DE&S JSC SCM SCPol United Kingdom National Codification Bureau

The DNA of Modern Logistics - NATO Codification

CONTRACTING FOR DATA QUALITY

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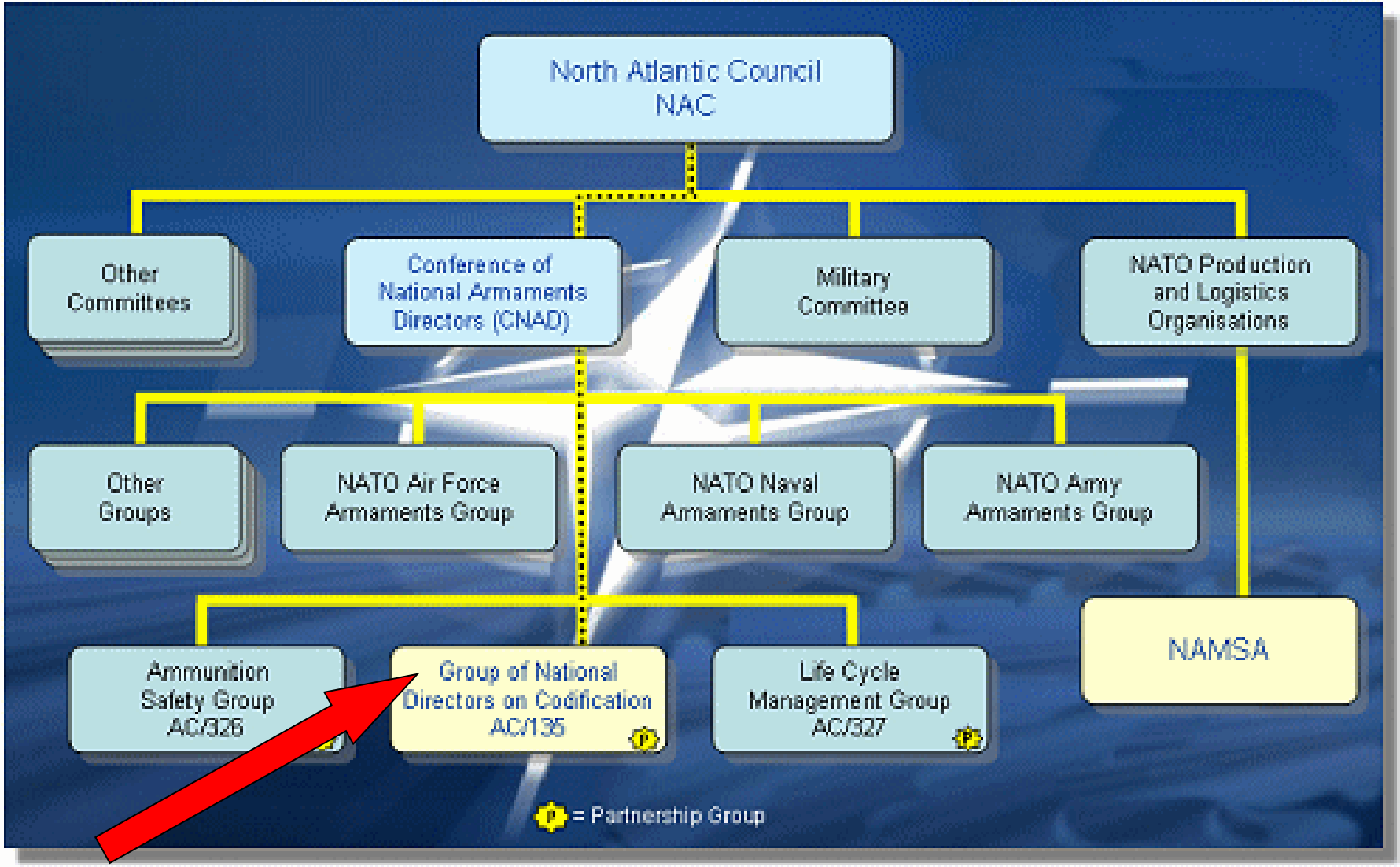
AC 135 & NATO

