



# **THE NATO CODIFICATION SYSTEM**

CONNECTING GLOBAL LOGISTICS  
THROUGH TECHNOLOGY



[www.nato.int/codification](http://www.nato.int/codification)

# FOREWORD FROM NATO

The North Atlantic Treaty Organisation (NATO) Codification System facilitates codification services to its 63 partner nations that form the NATO Codification System (NCS) framework. Its mission is to provide a uniform NATO Codification System that serves as a global reference standard for materiel identification, and represents a key enabler in support of NATO and multinational interoperability, and aims at harmonising logistic systems.

Individual National Codification Bureaux (NCBs) codify all items manufactured within each member nation, sold either to their national defence forces or to international customers from the 63 partner countries.

Although originally a purely NATO organisation, the NCS is now by far larger than NATO itself. Over one third of the world's nations belong to the system, thereby encouraging interoperability and fostering standardization, as a lever to ease joint deployments and offer a general logistics melting pot for all potential partners and allies.

The NCS has been the chosen method for the identification of all managed stock items since its first development soon after WWII. By creating an effective relationship between the military and its suppliers, and ensuring proper codification, the NCS has become a critical enabler for international and multinational military organisations to effectively manage stock and maintain an effective armed force.

Internationally, the role of an NCS nation is to work with their own industrial base to

ensure codification of an item at any time of its life span. This results in an overall effective NATO Codification System, ensuring that any NCS member nation can be confident that they will get the item they require, wherever they may be operating.

This booklet provides Defence Staffs, Business Owners, Operators and similar International Organisations, with an NCS overview and background, allowing you to better understand the role of the NCS and its many Codification Bureaux. It explains how the NCS concept fits within the global logistics system in support of defence forces, showing the wide range of vendors and partners, both inside and outside of this organisation.

If you have any questions regarding the NATO Codification System, or the work of the NCBs, please do not hesitate and contact your National Codification Bureau, they are always available to assist in any way they can.

**Mr Ernest J. HEROLD,**  
*Deputy Assistant Secretary General;*

**Defence Investment Division;  
NATO HQ**

# FOREWORD

## FROM CHAIRMAN OF THE NATO GROUP OF NATIONAL DIRECTORS OF CODIFICATION (AC/135)

On behalf of the NATO Group of National Directors of Codification (Allied Committee 135), it gives me a great pleasure to welcome you to the guide to the NATO Codification system.

Codification touches virtually every area of the supply chain: in practice it addresses the challenge to correctly identify material and exchange complex technical data regardless of language barriers. The technological support is a key enabler to codification success, thus it's important that all parties involved in realisation of codification recognise this including: codification project leaders, technology experts, operations managers and specialists with a dedicated codification interest.

Originally a purely NATO organisation, the codification system is now far larger than NATO itself, 63 nations belong to the system which has become a common supply language throughout all logistics operations. The NCS managing committee highlights the importance of economic developments, thus aspiring to engage in direct dialog with industry partners to promote codification practices and to present the complete set of functionality and the associated benefits.

Moreover, in December 1957 the NATO Council established AC/135, and today we continue to expand the Codification spectrum in providing the data required to support combat readiness and interoperability.

Once again I welcome you to this guide and I hope that you and the organisation you represent will benefit from this study into the world of the NATO Codification System.

**Thierry Vanden Dries**

*Chair NATO Allied Committee 135*

# CONTENTS

Foreword From NATO	03	The myth of the manufacturer's part number	22
Foreword From Chairman of the NATO Allied Committee 135 (NATO Group of National Directors of Codification)	04	The NCS Concept	22
Contents	05	Fit, Form and Function	23
Codification in the 21st Century	07	NATO Stock Number (NSN)	24
Overall Findings	08	NATO Commercial and Government Entity code (NCAGE)	26
The job of the National Codification Bureaux (NCBs)	10	Codification Contract clause requirements	27
The NCS, its national codification bureaux and industry	11	National responsibility	27
The Relationship between the NCS, the NCB, the national defence force and industry	11	Data requirements	28
The NATO Codification System (NCS)	13	NATO Master Catalogue of Reference for Logistics (NMCRL)	29
The capabilities of codification	14	In physical terms	29
What is codified	16	Structure of the NMCRL	29
COTS	16	NMCRL Web	31
Exceptions	16	In summary	35
Task	16	FAQs	36
In Summary	17	In conclusion	38
Principle aims of the NATO Codification System	18	Case studies	39
In Summary:	18	Abbreviations in use in this document	44
Membership of the NATO Codification System	19		
The World According to Codification	20		
Strategic objectives of the NCS	21		



# CODIFICATION IN THE 21<sup>ST</sup> CENTURY

Logistics staff often take it for granted that the NATO Codification System (NCS) is recognised as important to the advancement of logistics, but they do not often state the reasons nor understand how the system works and the gains that can be made by adopting the newest technological changes. The purpose of this guide is to provide a review of the technological advances that the NATO Codification System (NCS) brings to a country's logistics operations and to the NATO alliance and its partners.

Codification touches virtually every area of the supply chain: in practice it addresses the challenge to correctly identify material and exchange complex technical data regardless of language barriers. The technological support is a key enabler to Codification success.

Codification impacts upon all parties involved in realisation of logistics support, whether it be to the military or other governmental organisations, in conflict or disaster relief, in industry or commerce.

The purpose of this guide is to introduce the reader to the complexities and opportunities of the NATO Codification system, to show the importance of technology in the system and to allow the reader to see the value codification adds to the logistics world.

# THE BENEFITS OF CODIFICATION

A study carried out on behalf of the NCS governing committee, AC/135 by LSC Consulting of the UK identified a number of specific issues surrounding the benefits and cost avoidance directly attributable to the operation of the NCS.

The primary questions to be answered by the study were:

- Is codification providing value for money?
  - Is the NATO Stock Number (NSN) a unique mechanism by which to achieve the relevant identification requirements or are there alternatives?
  - Does codification ultimately contribute to the operational effectiveness of military capability?
  - Is there a definitive view of the benefits of codification, settling the debate once and for all?
- Other related benefits make the case for codification even more favourable
    - inventory reduction
    - reduction in warehousing costs
    - lower purchase prices per item through purchasing larger, consolidated volumes of items
    - shorter re-supply times
    - ability for different nations to share supply chains
    - ability for different nations to share inventory
    - the recognition by Industry of shared benefit through using the system.

## OVERALL FINDINGS

- The prevention of unnecessary inventory growth by the use of accurate codification is alone sufficient to justify the total cost of the Codification System within Defence logistics.



# ITEM OF PRODUCTION VS ITEM OF SUPPLY

Item identification is the most important element of the codification system because it establishes a unique identification for every Item of Supply.

