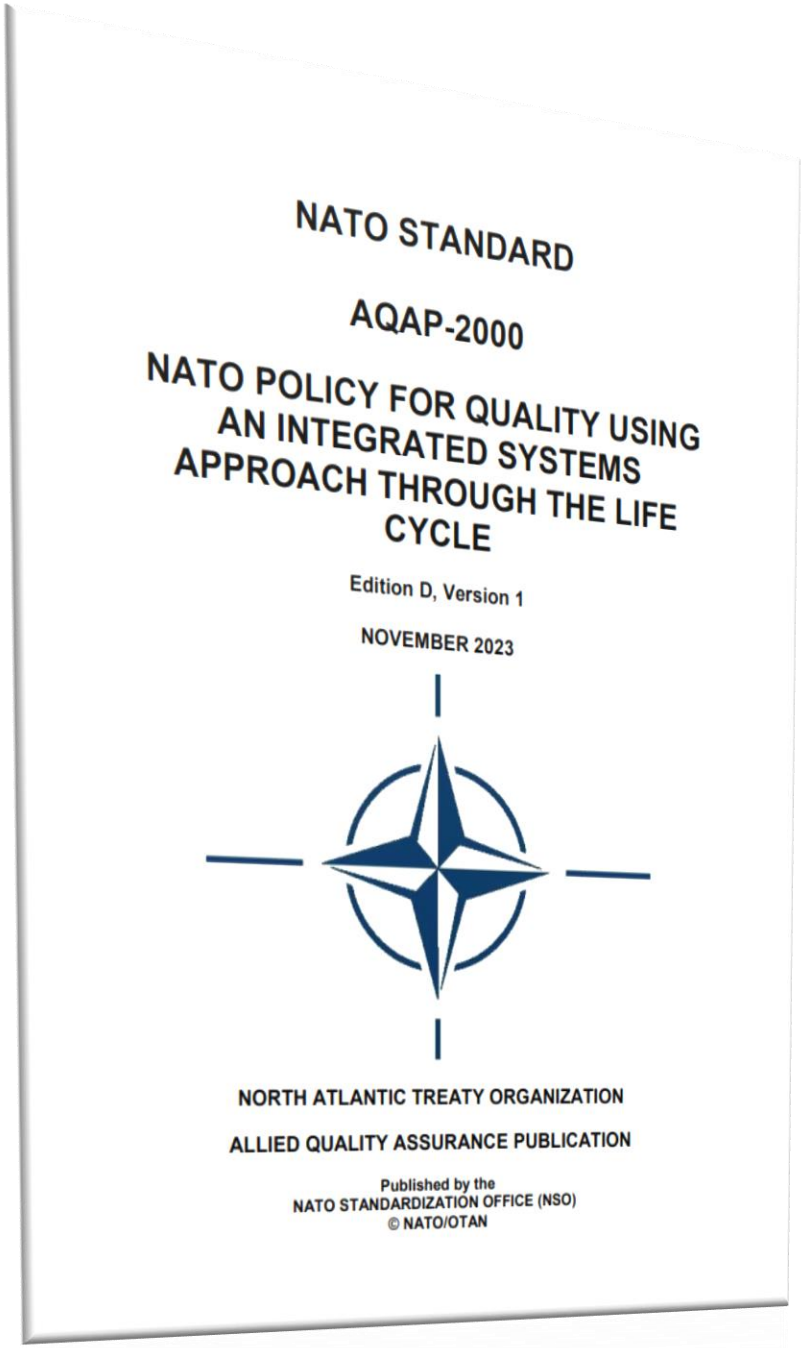
1.2 POLICY STATEMENT

To achieve an integrated systems approach to the provision of defence products[4], it is Alliance policy that NATO Programmes, NATO Nations and NATO Organisations apply quality management and quality assurance as elaborated in this policy publication. IP Nations are invited to follow the policy set out in this document.