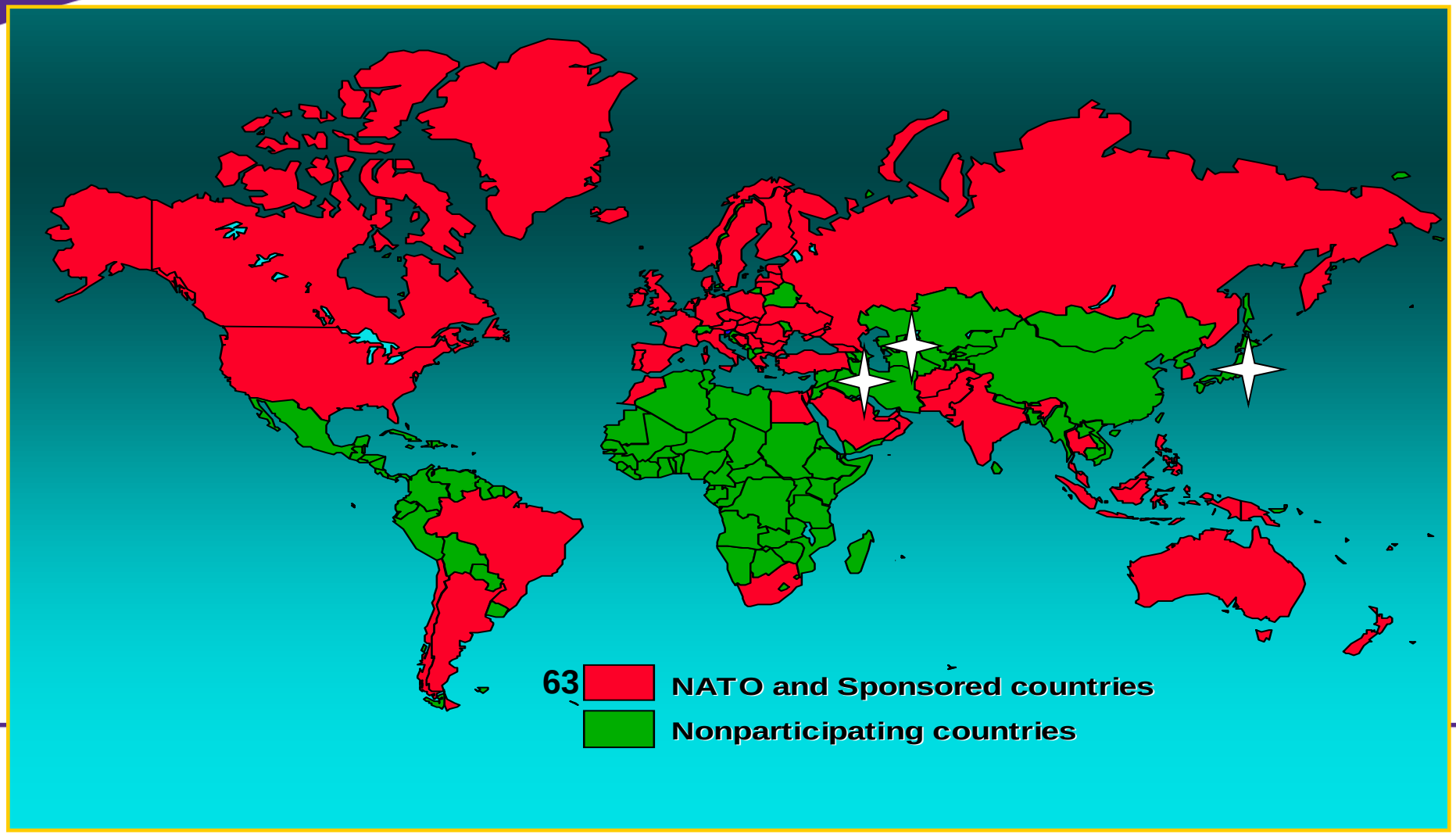

North Atlantic Council
NAC
Other Committees
Conference of National Armaments Directors (CNAD)
Military Committee
NATO Production and Logistics Organisations
Other Groups
NATO Air Force Armaments Group
NATO Naval Armaments Group
NATO Army Armaments Group
NAMSA
Ammunition Safety Group
AC/326
Group of National Directors on Codification
AC/135
Life Cycle Management Group
AC/327
= Partnership Group

AC135 STRATEGIC VISION

The adoption of a state-of-the-art NATO Codification System and its methodology, by Armed Forces and Defence Industries, as the Global Reference Standard for Materiel Identification, and as a key ‘enabler’ to support NATO & Multi-National Interoperability and Harmonised Logistic Systems