The identification consists of the minimum data required to establish clearly the essential characteristics of the item, i.e., those characteristics that give it a unique character and differentiate it from all others.

The NCS identification process is based on the “Item of Supply” concept. The term “Item of Supply” refers to an item required for acquisition in order to satisfy a logistics need. It can consist of one or many “Items of Production” having equivalent “fundamental characteristics”. This is the primary driving principle behind the NCS, the recognition that many manufacturers may each make an item of production but all of them conform to one Item of Supply. This means that the principles of interoperability, multinational logistical support and effective inventory management all drop out of one simple number.

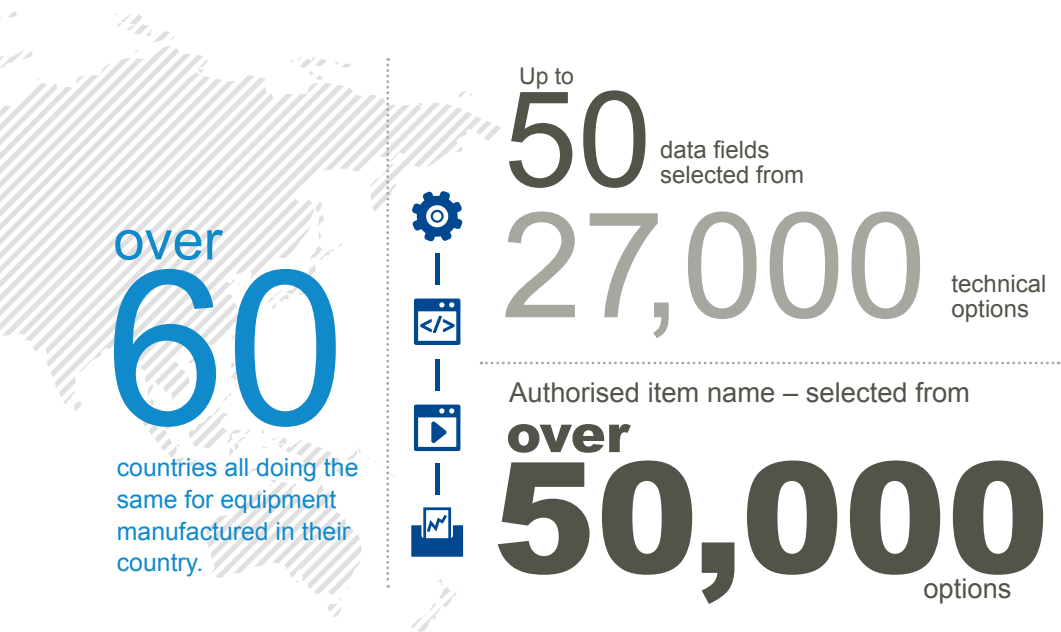
The system employs rules for “naming” each Item of Supply using standard naming conventions to ensure uniformity among users. The NCS controls these naming conventions using a dictionary of Approved Item Names. Each approved name is given a five digit numeric code. This code-based system provides for easy translation and communication between nations in varying languages. After an item has a name, a suitable supply classification is determined.

# The real job of the National Codification Bureau (NCB)

## WHAT THE WORLD THINK THE NCB DOES

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## WHAT THE NCB REALLY DOES



# THE NCS, ITS CODIFICATION BUREAUX & INDUSTRY

Individual NCBs are the sole agency for all codification matters for both the national military and industrial organisation and companies within a single country. These bureaux provide services or products both to internal customers and to foreign agencies, defence forces and industry who use the NATO Codification System world wide.

## **THE RELATIONSHIP BETWEEN THE NCS, THE NCB, THE NATIONAL DEFENCE FORCES AND INDUSTRY**

The relationship between the NCS and its individual component parts and partners is a critical one, both for the day to day operations of a nation's defence force and for the interoperability relationship between multiple countries' defence components.

Without industry, a country's defence forces would be without vital equipment and support, but at the same time, if national industry does not facilitate the codification of the products it sells to the military or any other agency using the NATO Codification System throughout the world, then the item will remain on the shelf and be unable to be procured or used.

It is therefore in the interests of both the supplier and the user that the codification elements are involved at an early stage of any agreement to acquire equipment by the national or any international, defence forces and that the information required to facilitate codification is viewed as an essential deliverable element of any procurement contract.

The fundamental principles of the relationship are:

- Any country's military is an integral player in many multinational operations where interoperability is a fundamental element of the process.
- Manufacturers and suppliers are essential partners of the military.
- The NCS is the primary key when managing an Item of Supply within the logistics system and without it no item can be said to be uniquely identified within the military inventory.

This relationship is enabled by:

- Clauses in contracts detailing what data is to be provided, to whom and when in the procurement and delivery cycle.
- The maintenance of ongoing working relationships between the NCB's and individual manufacturers and suppliers.
- The generation of requests for data by the NCB's and their submission to the supplier of any item of equipment.

As technology develops, the relationship between all of the partners of the integrated logistics landscape will intensify. Industry will need to understand the parameters of the products it is required to manufacture; the user community will need to be very specific about what data is required, and the need for a single point of acquisition of data supporting multiple uses of that data, will deepen.





# THE NATO CODIFICATION SYSTEM (NCS)

The NCS is a disciplined process by which all Items of Supply (IOS) can be uniquely identified and recorded.

## THE CAPABILITIES OF CODIFICATION

The NCS is the global language of logistics, providing four key capabilities to underpin the defence logistic support system:

1. a common language, including codes for which different nations can provide translations into local language
2. master data describing the items within the defence inventory (Items of Supply), covering naming, identification, classification and characterisation of items
3. equivalence between form, fit and function of items available from different manufacturers (Items of Production), creating an association with Items of Supply
4. master data for the purposes of logistics management of those items, covering, for example, inventory accounting, packaging and units of issue.



## **CODIFICATION IS CRITICAL TO MISSION SUCCESS**

The role of the various NCBs around the world is little known even in logistics circles. Nevertheless these bureaux provide a foundation for international cooperation in military and government logistics and an ever increasing role in commercial logistics.

The NCBs are responsible for:

- capturing technical data and assigning NSNs
- linking national catalogue systems with those of other governments
- operating a database and systems integration processes
- ensuring the data integrity that underpins coalition and joint logistics.
- representing their nations at all NCS meetings





# WHAT IS CODIFIED

The short answer is all items that are going to be brought into the inventory and managed as stocked items must be codified in order to be managed by a nation's domestic logistics system.

Naturally, there are exceptions but in general, if the record is required to be managed, then it must be codified.