2.4.3. Government Quality Assurance

1. Organisations can be acquirers and suppliers at the same time[13]: they are part of a supply chain that develops and delivers defence capability. In the context of this publication the acquirer is the Governmental and/or NATO Organisation that enters a contractual relationship with a Supplier, defining the product and quality requirements. The industrial supply base is very much recognized as a key partner in the provision of defence capability and quality as a key enabler.



2.4.1. Quality Assurance During Acquisition - Policy Statement

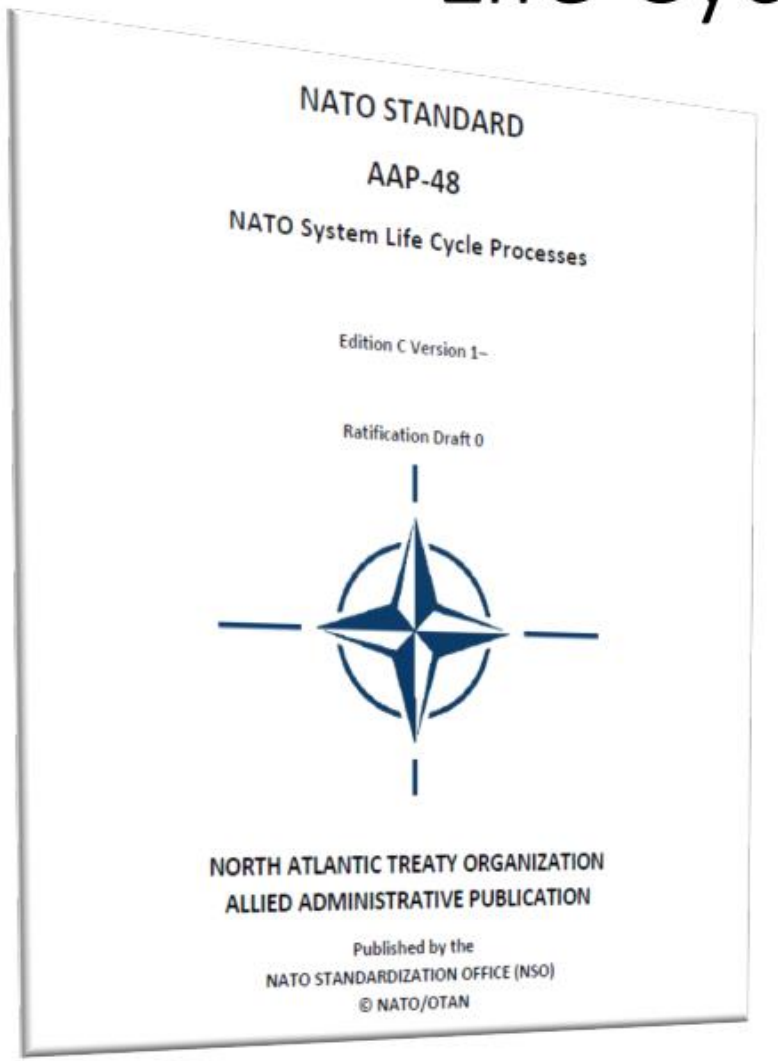
1. Acquirers of defence products shall ensure that appropriate resources are committed for the conduct of quality assurance activities.

In the context of NATO nations, this is Government Quality Assurance (GQA)These quality assurance activities are to be proportionate to the complexity, criticality, and risk of the acquisition programe

They are applicable to all stages of the life cycle management acquisition process and the product lifecycle

2. Acquiring NATO nations and NATO Organisations shall support the development and use of common quality processes and requirements to support increased interoperability between nations and across the global defence supply chain.