CODIFICATION -

BUILDING A WORLDWIDE COMMUNITY

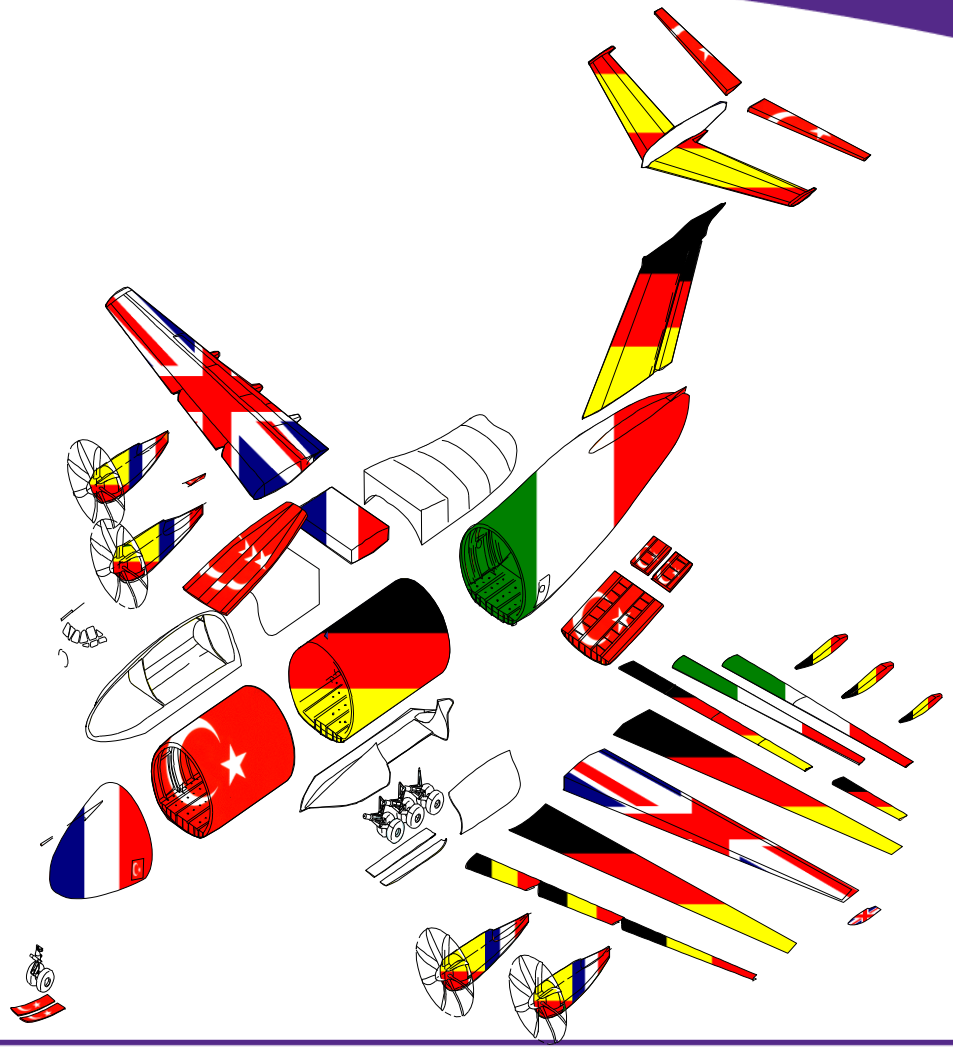


INTEROPERABILITY

- ASSET MANAGEMENT
- COMMON PURPOSE & UNDERSTANDING

MULTINATIONAL SYSTEMS DEVELOPMENT

ALN
AS
BAE
CASA
DASA
FLABEL
TAI



Source: Airbus Military

ENGAGING WITH INDUSTRY

- **THRU-LIFE FROM CONCEPT TO DISPOSAL**

- **DESIGNER ENGAGEMENT**

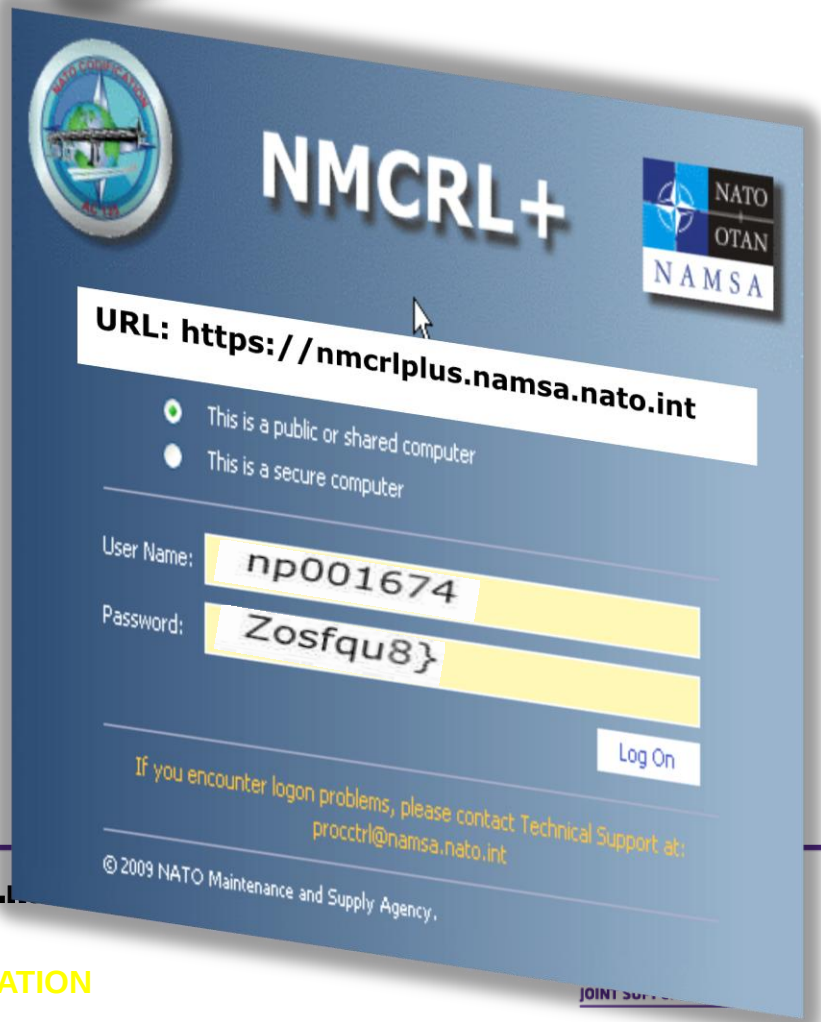
MINISTRY OF DEFENCE

NATO Master Catalogue of References for Logistics

AC/135

CODIFICATION nmcrl CATALOGUE

30-DAY TRIAL!