The task of adopting the NCS is made easier by the fact that a huge number of items have already been catalogued. There are approximately 18 million items codified in the NCS. For example, the United States has 7 million active items in their central catalogue. If a country acquires U.S. equipment, then it is generally able to draw the catalogue data directly from the NCS. Similarly, if a country buys French or German equipment then this information would also be available to be drawn down without the need for new codification.

## COTS

There are some that argue that Commercial off the Shelf (COTS) items should not be codified, but how do you ensure you are not buying something that the next unit is trying to get rid of? How do you ensure the items are not already in stock? How do you ensure you get the best deal for your money? The decision not to codify needs to be made at the appropriate level if a nation wants to reap the benefits of the NCS.

## EXCEPTIONS

As mentioned above, there are exceptions. There are items managed by the armed services that may not require codification such as non managed consumables. As soon as more entities start acquiring the same item or there is a need to store some reserve items, then the item must be codified. If this does not happen, there is a high risk that the impacted defence force will either be paying more than it should for an item or buying items that are already in stock elsewhere in the system under a different name or manufacturer's part number. Again, the decision not to codify needs to be made at the appropriate level if a country wants to reap the full benefits of the NCS.





## **IN SUMMARY**

- Codification is usually a mandatory requirement if equipment is to be loaded onto a logistics management system
- COTS items are no different to any other item and usually need to be codified
- Codification prevents the purchase of duplicate items resulting from a lack of visibility of stock.

# PRINCIPLE AIMS OF THE NATO CODIFICATION SYSTEM

## THE PRINCIPLE AIMS OF THE NCS ARE:

- The establishment of a common logistics system to ensure that each unique Item of Supply available to all users of the NCS - military and civilian - is correctly characterised and assigned a standardised NATO Stock Number (NSN).
- To avoid duplication by maintaining a database of descriptive information with respect to each Item of Supply. Before new NSNs are assigned, details of all proposed new Items of Supply are screened against the codification database to identify which items have already been given NSNs and therefore are already in the defence inventory.
- To ensure all Items of Supply are uniquely identified by an NSN as the use of the manufacturer's part number alone cannot guarantee uniqueness.

The NCS names, classifies, identifies, describes and assigns numbers to Items of Supply for use by participating nations and agencies.

## IN SUMMARY:

The NCS operates within the following parameters:

- **Interoperability** – with all nations and agencies operating the system.
- **Standardisation** - use of set procedures allows language barriers to be broken down.
- **Discipline** - the operation of the NCS is clearly defined and understood by all the user nations.
- **Uniqueness** – the NCS is the principle system in use within the armed forces of over 60 countries which guarantees an item's uniqueness.

# MEMBERSHIP OF THE NATO CODIFICATION SYSTEM

The NCS currently comprises more than 60 NATO and non-NATO nations, representing one third of the world's countries. The organisation comprises three main groups;

- NATO countries
- technically proficient non-NATO sponsored nations (known as Tier Two nations)
- non-NATO sponsored nations who participate within the NCS but are only approved to receive data (known as Tier One nations).

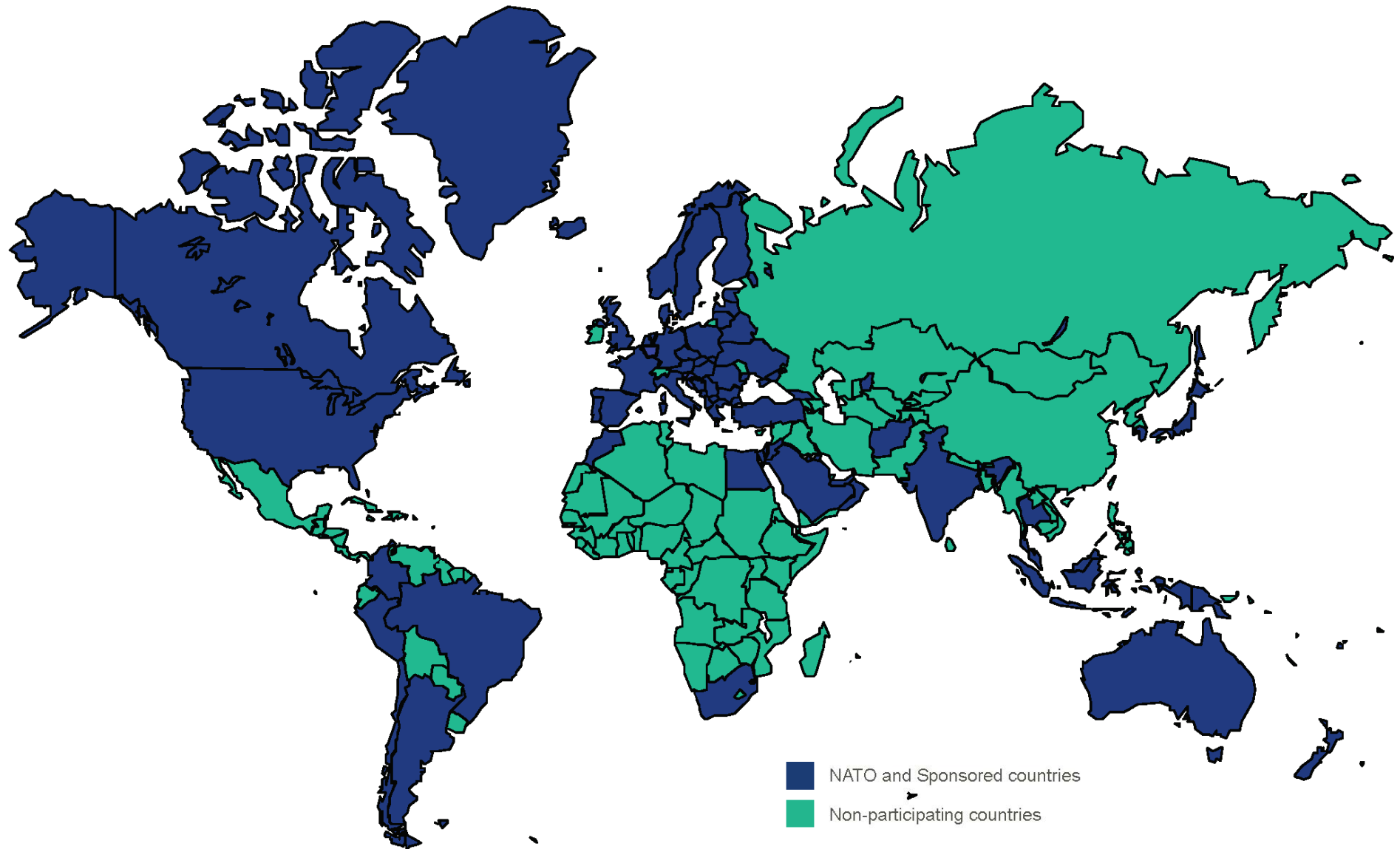
Each nation, and its NCB, collaborate closely with all other NCS member nations and collectively, under the auspices of Allied Committee 135 form the focus for international codification policy and transactions involving military acquisitions and sales within a country and to international Defence Forces and other government agencies.