Life Cycle Process- Acquisition


NATO STANDARD

AAP-48

NATO System Life Cycle Processes

Edition C Version 1~

Ratification Draft 0

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ALLIED ADMINISTRATIVE PUBLICATION

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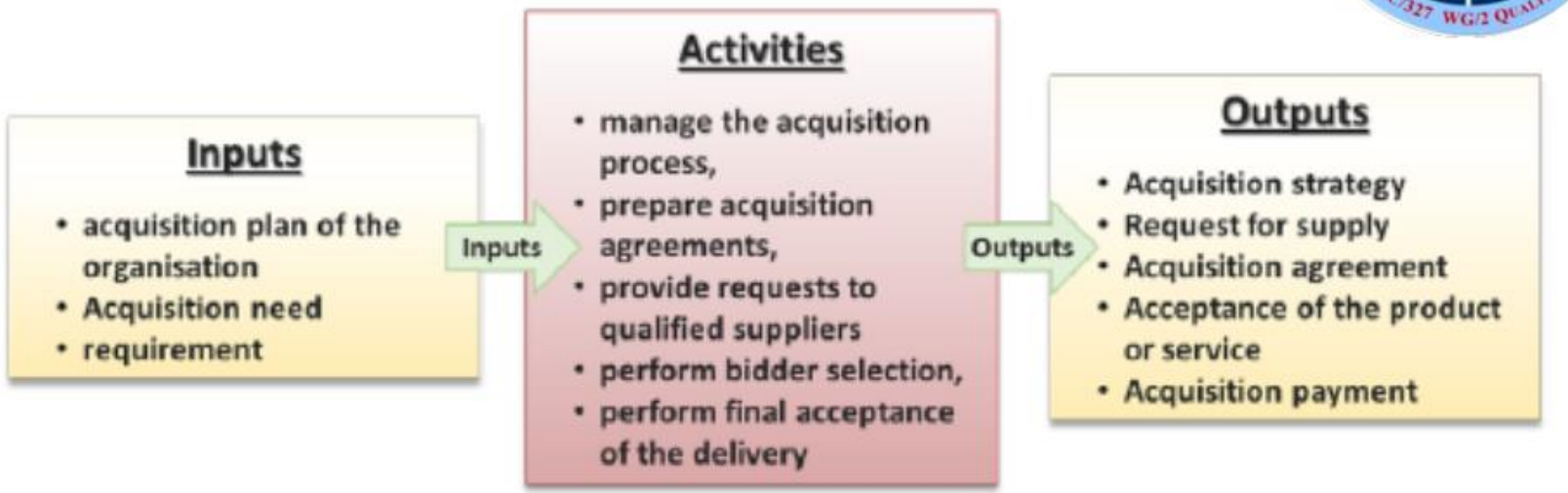
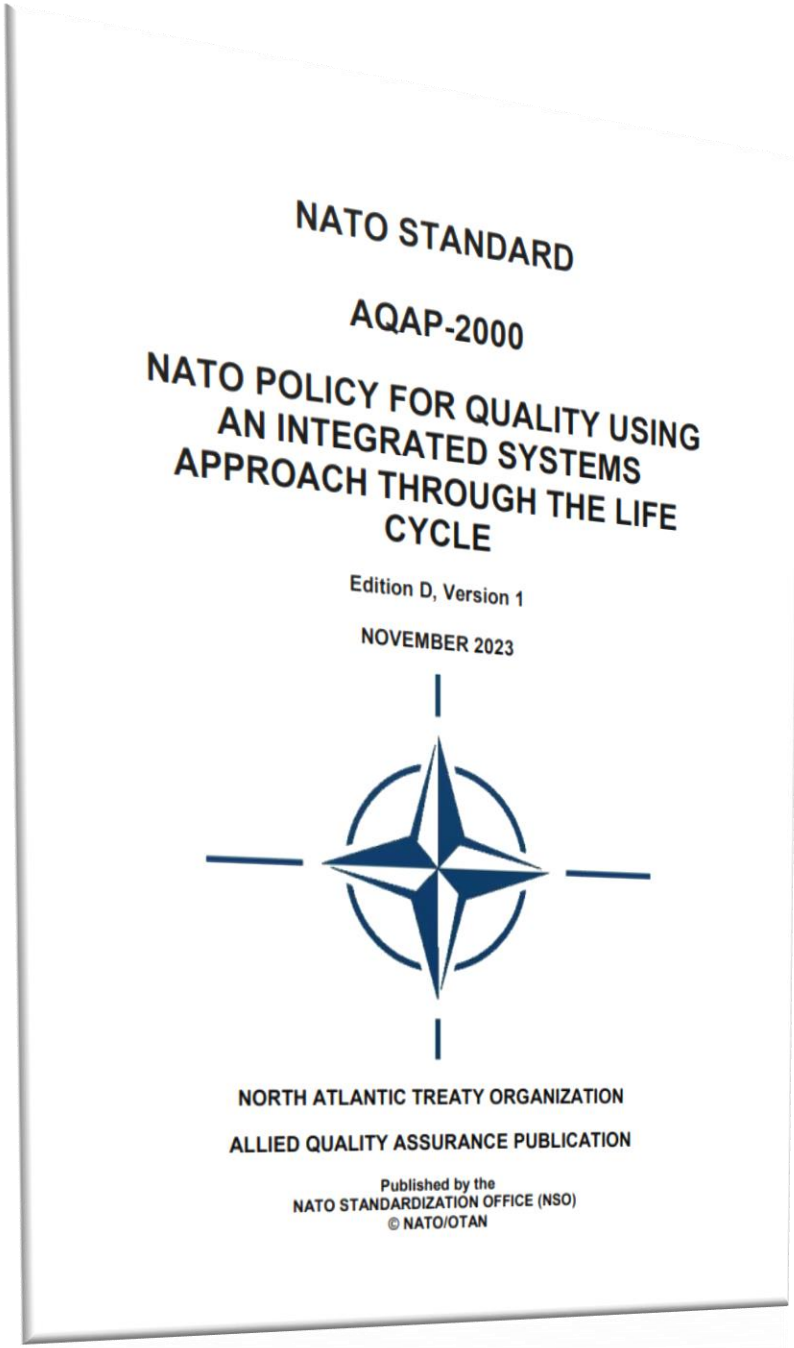