NMCRL provides NATO forces with a multilingual web application in 12 languages.

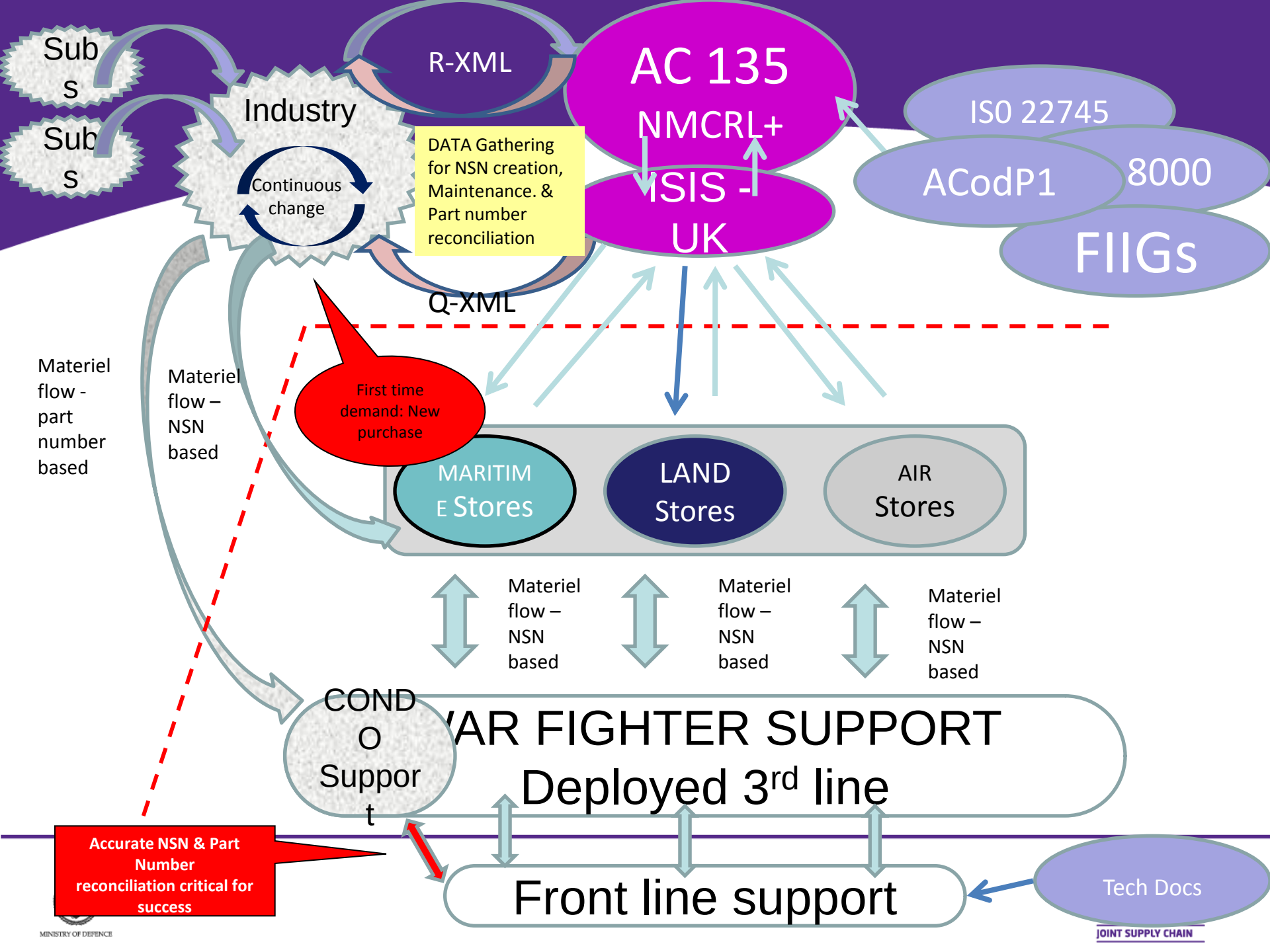
NATO Codification System (NCS) data:

- 16 Million active Items of Supply (NSNs)
- 33 Million active Items of Production
- 2 Million Manufacturers and Vendors
- 91 Million Rows of Technical Characteristics
- Links to other Identification Systems
- Search by Characteristics, Batch Functionalities

MINISTRY OF DEFENCE

WWW.NATO.INT / CODIFICATION

What is DATA Quality?