The NCBs are responsible for the day to day operation of the NCS within each member nation on behalf of the national defence force and industry. As such, the NCB is the custodian of the country's NCS database.

The national NCB may also be responsible for the management and maintenance of the vendor address databases which link into the NATO master databases and is the means by which all individuals and companies who enter into a financial relationship with a NCS participant nation are identified across the world. This database currently holds a worldwide list detailing nearly 3 million Vendors.



# THE WORLD ACCORDING TO CODIFICATION



# STRATEGIC OBJECTIVES OF THE NCS

- To ensure that defence logistics capability is maintained at its optimum effectiveness.
- To ensure that each Item of Supply in the defence inventory that requires codification is identified uniquely and allocated a NATO Stock Number.
- To maintain an honest and effective relationship with all elements of the defence logistics organisation and associated industrial partners.
- To represent the interests of the nation in developing and implementing the NCS.
- To ensure that codification practices, policies and procedures used within the country reflect both national and AC/135 policy.
- To ensure that each item of equipment supplied by industry to customers in other countries who use the NCS, is identified uniquely and allocated a NATO Stock Number.
- To maintain an accurate and efficient database of codification information and related systems.
- To seek continuous improvements in cost effectiveness, efficiency and quality, taking into account technical developments and the changing requirements of the national defence force and its industrial partners.
- To identify and meet customer needs for codification and actively promote the benefits.
- To manage the codification process throughout the NCS and national industry to an appropriate quality standard.
- Provide advice regarding codification, cataloguing, registration and change requests to both internal and external customers.
- Liaise with the country's defence industry regarding the provision of technical data to support the codification of submitted items.
- Provide technical advice in relation to the NCB function to all users of the NCS and associated systems.
- Manage the co-ordination of NCB involvement in Defence Capital Equipment Projects.
- Provide timely and accurate cataloguing data.
- Act as the national point of contact for all technical codification and vendor file maintenance matters to ensure the national NCB data records are maintained to the highest standards.
- The vetting, researching, timely processing and final validation of all codification requests entering the NCS database.

# THE MYTH OF THE MANUFACTURER'S PART NUMBER

Manufacturers have developed particular systems to meet their specific needs. Consequently, similar types of items satisfying comparable needs, but manufactured by different companies, will be identified by different numbering schemes. This does not satisfy the requirements of users such as armed forces who (for the majority of Items of Supply) manage their inventories by item type, rather than origin or use. For the military stock manager, it is less important who uses it and on which system or equipment it is used; if it has the same characteristics (form, fit and function), it will be assigned one NATO Stock Number (NSN). That NSN will then be used by logisticians of all NCS member nations and armed forces to manage that item.

## 'FORM, FIT AND FUNCTION' MEANS:

### **FORM**

The shape, size, dimensions, and other physical measurable parameters that uniquely characterise a product. For software, form denotes the language and media.

### **FIT**

The ability of a product to interface or interconnect with an integral part of another product.

### **FUNCTION**

The actions that a product is designed to perform.

## THE NCS CONCEPT

**ONE  
NAME**

**ONE  
IDENTIFICATION**

**ONE  
NUMBER**

# FORM, FIT AND FUNCTION

The fundamental precept of the NCS is that through the use of form, fit and function items from different manufacturers will perform the same task if they are all codified under the same NSN. In other words an Item of Supply may comprise Items of Production from many different suppliers.

This was designed to allow management of an item where there are multiple manufacturers who make an item that matches all of the NATO FFF criteria.



The concept underpinning the entire NATO Codification System (NCS) is that of 'one item, one number'. The codification process involves describing the item in some detail to enable it to be differentiated from similar items of supply. When we assign an Approved Item Name (AIN) code to an item, a specific and relevant set of questions appear for us to answer. For a generator for example, power output, dimensions, prime mover, voltage and the like would be required.

The phrase form, fit, and function incorporates all of these specifications and each needs to be considered to be the same for an item to have the same NSN. The form relates to materials, dimensions, layout, configuration etc. Fit is the ability of the item to attach to, or be compatible with its parent item, and function relates to what it does, its outputs etc. in addition to 'purpose'.

If an item has a different size, weight, materials or layout then it does not have the same form. If it doesn't fit into the same space, have the same mountings etc. then the fit is not the same and if the rated outputs or purpose differ then the function is different also.

It is not acceptable to work on the premise that an item exceeds the specification of an existing item and therefore can have the same NSN. While it may be suitable in the same application for one user it may be totally unacceptable to another user due to space limitations or a maximum allowable output etc. It must be remembered that the NSN may be used by many different users from among the over 60 participating nations in the NCS.

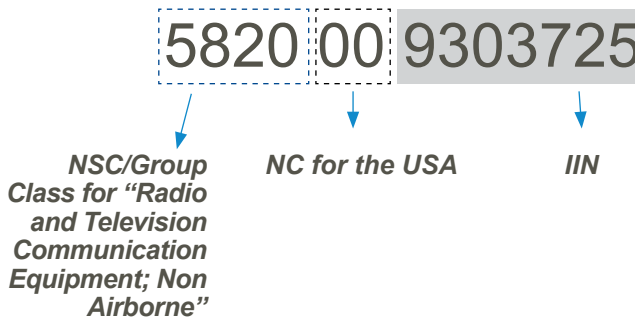
Essentially, any significant difference in an item of supply in any of the areas of form or fit or function must be codified to a new NSN.

# NATO STOCK NUMBER (NSN)

Each Item of Supply is identified in the NCS by a unique 13 digit NATO Stock Number (NSN). The NSN consists of three identifying parts:

- a **four digit NATO Supply Classification Code (NSC)**, also known as “Group and Class”, this places the Item into a group classification, for example generators, aircraft engines etc
- a **two digit Nation Code (NC)**, this identifies the country of manufacture
- a **seven digit Item Identification Number (IIN)** which, together with the NC, is unique to that Item.
- **NC and IIN form together the NIIN = NATO Item Identification Number**

An example of an NSN is 5820 00 9303725, where:







# NATO COMMERCIAL AND GOVERNMENT ENTITY CODE (NCAGE)

## **WHAT IS AN NCAGE CODE?**

Each manufacturer or supplier who provides equipment or spares to a country utilising the NCS, together with other organisations who provide design control drawings, standards or specifications, or a service to that country's defence force, needs to be allocated a NATO Commercial And Government Entity (NCAGE) code in order to comply with the requirements of the NCS system and with the systems of the other nations who utilise the NCS.