Figure 8 Acquisition Process

Important ! - acquisition can happen at all stages of the System Life Cycle



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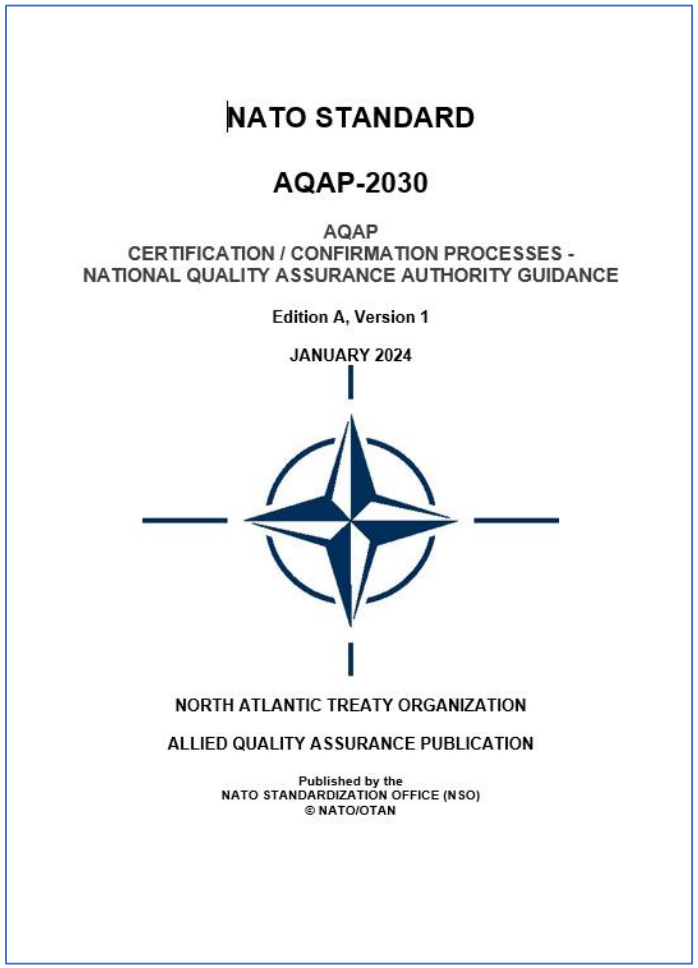
Certification