Subs
Subs
Industry
Continuous change
R-XML
AC 135
NMCRL+
ISIS - UK
DATA Gathering for NSN creation, Maintenance. & Part number reconciliation
ISO 22745
ACodP1
8000
FIIGs
Q-XML
Materiel flow - part number based
Materiel flow – NSN based
First time demand: New purchase
MARITIME Stores
LAND Stores
AIR Stores
Materiel flow – NSN based
Materiel flow – NSN based
Materiel flow – NSN based
COND O Suppor t
AR FIGHTER SUPPORT
Deployed 3rd line
Accurate NSN & Part Number reconciliation critical for success
Front line support
Tech Docs
MINISTRY OF DEFENCE
JOINT SUPPLY CHAIN

Landauer's principle (1961) - Information is Physical.

An Erasure in information leads to an entropy increase in non information degrees of freedom of the information processing apparatus or its environment.

Yes I cut and pasted this from wikipedia

In English

If the **information** is **complete** it should be **easy** to **identify** an item from that information.

If information is incomplete, the difference between the level of information existing and the actual item it describes, proportionately reduces the probability of identifying the item which reduces the value of having that information…… and that can lead to all sorts of problems!!!!!!!!!

The measuring stick

Type 1: All the mandatory eliments of the Federal Item Identification Guide for the item in question have been met. The item is considered to be **FULLY DESCRIBED**.

Type 4: At least ONE of the mandatory eliments of the Federal Item Identification Guide for the item in question have not been completed. The item is considered to be **PARTIALLY DESCRIBED**.

Type 2: NO mandatory or optional eliments of the Federal Item Identification Guide for the item in question have been answered. Only the manufacturers part number exists. The item has **NO technical description**.

Traditional Versus Supplier Sourced Codification

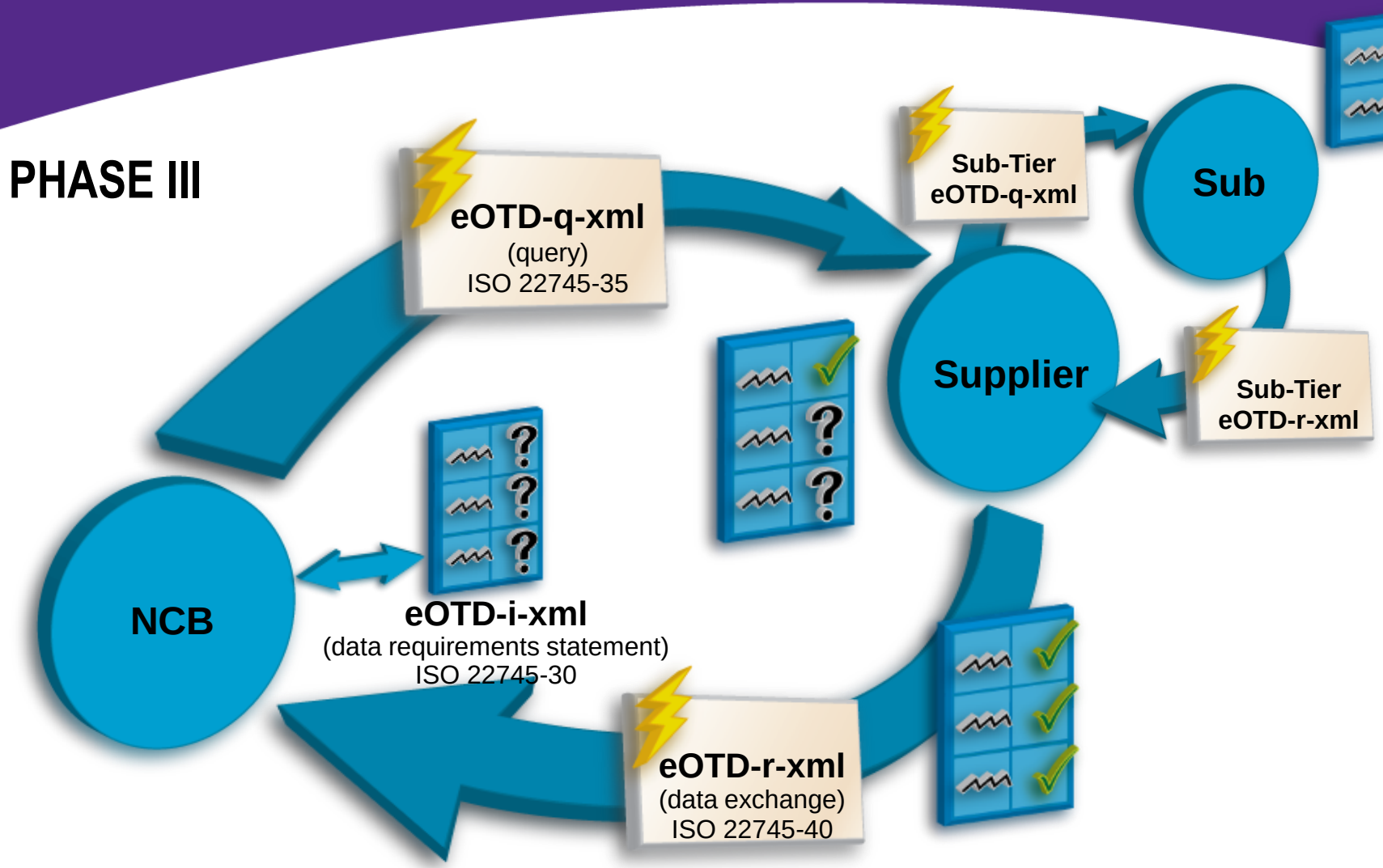
The first SSC III task was sent to one of our contractors with a special instruction to complete the task in accordance with ISO 8000 Pt 110 and use ISO 22745 transactions for the 30 item task.