An NCAGE Code is a five (5) position code that identifies companies or entities doing or wishing to do business with the governments or defence organisations.

Individual NCBs or NSPA allocate these unique five-character codes to companies depending on their location.

## **WHY DO I NEED AN NCAGE CODE?**

NCAGE records are used to hold manufacturer/supplier details such as name, address, postcode, telephone number, fax and company email address. The code is used to support a variety of systems throughout the military, governmental and defence organisations. The code provides for a standardized method of identifying a given company or facility at a specific address – so it is possible for a large company to have several NCAGE codes, one for each location. In some cases, prime contractors may require both their sub-contractors to have a NCAGE Code as well as there often being a need for an NCAGE to be issued to the next higher organisation.

The NCAGE code is used along with the manufacturer/supplier's part number to form a reference which is held on the NATO Stock Number (NSN) record. This reference enables users of the NCS to determine who manufactures/supplies the Item of Supply.

It is therefore in the interest of suppliers to ensure that the information held in the NCAGE database is complete and up to date.

# **CODIFICATION CONTRACT CLAUSE REQUIREMENTS**

The NCS as an organisation has recognised that, in order to work effectively all equipment procured for participant defence forces through contracts issued by the military or appropriate procurement organisations should be required to be codified before being accepted from the vendor. This particularly applies to Items of Supply being purchased for inventory rather than being purchased for immediate consumption – often the case for low value, disposable items which are more and more often being bought off the shelf.

Accordingly, the NCS has developed a standardised codification clause which member nations are required to insert within their procurement contracts. This mandatory clause identifies the requirement for the provision of information and technical specifications necessary to be delivered to the appropriate codification bureau before the actual items of equipment are receipted and payment made.

The purpose of codifying items at this point is to ensure the unique identification and classification of Items of Supply, using a common supply language, before they are received from the supplier. This information is recorded in sufficient detail to distinguish unique Items of Supply from other Items using NATO Stock Numbers (NSN). These are used to enable maximum effectiveness in national and international logistic support and data management in the area of materiel supply and inventory management throughout the life of the item.

## **NATIONAL RESPONSIBILITY**

If the supplier is located in a NATO country or in a sponsored Tier Two country then the codification organisation will be the National Codification Bureau of the country where the manufacturer is located. If the supplier is not located in a NATO country or in a sponsored Tier Two country the item will be codified by the NCB of the first purchasing nation.

## **DATA REQUIREMENTS**

Vendors who supply items under such contract terms are required to provide, within the timescales specified in the contract, initial and supplementary data required for cataloguing and codification purposes. These requirements are detailed by the ACoP-1 – NATO Manual on Codification.

- Technical data (comprising drawings, specifications, catalogues or any other information describing the physical characteristics of an Item) is required to enable codification to be undertaken for the identification and management of materiel as required by the NCS. Specific data requirements for an individual item can be obtained, upon request (unless already specified) from the relevant NCB.
- In addition to the initial provision of technical data, the vendor is also required to provide any updated information on all items specified in the contract, resulting from agreed modifications, design or drawing changes as and when these changes are made during the life of the item.

When items are ordered from a manufacturer in a non-NCS country, the codification authority in the purchasing nation becomes responsible for obtaining the necessary technical data and codifying that item.

If the vendor, sub-contractor or manufacturer has previously supplied technical data for codification purposes, on any of the items covered in the original contract, to the requesting Codification Authority, they are to state this fact and to indicate to which Codification Agency they were supplied. The vendor, sub-contractor or manufacturer shall contact the Codification Authority in their country for any information concerning the NATO Codification System.

Unless otherwise provided by the contract, the cost of supplying the information above, and any other information specifically called for under the contract, shall be deemed to have been included in the contract price.

Where the vendor engages a sub-contractor, then these requirements also apply to the sub-contractor, and the vendor will ensure that the sub-contractor complies with them.

# NATO MASTER CATALOGUE OF REFERENCES FOR LOGISTICS (NMCRL)

AC/135, which is the governing body for the NATO Codification System, owns the Intellectual Property rights on all data held on the codification system in the form of the NATO Master Catalogue of References for Logistics (NMCRL). This data includes details of all equipment manufacturers, by individual item, countries registered for an item and many other details. This information is easily available to individual companies and users by subscription, and can be used for commercial purposes.

## **In physical terms**

Physically, the NMCRL is the largest materiel database in the world and the primary information product of the NCS. It contains nearly 20 million NATO stock numbers, over 30 million manufacturer part numbers and nearly 3 million registered suppliers and other organisations. Links between the NSNs and the additional data source are updated regularly, these include:

- World Customs Organization Custom codes (Harmonised System & Schedule B)
- Common Procurement Vocabulary (CPV) codes

In addition, further enhancements are being studied, including links to Reportable Item Codes (RIC) and many of the new customs and transit codes now internationally required.

The NMCRL is a vital data repository for the AC/135. It is the source document for all initial codification checks; it is the primary reference tool for many logistics tasks, and for both military and commercial organisations the NMCRL represents the largest and most complex database of military equipment in the world.

## **Structure of the NMCRL**

The actual NMCRL comprises six segments or sections:

- Segment A - Item Identification Data (What is the item?)
- Segment B - User Registration Data (Who uses the item?)
- Segment C - Reference Data (Who manufactures/sells the item with what number?)
- Segment K - Item Identification Status / Cancellation Data
- Segment V - Technical Characteristics Data

- Segment 8 - Manufacturer and Vendor Data.

These segments are broken down into individual data records that can be used by the military or civilian operator. In doing so, the actual database itself contains information on the following technical aspects of equipment used within over 60 of the world's major military organisations (this number of nations equates to almost 1/3rd of the nations on the planet).

Currently the NMCRL is available to many commercial organisations around the world subject to NATO constraints. However, subscribing non-military users of the NMCRL cannot see some characteristics data for NSNs (Seg V) for manufacturers' proprietary reasons.



# NMCRL WEB

The current version can be obtained either as a stand alone version where no web access is available, or a fully online version.

Fundamentally, the aim is to move all but deployed users to the Web version as soon as possible to ensure that the information used is always the most up to date and complete.