NATO STANDARD

AQAP-2030

AQAP
CERTIFICATION / CONFIRMATION PROCESSES -
NATIONAL QUALITY ASSURANCE AUTHORITY GUIDANCE

Edition A, Version 1

JANUARY 2024

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED QUALITY ASSURANCE PUBLICATION

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- Recognises the value of QMS certification in relation to acquisition.
- Recognises the value of accredited certification *'This certification shall be from certification bodies that are accredited as competent by an International Accreditation Forum recognised National Accreditation Body'*
- Recognises that NATO nations are effectively customers of the certification process.
- Recognises that some nations use AQAP confirmation as part of their approach to supplier assessment.
- Recognises that acquirers cannot use AQAP certification as a discriminator at supplier selection.

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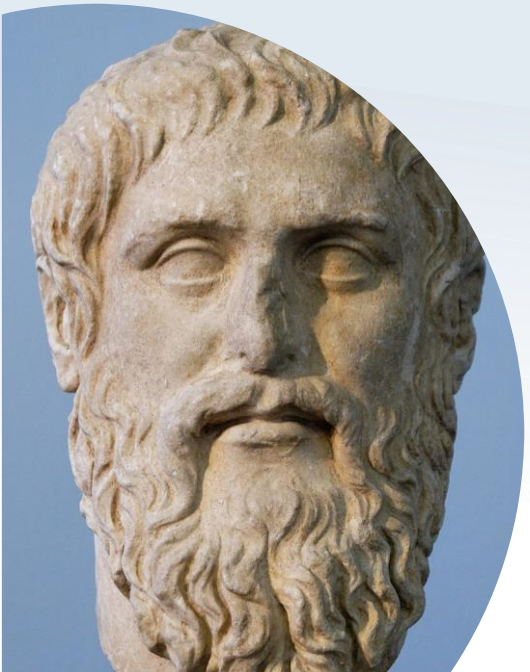
ORGANISATION DU TRAITÉ DE L'ATLANTIQUE NORD

Our need will be the real creator

Necessity is the mother of invention



ers of Royal Tank Regiment sit on a Challenger tank as t
d yesterday.

crease 155mm shells
or British Army

aced a significant order for 155mm artillery shells with
ns, which will increase the UK's stockpile and deliver an
increase in production capacity.

On-going AM Projects in the Defence Sector

The Largest Metal 3D Printer Was Commissioned by the US Military

The U.S. DEVCOM Army Ground Vehicle Systems Center is working to build the printer with the help of ASTRO America, Ingersoll Machine Tool, Siemens, and MELD Manufacturing at Rock Island Arsenal – Joint Manufacturing and Technology Center. The printer will be part of the Jointless Hull Project with the end mission being to print monolithic (one-piece) hulls for combat vehicles.

A 3D Printed Runway for the US Air Force

Another application in the military and defense sector comes from ITAMCO (Indiana Technology and Manufacturing Companies), which has developed a runway for military expeditionary airfields using additive manufacturing. These runway mats are an essential component of Expeditionary Airfields.

ExOne and Its Military Pods, an Innovative Application for Additive Manufacturing in Defense

With the goal of accelerating the development of strong and robust 3D printed factory pods, ExOne got involved in the realization of this task after working with several partners. The 3D printer, designed specifically for the military, is said to be capable of binder jetting more than 20 metal, ceramic and other powder materials – in addition, the unique housing and other features are said to make it perfect for a military-grade product.

A Ship's Propeller Made With Additive Manufacturing Shows Progress in the French Defense Sector

For several years now, the renowned French company Naval Group has been using 3D printing to meet a variety of needs. In 2021, thanks to additive manufacturing and more specifically to the WAAM (Wire Arc Additive Manufacturing) process, Naval Group has 3D printed a propeller, composed of five 200 kg blades.