The contractor missed the special instruction, which normally we would have been really unhappy with!

Every cloud has a silver lining though and this let us put together some comparison stats: The traditional codification was achieved using the technical drawing which was only provided to allow item naming for the 22745 task.

	Type 1	Type 4	Type 2	Avg PVP
Traditional Codification	0	27	3	8
Supplier Sourced Codification	20	10	0	12

TRULY Automated Codification



NATO Mandatory Requirements

Class – VALVE BALL

Property 1 – Material

Property 2 – Style

Property 3 – Valve Operation

BAES Part Classification – 40,000,000

Class – Valve, Stainless Steel, 3 way L ported, manually turned.

NATO Mandatory Requirements

Class – VALVE BALL

Property 1 – Material

Property 2 – Style

Property 3 – Valve Operation

BAES Part Classification 40,000,000

Class – Valve, Stainless Steel, 3 way L ported

Property 1 – Operation Method – Hand Turned

NATO Mandatory Requirements

Class – VALVE BALL

ISO 22745 OTD 0161-1#01-089708#1

Property 1 – Material

ISO 22745 OTD 0161-1#01-056789#1

Property 2 – Style

ISO 22745 OTD 0161-1#01-542315#1

Property 3 – Valve Operation

ISO 22745 OTD 0161-1#1543256#1

BAES Part Classification – 40,000,000

Class – Valve

ISO 22745 OTD 0161-1#01-248615#1

Property 1 – Material Value 1 Stainless Steel

ISO 22745 OTD 0161-1#01-056789#1

Value - ISO 22745 OTD 0161-1#01-021587#1

Property 2 – Configuration Value 2 - 3 way L ported

ISO 22745 OTD 0161-1#01-254780#1

Value - ISO 22745 OTD 0161-1#154278#1

Property 3 – Operation Method – Value 3 – Hand Turned

ISO 22745 OTD 0161-1#245780#1

Value - ISO 22745 OTD 0161-1#012475#1

NATO NATIONAL STOCK NUMBER - 991234567

Class – VALVE BALL

ISO 22745 OTD 0161-1#01-089708#1

Property 1 – Material Value 1 Stainless Steel

ISO 22745 OTD 0161-1#01-056789#1

Value - ISO 22745 OTD 0161-1#01-021587#1

Property 2 – Style Value 2 – 3 way L ported

ISO 22745 OTD 0161-1#01-542315#1

Value - ISO 22745 OTD 0161-1#154278#1

Property 3 – Valve Operation Value 3 - Manual

ISO 22745 OTD 0161-1#1543256#1

Value - ISO 22745 OTD 0161-1#012475#1

BAES Part Number – 40,000,000

BAES Part Classification – 40,000,000

Class – Valve

ISO 22745 OTD 0161-1#01-248615#1

Property 1 – Material Value 1 Stainless Steel

ISO 22745 OTD 0161-1#01-056789#1

Value - ISO 22745 OTD 0161-1#01-021587#1

Property 2 – Configuration Value 2 - 3 way L ported

ISO 22745 OTD 0161-1#01-254780#1

Value - ISO 22745 OTD 0161-1#154278#1

Property 3 – Operation Method – Value 3 – Hand Turned

ISO 22745 OTD 0161-1#245780#1

Value - ISO 22745 OTD 0161-1#012475#1

NATO NSN – 991234567

Does this make things Faster?