The NMCRL is available on an annual subscription basis. Subscribers should complete and submit a specific subscription form indicating their preference on available options, i.e. NMCRL-WEB, NMCRL-OFFLINE and NMCRL-PACK (Web access plus 6 Offline updates). It should be noted that annual instalments should be paid in advance, whereas pricing policy depends on the number of the NMCRL consecutive users. More information on pricing and license types are available at [www.nato.int/nmcrl](http://www.nato.int/nmcrl)



The NMCRL is for authorized use only. NMCRL-WEB subscribers agree through their subscription form that they will not share or reveal their login credentials to others. Also, NMCRL-OFFLINE subscribers agree that they will not disclose their download credentials to any third party.







# DATA EXCHANGE

AC/135 is the governing authority of all codification matters within NATO in order to ensure the continuity and the appropriate application of Codification disciplines as described in the NATO Manual on Codification, Allied Codification Publication 1 (ACodP-1). AC/135 has regular meetings to manage the NCS and to ensure that NCS changes meet the needs of its customers. Under STANAG 3151 on Uniform System of Item of Item Identification, a NATO Stock Number (NSN) is accepted by all signatories for assignment to an Item of Supply. This means the NCS countries mutually and collectively agree to implement the NATO Stock Number concept under the rules defined in ACodP-1. The Codification record establishes the master data for a broad set of logistics management aspects of items of supply, as well as the most frequently recognised NATO Stock Number.

AC/135's business affairs are administratively managed by the NATO Support and Procurement Agency (NSPA), established in Capellen, G.D. Luxembourg. NSPA provides AC/135 with a central support promoting the expansion of the NCS and safeguarding system cohesion. NSPA develops and maintains tailor made systems and applications to facilitate the creation and exchange of codification data.

The codification dictionaries & applications are accessible at: <https://eportal.nspa.nato.int/ac135public/> as the following:

- The ITEM NAME DIRECTORY (ACodP-3) provides the Approved Item Names, their definitions together with appropriate inclusions and exclusions and also Colloquial Names. ACodP-3 serves as the internationally agreed dictionary for the preparation of materiel identifications. This directory lists more than 50,000 definitions, the current version is available in more than 20 languages.
- The SUPPLY CLASSIFICATION (ACodP-2) provides the classification structure of the NSC, by presenting 670 Classes listed in the arrangement of the four-digit NSC code-number system, available in more than 20 languages.
- The NATO MailBox System (NMBS) facilitates data flow between the nations, handling an impressive number of 260.000.000 transactions annually. The NMBS plays the role of the world-wide codification post office. It accepts the message envelopes, controls the origin and destination addresses, registers it, forwards the envelope to the appropriate country and returns the receipt acknowledgement when the envelope is delivered. Similar to the postman, the NMBS does NOT control/read the message content.
- The Management Information System (MIS) facilitates performance measurement and assess quality aspects of codification data against set of the key performance indicators. The MIS provides data on the performance of the system, the number of good and erroneous records, the ability of NCBs to meet turnaround times, and the overall quality of the NCS and NCBs.

The beauty of the NCS architecture is based on data segmentation and its flexibility to add new data elements. The data formats are based on the US Federal Cataloguing System, and use the NATO Data Exchange (NADEX) protocol, which was designed on the 80-column punch card format. While most procedures and practices amongst the AC/135 community have evolved and changed over time, NADEX imposes limits on field lengths, file sizes, processing speeds and the use of non-Latin characters.

AC/135 is therefore undertaking modernization of data exchanges protocols by moving to a modern data exchange format, the Extensible Markup Language (XML). This format is widely used throughout industry and will allow the international codification community to make changes as required with simplicity and flexibility. Transfer of codification data to other logistics systems both inside and outside the military will be quicker and easier. In order for the codification community to remain relevant and in-touch with the changing demands of the military, this modernization is essential. Implementation of this pivotal for the Codification community project is underway within AC/135 and NSPA. It is envisaged that implementation will be completed in each nation by 2022 and at this point of time NADEX will cease to be used for codification data exchange.





# IN SUMMARY

The NATO Codification System (NCS) is often referred to as the international language of logistics. It is neither an inventory control system nor a supply accounting system, but the logistics language used by such systems to enable them to function and communicate with the system's users. This also applies to procurement systems, maintenance systems and transportation systems. The NCS is the foundation of inter-service and inter-nation logistics co-operation. Adopting this language is often the first step towards such co-operation.

The NATO Codification System is an integral part of the supply operations of both NATO and many non-NATO countries. This system has established a single supply language across the armed services and many public/federal services and provides accurate information on the identity and characteristics of an Item of Supply, avoiding wasteful duplications. It is a flexible system with growth and upgrade capacity to facilitate improved support to logisticians.

Over 60 countries have long recognised the benefits of using the NATO Codification System to support their defence force operations. The flexibility of the system, both within at home and in joint operations with other users of the NATO Codification System allows a common language in situations where a mistake could cost lives. The individual nation NCBs are the key to the NATO Codification System and their relationship with manufacturers and suppliers is critical for the overall functional capability of national defence forces. By working together, the NCB, the military and national industry and suppliers can ensure that an item of equipment is available for use when it is delivered, as well as ensuring that national manufacturers can provide the best service when dealing with overseas customers who also use the NATO Codification System within their logistics organisations.

# FAQS

## NATO CODIFICATION

### What is the role of vendors/manufacturers in codification?

NATO codification is a government to industry government function. The role of vendors/manufactures is also of critical importance as they provide the technical documentation which allows the attribution of a single NSN. An example of how the process can work is as follows:

Let's say a U.S. company has a contract to sell a system to the Italian Air Force. The Italian Air Force should work with the Italian National Codification Bureau and the manufacturers to ensure that codification of the spare parts for the system takes place. That process may include the Italian Air Force providing tech data to the Italian NCB that it has obtained from the U.S. Company. The Italian NCB will take care of contacting the U.S. NCB for assignment of NSNs and will forward any tech data it has obtained from the Italian Air Force/manufacturers to the U.S. NCB to assist item identification and NSN assignment.

### Can non-NATO countries use the NCS?

Yes, and a large number of countries around the world do use it. In fact, there are now more non-NATO countries using the NCS than there are NATO countries. AC/135 has a sponsorship programme through which non-NATO countries can establish an official relationship within the NCS and participate in most AC/135 meetings.

### Who's in charge of the NCS?

The NCS is governed by the NATO Allies collectively through NATO Allied Committee 135, known as AC/135. AC/135 is officially recognised by NATO headquarters as the governing authority for all codification matters within NATO. AC/135 has regular meetings to manage the NCS and to ensure that the NCS changes to meet the changing needs of its customers. AC/135's business is administered by the NATO Support and Procurement Agency (NSPA), located in Capellen, Luxembourg.

### Why do you need all the technical source data for the item?

Technical data helps codifiers write full item descriptions. These descriptions in turn help users of the NCS determine if items of supply meet their requirements. Full descriptions also help promote efficiency by providing the information needed for item reduction studies and other rationalisation projects.