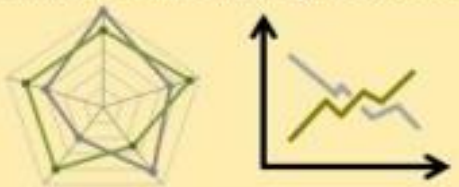
Source: 3DNatives

Knowledge of technologies:

Industrial and academic network

Worldwide machines providers

Technologies capabilities
(technical data, reliability, drawbacks,…)



General and scientific survey (DGA ITE)

AM for high-performance equipments/platforms

3D printing to increase operational performance

Readiness, reduce logistic burden, adaptability

Both topics of interests:

- **day-to-day parts**
- **spare parts**

Qualification / Certification

- Follow what Industry is doing about qualification/certification
- Know how to qualify/certify parts manufactured inside MoD

RAPiD-e CWIX 23 Field Trial Use Case

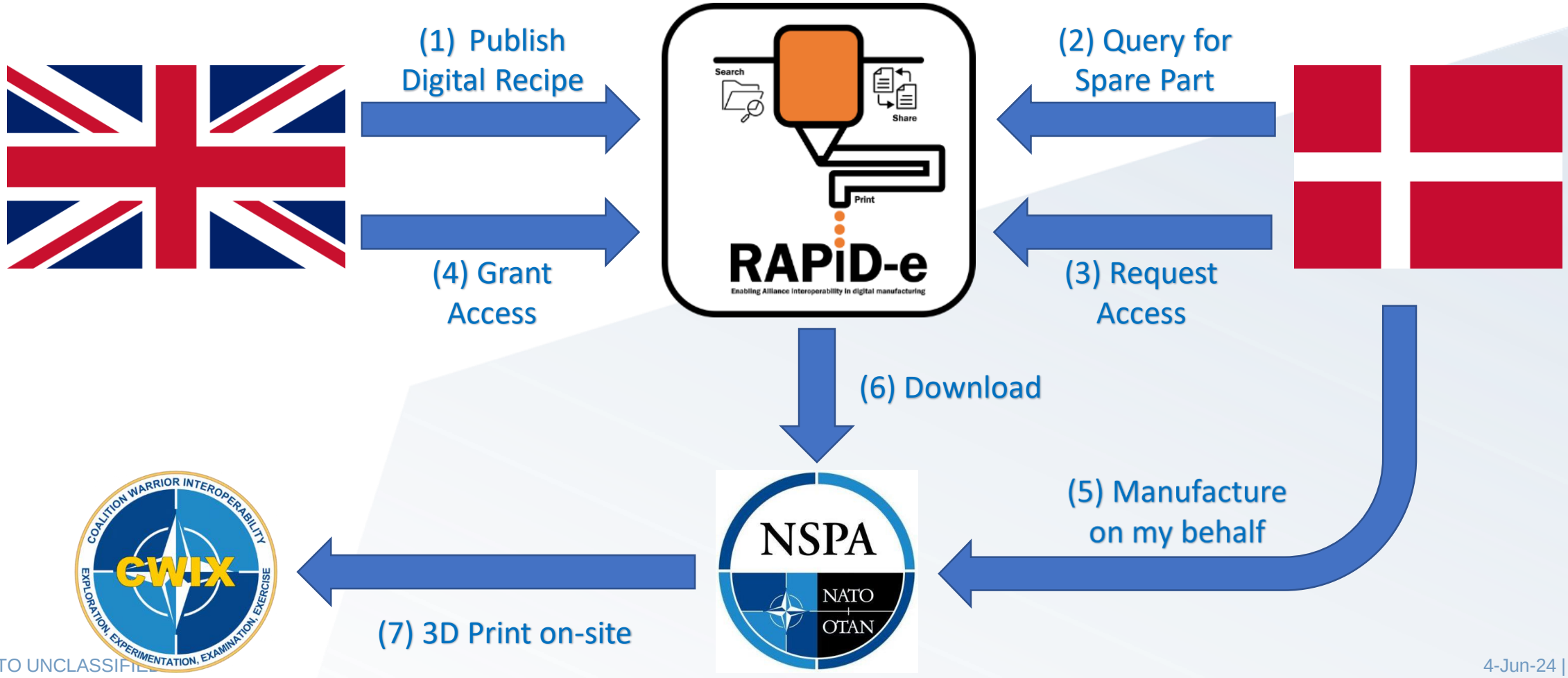
A military vehicle breaks down in a remote location during a mission. The malfunctioning is due to a minor defect. Only the fuel outlet connection of the fuel pump must be replaced. However, since it is a critical component, the vehicle is no longer operational.