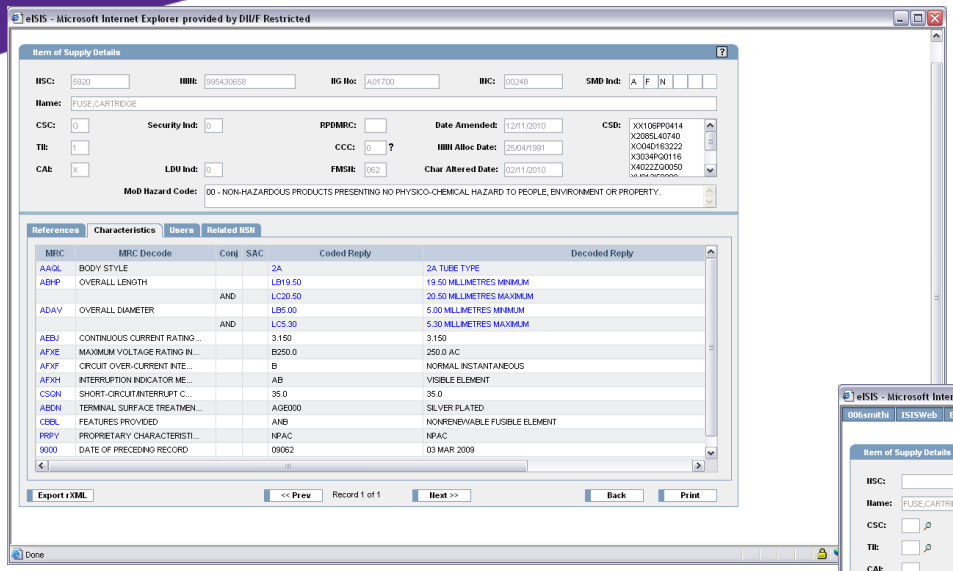
Ask a cataloguer how long it takes to create 1 item and the reply will be something like ***"how long is a piece of string"***

To get the best possible comparison, I removed the cataloguer's thinking time, and reduced the creation of NATO Stock record to a count of the mouse clicks required.

The average number of property value pairs within the UK NATO Database = 8. Each Property Value Pair requires a minimum of 3 mouse clicks.

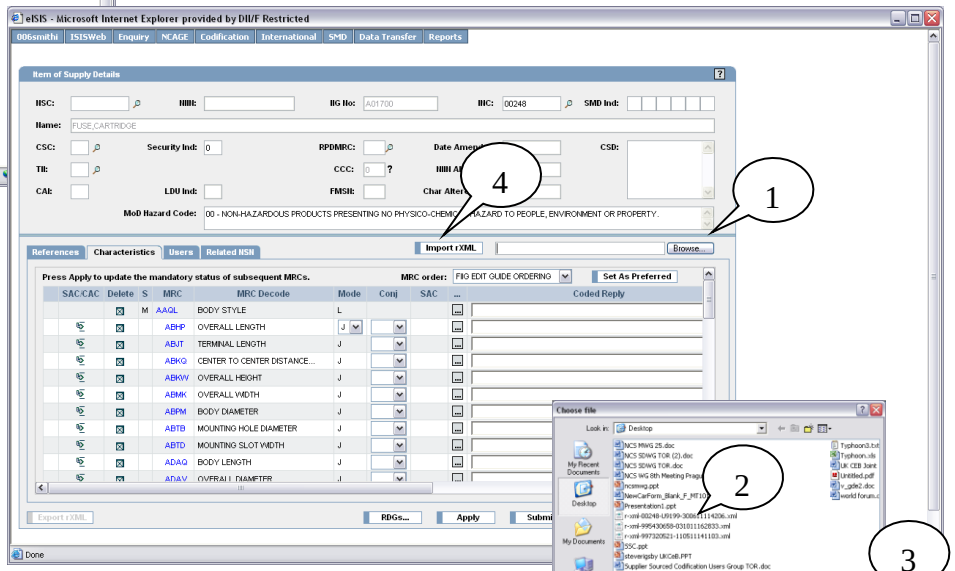
An NSN requires an average of 24 mouse clicks to populate the descriptive data.

Does this make things Faster? Answer = Yes.



To create an exact duplicate
Of this record
(13 PVPs = 39 mouse clicks)
traditionally…….

…….takes 4 mouse clicks
Using ISO 22745!



Does it make things better?

Existing NSN 1 – Type 4

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4347 Ethernet Shipboard Cable

ISO 8000 NSN 1 – Type 1

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4347 Ethernet Shipboard Cable

Conductor Quantity – 8

Conductor Form – AY

Material – 990019001

Cross Sectional Shape Style – 6

Connector ID – JTRJ456F-16NXLSB

Connector Manufacturer – 0BW78

Overall Length - Varying

Existing NSN 2 – Type 4

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4351

Cable Shipboard Ethernet

ISO 8000 NSN 2 – Type 1

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4347 Ethernet Shipboard Cable

Conductor Quantity – 8

Conductor Form – AY

Material – 990019001

Cross Sectional Shape Style – 6

Connector ID – JTRJ456F-16NXLSB

Connector Manufacturer – U7739

Overall length – varying

Features – Double Sheathed.

ISO 8000 NSN 1 – Type 1

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4347 Ethernet Shipboard Cable

Conductor Quantity – 8

Conductor Form – AY

Material – 990019001

Cross Sectional Shape Style – 6

Connector ID – JTRJ456F-16NXLSB

Connector Manufacturer – 0BW78

Overall Length - Varying

ISO 8000 NSN 2 – Type 1

AGAV – sonar 2054 inboard replacement

CXCY – LM146c/TWS4H4347 Ethernet Shipboard Cable

Conductor Quantity – 8

Conductor Form – AY

Material – 990019001

Cross Sectional Shape Style – 6

Connector ID – JTRJ456F-16NXLSB

Connector Manufacturer – U7739

Overall length – varying

Features – Double Sheathed.