### **Why should I go to the trouble of adding users and adding part numbers to NSNs?**

Both adding users and adding part numbers to NSNs adds value to NCS data. Adding users helps promote interoperability between countries. Adding reference numbers helps ensure readiness by maximising the number of available suppliers and lowers costs by promoting competition among suppliers.

### **How do I add the reference number of a new supplier I have discovered, to an existing NSN?**

You would contact the NCB of your country and they will handle it.

### **How do I add New Zealand, for example, as a user to a foreign NSN (to a United States NSN, for example)?**

In this case you would contact the NZ NCB and they would handle it using a simple electronic transaction. The NCB of each country is responsible for handling all codification matters.

### **Who should I contact if the information on file is incorrect?**

Contact your NCB.

### **How can I tell who manufactures the Item of Supply from a reference listed on the NSN?**

Every part number listed on NSNs in the NCS is accompanied by a NATO Commercial and Governmental Entity (NCAGE) code. These five character codes identify exactly who the manufacturer or other organisation is. With one mouse click, users of the NMCRL can easily obtain the name and address and other details associated with NCAGE codes. NCAGE code information is also available from national products and databases.

### **How can I find out the NSNs registered against my company?**

By subscribing to the NMCRL or by contacting the NCB of your country.

### **Who uses an Item of Supply?**

The forces of all the NATO countries and non-NATO countries that participate in the NATO Codification System (NCS). Some Items of Supply are used by only one country, while others are used by many countries. NSNs are used through the life cycle of Items of Supply, from procurement through disposal and by all levels of the armed forces. In addition, in many countries, NSNs are also used by many other sectors of government apart from Defence.

### Where can I get information on the NATO MCRL?

You will find extensive information about it, including pricing and ordering information, at [http://www.nato.int/structur/AC/135/nmcrl/nmcrl\\_e/index.htm](http://www.nato.int/structur/AC/135/nmcrl/nmcrl_e/index.htm).

### How long will it take to get an NSN?

The standard timeframe for requests for codification of items is normally less than 60 days with the average being 30 days from start to finish. However, AC/135 has developed accelerated and emergency procedures for customers that need faster NSN assignments. Contact your NCB for details. Normally, NSNs should be assigned early enough in the logistics process so that codification does not hamper logistics operations in any way.

### What do I do if I need an NSN urgently?

Contact your NCB. A special procedure for assignment of NSNs on an emergency basis allows NSNs to be assigned as quickly as possible.

### How do I get my items codified?

In each country, the National Codification Bureau is the central point of contact for getting items codified.

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## IN CONCLUSION

We hope that, with this brochure, we have helped you appreciate where the role of the NATO Codification System and the position of a country's National Codification Bureau fits within the rest of the governmental and military structure of a country.

If you have any questions regarding the NATO Codification System, or the work of an individual Country's National Codification Bureau, please do not hesitate to contact the Bureau's staff, they are always more than happy to help.

# CASE STUDIES

The benefits of a common language	
Source:	International
Type of benefit:	role of codification record: common language
Role of Codification:	In 2011, the Codification System reached the milestone of being in operation across 64 countries worldwide. If these countries were not signed up to operate a common language then they would have to build an infrastructure of interconnections in order to achieve the same effect as the one the Codification System achieves.
Quantified impact:	<b>Reduced cost.</b> Without a standard, 63 countries would require a possible total of $63 \times 63 = 3969$ point to point interfaces. With a single, common standard in place, the number of interfaces becomes $63 \times 2 = 126$ . While the figure of 3969 is somewhat theoretical in the sense that every nation is not actually talking with every other nation at this moment in time, missions such as ISAF in Afghanistan or NATO operations in Libya demonstrate that the requirement to interoperate can arise with little warning.
Quantification of the inventory rationalisation enabled by the Codification System	
Source:	USA
Type of benefit:	impact on logistic support system: rationalised inventory
Role of Codification:	KPMG performed a survey of several different industrial sectors and discovered examples of inventory rationalisation ranging between 15 and 50% arising from the adoption of effective cataloguing. Such rationalisation is already in place for all participating nations because of the NATO Codification System.
Quantified impact:	<b>Reduced cost.</b> At the time of the survey, the total US defence inventory was USD 4.5 billion, so the Codification System is preventing inventory growth in the range of USD 0.8 to 4.5 billion. The underlying mechanism for inventory reduction is the System identifying an average (mean) of two items of production for each item of supply.
Re supply during operations	
Source:	Australia
Type of benefit:	impact on logistic support system: procurement of materiel
Role of Codification:	During operations in East Timor from 1999 to 2003, the Australian forces found that some items had an allocated NATO Stock Number (NSN), while others did not.
Quantified impact:	<b>Improved timeliness.</b> Items without an NSN took up to nine weeks to re supply, significantly longer than those items with an NSN.



Financial benefits from inventory rationalisation	
Source:	UK
Type of benefit:	impact on logistic support system: rationalised inventory
Role of Codification:	The United Kingdom Protected Mobility Project Team conducted an exercise to use the NATO Stock Number in a review of inventory.
Quantified impact:	<b>Reduced cost.</b> The result of an initial trial of just three items identified an inventory reduction of GBP 64,000. The Protected Mobility Team used these initial results to underpin the business case to rationalise the rest of the inventory for all types of vehicle for which the team has responsibility.
More effective in theatre supply	
Source:	Estonia
Type of benefit:	role of codification record: equivalence between form, fit & function
Role of Codification:	During the Iraq War, the Estonian army was able to use the US supply chain to provide engine oil for vehicles because the NATO Stock Number was the definitive link by which to establish the validity of the technical characteristics and, hence, the suitability of the available oil.
Quantified impact:	<b>Reduced cost and risk.</b> Sharing of the existing supply chain avoided the complexity and expense of creating a new supply chain from Estonia (noting the classification of engine oil as a dangerous cargo, requiring extra arrangements for special handling).
Visibility of purchase prices	
Source:	Singapore
Type of benefit:	role of codification record: master data for logistics management aspects
Role of Codification:	The NATO Stock Number was the basis for being able to identify the last purchase price of items during acquisition for a new aircraft.
Quantified impact:	<b>Reduced cost.</b> The data on last purchase price revealed the contractor was proposing to charge USD 4 million more in total for 156 high-value items. As a consequence, the contractor was put under pressure during negotiations to achieve an appropriate reduction in the proposed prices.