The logistic personnel checks the spare parts list for the fuel outlet connection. Unfortunately, it is not available. Supplying ad-hoc solutions for secondary parts such as the fuel outlet connection is simply not viable for the original equipment manufacturer (OEM). Low demand rates would impose a relatively high inventory cost compared to the limited turnover. Moreover, the exclusive design and production rights of the OEM ensure that no third party will enter the market.

RAPiD-e CWIX 23 Trial

- Denmark: Requester of the use of a digital file
- NSPA (NRH), Luxembourg: Library
- UK: Owner of the digital file
- Poland: Place where the spare part is printed

RAPiD-e CWIX 23 Trial



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WHY DOES NATO TAKE INTEREST IN CLIMATE CHANGE?

Shapes the geopolitical environment and may **influence state behavior**.

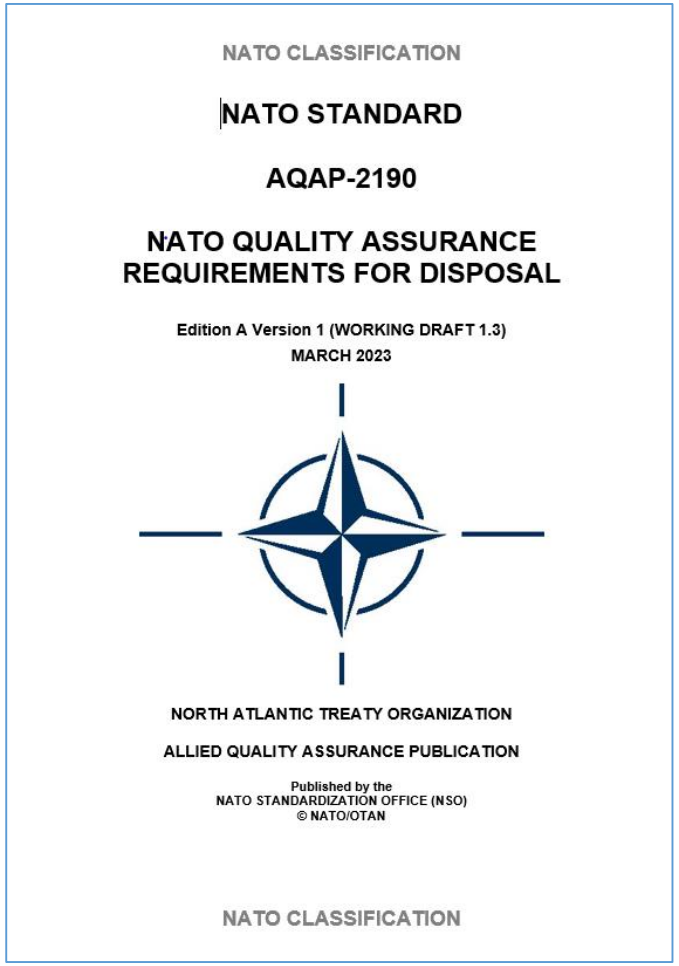
(new shipping routes due to thawing permafrost; sea level rises; desertification; droughts; green energy transition disruptions, etc.).