The Cables

Both NSNs upgraded **from Type 4** partially described **to Type 1** Fully Described

100% success

NSN 1 increased from 2 Property value pairs to 9 property Value Pairs

NSN 2 Increased from 2 Property Value Pairs to 10 Property Value pairs

350% improvement

The data quality

These NSN were created as separate NSNs because the part numbers are different but no reason for the difference was know by the UK MoD and therefore the in service users of the kit.

The extra property value pair on NSN 2 shows the same fit form and function, but with increased operating tolerance.

Source Supplied Codification (SSC) In UK MoD

The UK delivered the first Platform (TERRIER) fully codified in accordance with ISO 8000 Pt 110 & ISO 22745:

Items on the TERRIER Bill Of Material	1879
NSNs created	920
Pre existing NSNs Screened	959

***Type 1** 667 **(72.5%)** *__Type 4__ 323 **(37.5%)** *__Type 2__ 0 **(0%)**

This is an unprecidented success in terms of data quality apparent when benchmarked against the entire UK NATO Database which has 2,618,151 items in total :

Type 1 459,178 **(17%) Type 4** 1,699,549 **(65%) Type 2** 459,424 **(18%)**

Does it make it Cheaper?

BAES Global Combat Systems spend **£3000** per item to bring their data to a maturity suitable to be fitted to a platform. **£1500** of that is the cost of procuring DATA.

The Test platform, TERRIER has 1879 items on its BoM.

That would have been a design cost of:

1879 items @ £3000 = **£5,637,000**

By implementing the ISO Standards, TERRIER was able to take advantage of pre-existing NATO Stock Number Data, the design cost was instead:

920 items @ £3000 = £2,760,000
959 items @ £1500 = £1,438,500
Total Cost = **£4,198,500**
Overall saving of £1,438,500

Source Supplied Codification (SSC) In UK MoD

The cost and quality savings for TERRIER have lead UK MoD and BAES to include ISO 8000 Pt 110 and ISO 22745 on a much larger platform, the Aircraft Carrier Queen Elizabeth Class,

The biggest ships ever commissioned by the Royal Navy due to enter service in 2020. 2 Aircraft carriers 284 meters long, displacement of 65,600 tonnes, capacity for up to 40 aircraft and an un-refuelled range of 10,000 nautical miles.

QEC is forecast to have **80,000** line items codified.

The design contract for QEC would result in a charge of **£1700** per item where BAES need to source data.

For any item where NSN data can be imported that cost is reduced to **£875**.

Source Supplied Codification (SSC) In UK MoD

If we apply a ‘screening ratio’ of 50% (slightly less than the current NATO average) and run a calculation, we can see the following potential savings for BAES.

80,000 @ £1700 = **£136,000,000**

Include ISO 22745 in the design contract

40,000 @ £1700 = **£35,000,000**

40,000 @ £875 = **£68,000,000**

Total = **£103,000,000**

Total saving of **£33,000,000**

Contracting for DATA Quality In UK MoD

The future of ISO 8000 & ISO 22745 in the UK:

The potential to deliver an improved service for less costs will drive these ISO Standards into UK MoD Policy for codification.

An ISO 8000 Pt 110 clause has already been included in our contracts with industry.

The UK NCB has been tasked with providing the capability to gradually transform to a state where all data transactions are automated, using a web service for individual transactions and working with delivery partners with high levels of transactions to build **ISO 22745** interfaces as with the **BAES QEC** and **TERRIER** platforms.

The potential savings to UK MoD are **£756,563.60** per annum, which equates to **75%** reduction in the overall budget for NSN creation in the UK.

Contracting For DATA Quality

Standard statement for inclusion as both an NCB Contract Clause and Codification Requirement statement in any standards which have NATO Codification as part of their delivery.

Supply of Source Data in support of NATO Codification

The contractor, sub-contractor or supplier shall supply identification and characteristic data in accordance with ISO 8000-110:2009 on any of the selected items covered in this contract.

Following a codification request, the Home NCB shall present a list of the required properties in accordance with the US Federal Item identification Guides.

This exchange can be in a format agreed between the vendor and home NCB. One potential format of exchange is:
(a) The contractor, sub-contractor or supplier shall agree a contact method to which requests for identification and characteristic data in an ISO 22745-35 compliant format can be facilitated.
(b) The contractor, sub-contractor or supplier shall respond in a timely manner to requests for characteristic data that it receives in an ISO 22745-35 compliant format and the replies shall be in an ISO 22745-40 compliant format.
(c) All metadata shall be from an ISO 22745 compliant Open Technical Dictionary.

NATO Codification

Supporting the Warfighter