Industry benefit from the NATO Stock Number	
Source:	UK
Type of benefit:	delivered benefit: faster, better, cheaper logistic support system
Role of Codification:	The company Babcock Marine provides an extensive range of logistic support services to the Ministry of Defence and has adopted the NATO Stock Number for inventory management purposes.
Quantified impact:	<b>Reduced cost.</b> The NSN provides compatibility with the UK Defence support chain but also enables Babcock Marine to optimise support processes and the associated inventory requirement.
International sharing of inventory	
Source:	NSPA
Type of benefit:	impact on logistic support system: interoperability
Role of Codification:	NSPA facilitates sharing of inventory between NATO partners. The NATO Stock Number is the identifier that makes this sharing possible. In one particular example, the United States had been struggling with some particular aircraft being unavailable for operations over a period of 60 days.
Quantified impact:	<b>Improved timeliness.</b> Within 24 hours of eventually being advised of this problem, NSPA was able to identify and obtain the required replacement items from inventory held by Norway.
Competitive supply from Industry	
Source:	Singapore
Type of benefit:	delivered benefit: secure and competitive supply from Industry
Role of Codification:	The Singaporean Defence Science and Technology Agency has done extensive investigation and analysis to understand how codification delivers worthwhile value in supply chain management. If prime contractors can hide the origins of parts by replacing the original part numbers then the customer has no ready means by which to check the scale of any mark-up in price that the prime contractor decides to apply. The NATO Stock Number prevents such practices and helps to avoid unjustifiable expense in acquisition programmes.
Quantified impact:	<b>Reduced cost.</b> Original equipment manufacturer (OEM) prices of items are up to 30% cheaper than those charged by prime contractors.

Chaotic logistics without a common language	
Source:	NATO
Type of benefit:	delivered benefit: multi national operations
Role of Codification:	When peacekeeping in Bosnia transitioned from being the responsibility of UN to NATO, the result was a significant decrease in the in theatre inventory because the participating nations were all using the NATO Stock Number.
Quantified impact:	<b>Reduced cost and risk.</b> The supply chain was no longer delivering unnecessary items into the theatre of operations.
Wrong items in theatre	
Source:	UK
Type of benefit:	impact on logistic support system: procurement of materiel
Role of Codification:	While Colonel Mark Dunn of the British Army was responsible for logistics operations in Afghanistan, he personally witnessed the discovery of buttons for ceremonial naval uniforms sitting in an in theatre logistics store. These buttons had arrived because someone had assigned a dummy NATO Stock Number to a completely different item, happening to use the same number as the one for the buttons.
Quantified impact:	<b>Reduced cost.</b> At the very least, the consequence of not using the Codification System properly was unnecessary expenditure on delivering and returning the buttons to and from Afghanistan (or the cost of the buttons if no return took place). More worryingly is the unknown, potential impact on the vehicle that had a need for the items with the dummy NSN. How long did a military commander have to wait until the vehicle received the required maintenance action? What risks did this cause to soldiers in the battlefield? What military action could not take place?
Keeping the logistic footprint small	
Source:	UK
Type of benefit:	delivered benefit: faster, better, cheaper logistic support system
Role of Codification:	For the Jackal 1 vehicle, the British Army was able to use the NATO Stock Number to identify 220 types of item (covering a total inventory of GBP 400,000) that were unnecessarily in stores in the theatre of operations once the vehicle was no longer in use. The Army was able to send these items back to the UK, reducing the storage requirement in theatre.
Quantified impact:	<b>Improved timeliness and reduced cost.</b> This activity took half a day rather than the estimated two weeks it would have taken if the team had searched through illustrated parts catalogues to determine which items were or were not returnable.

The benefits of extending the scope of inventory	
Source:	UK
Type of benefit:	delivered benefit: faster, better, cheaper logistic support system
Role of Codification:	Historically, the UK MOD had not required codification of items within the inventory of the Royal Fleet Auxiliary (RFA) ships. In 2007, the MOD began to realise that various problems were affecting the ships, including lack of accountability for stock, overspend and configuration control issues (impacting the sign off of safety cases). These problems prompted a decision to codify the RFA inventory, which included over 45,000 types of item.
Quantified impact:	<b>Reduced cost.</b> Of the items, approximately 25% already existed within the Codification System. Thus, the costs of codification were not as large as they would have been when the Codification System was still new. As a result of adding the RFA inventory into the wider MOD inventory, the Afloat Support Team Leader (responsible for the RFA) is willing to state: "The use of the NATO Codification System has saved, and is saving, the UK Royal Fleet Auxiliary millions of pounds".

## ABBREVIATIONS IN USE IN THIS DOCUMENT

<b>AC/135</b>	Allied Committee 135	Committee of Countries involved in the codification of equipment. Reports to the Conference of National Armaments Directors.
<b>ACodP-1</b>	Allied Codification Publication #1	Principle "Bible" of the codification process. Written and ratified by AC/135.
<b>CNAD</b>	Conference of National Armaments Directors	Committee of high ranking national officials responsible for all armaments activities within NATO - reports to the Council of Ministers.
<b>COTS</b>	Commercial Off The Shelf	Non-defence specific item of supply bought off the shelf for use by NZDF.
<b>IIN</b>	Item Identification Number	Non unique element of the codification number.
<b>IoS</b>	Item of Supply	General term describing an item's form, fit, and function described using supply items satisfying logistics needs.
<b>MPN</b>	Manufacturer's Part Number	Part number allocated by an individual manufacturer to its product. However, no guarantee of uniqueness as there is no central controlling organisation – diametric opposite of the NSN.
<b>NATO</b>	North Atlantic Treaty Organisation	29 Nations in a mutual security pact, centred in Europe and North America.
<b>NC</b>	Nation Code	Code within the NSC which identifies which country undertook the codification action, usually country of manufacture.
<b>NCB</b>	National Codification Bureau	Bureau set up within each member country responsible for acting as the codification entity and point of contact between the country and the NCS.
<b>NCAGE</b>	NATO Commercial and Government Entity Code	5 character code by which all associated companies and organisations can be recognised.
<b>NCS</b>	NATO Codification System	
<b>NMCRL</b>	NATO Master Catalogue of References for Logistics	Master data record of all national and international codification actions, available commercially.
<b>NSN</b>	NATO Stock Number	Primary unique identification number of all codified items.

<b>NSPA</b>	NATO Support and Procurement Agency	NATO organisation located in Luxembourg responsible for the logistics support of NATO operations both physically and from a material management perspective.
<b>Tier One Nation</b>		Non NATO Nation which uses the international NSC codes but is unable to generate any codes of its own except for domestic usage and can only receive data from the NCS but not contribute towards it.
<b>Tier Two Nation</b>		Non NATO nation which is able to utilise and generate all NCS codes and data and interact with all other NCS nations in a two way data flow.





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