WHY DOES NATO TAKE INTEREST IN CLIMATE CHANGE?

Generates new or increased **tasks** for militaries in support of **civil protection** and **disaster response**.

(extreme weather conditions; wildfires; floods, etc.)

Future Developments


NATO CLASSIFICATION

NATO STANDARD

AQAP-2190

NATO QUALITY ASSURANCE REQUIREMENTS FOR DISPOSAL

Edition A Version 1 (WORKING DRAFT 1.3)
MARCH 2023

NORTH ATLANTIC TREATY ORGANIZATION

ALLIED QUALITY ASSURANCE PUBLICATION

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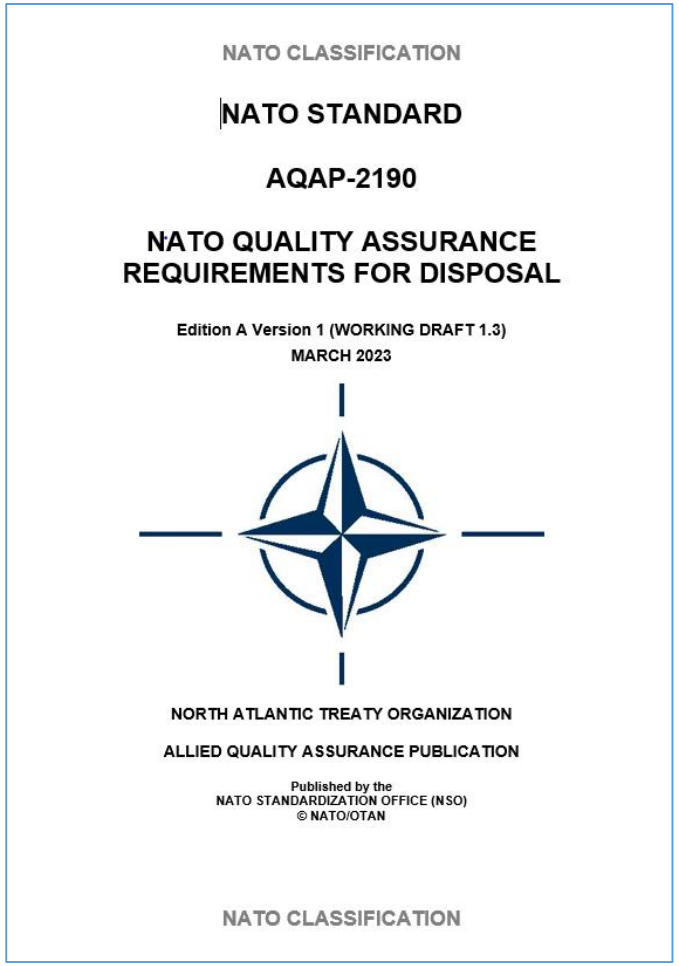
NATO CLASSIFICATION

AQAP 2190 – Needs and expectations of the acquirer

- The needs and expectations of the Acquirer are that the Supplier will proactively manage occupational health and safety to ensure that workers and other interested parties are not adversely impacted during contract execution.
- The needs and expectations of the Acquirer are that the Supplier will proactively manage the environmental aspects associated with the contract.

Future Developments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NATO CLASSIFICATION

- Technology and innovation – the role of QA
- Pace of acquisition – agile QA?
- Quality 4.0 – how to exploit data and AI
- Contract QA Conditions
  - AQAP for maintenance
  - AQAP for distributor
  - Updating the AQAP for quality plans
  - Updating AQAP 2110 and 2310

• ISO 9001 and AS 9100 updates

- What can we do to make industry ready for defence contracts?
  - Simplify our requirements
  - Establish clear acceptance criteria
  - Recognise that complex requirements can drive cost and incur time delays
  - Exploit third party certification industry

Key Messages

Quality – an enabler for interoperability and cooperation across the defence enterprise.

The industrial supply base is very much recognised as a key partner in the provision of defence capability.

Quality – an enabler for agile acquisition and innovation.