The NATO Codification System (NCS): Implementing the Standard and Continuous Improvement of Cost-effectiveness and Data Quality

ABSTRACT

The NCS is a procedure for classifying items of supply that ensures not just a consistently high data quality but also the international exchange of those data. Just as the national situation, scope and quality of the available data are different, the tasks when introducing the NCS or setting up a National Codification Bureau (NCB) are multifaceted. All have the same aim: To achieve the NCS data standard for national and international purposes. First successes are soon followed by the wish to organise the work in the NCB's more efficiently and at the same time to further improve the quality of the descriptions by using data available at manufacturers and also from other classification systems. This presentation shows a few such scenarios and strategies from ESG's many years of experience in the development, implementation and support of the NCS system N-CORE.

BIOGRAPHY

Henriette Schromm
Senior Project Manager, Software Engineer
ESG

Henriette Schromm is Senior Project Manager and Software Engineer at ESG. She started at ESG in 1986, working in the field and as Head of the Department "Knowledge-Based Systems", where she twice won the ESG innovation award. In 1996 Mrs. Schromm started work on the newly founded ESG Business Area NCS and worked on various tasks for different customers up until today: Analysis of national requirements, data cleansing, data migration, ERP interfaces and system rollout. Her main focus is on classification and material characteristic data according to NCS rules. Mrs. Schromm has been invited to the NATO Allied Committee 135 NCS Modernization working group to share her experiences, for example in involving ISO standards 22745 and 8000 in codification process. Mrs. Schromm studied Mathematics, Statistics and Physics at the Ludwig-Maximilian University of Munich, where she received the title Diplom-Mathematiker (advanced degree in mathematics) in 1984.

TURNING SYSTEM EXPERTISE INTO VALUE

NCS - The NATO Codification System

Implementing the standard and
continuous improvement of cost-effectiveness and data quality

MIT Information Quality Industry Symposium
Cambridge, Massachusetts, USA July 13-15, 2011

Henriette Schromm

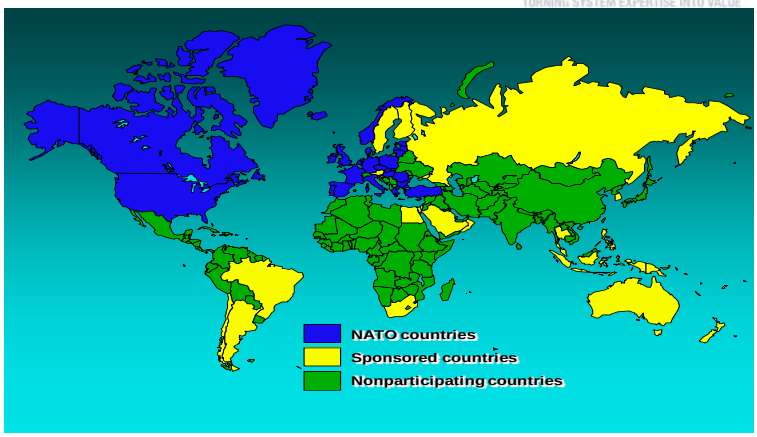
Agenda

TURNING SYSTEM EXPERTISE INTO VALUE

1. NATO Codification System NCS at a glance
2. Talking about Data Quality
3. Nations introducing NCS Codification System
4. Integration of independent links in logistic chain
5. Questions

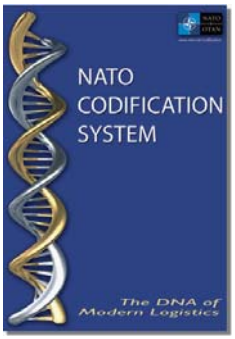
•1

NCS supporting Logistics Worldwide



28 NATO Countries
35 Sponsored non-NATO Countries
8 Nations fully compliant with the NCS procedures
27 Nations one-way data exchange with restrictions

NATO Manual on Codification



ACodP-1 NATO Manual on Codification

Chapter 1 Policy and Principles
Chapter 2 Item Identification
Chapter 3 Item Classification
Chapter 4 International Operations
Chapter 5 ADP for NATO Data Exchange
Chapter 6 Publications, Forms and Periodical Reports
Chapter 7 Glossary of Codification Terms

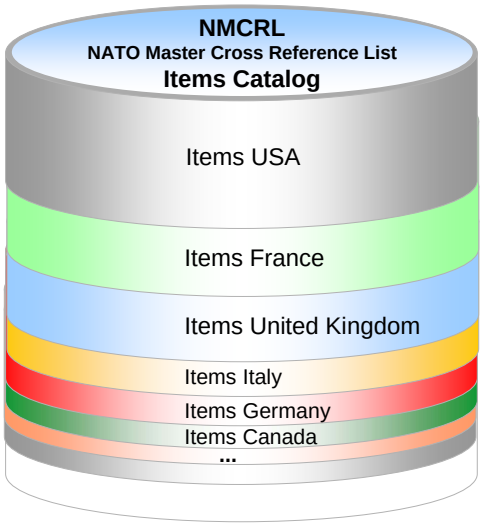
http://www.nato.int/structur/AC/135/redirect/1280-e.htm

NMCRL - NATO Master Cross Reference List

TURNING SYSTEM EXPERTISE INTO VALUE

17,4 million
Items of Supply (NSN)
34,5 million
Items of Production
1,9 million
Manufacturers/Vendors

45.000 Classes
54.000 predefined Attributes
150.000 predefined Values
20.000 Drawings



Agenda

TURNING SYSTEM EXPERTISE INTO VALUE

1. NATO Codification System NCS in brief
2. Talking about Data Quality
3. Nations introducing NCS Codification System
4. Integration of independent links in logistic chain
5. Questions

Data are of high quality if ...

TURNING SYSTEM EXPERTISE INTO VALUE

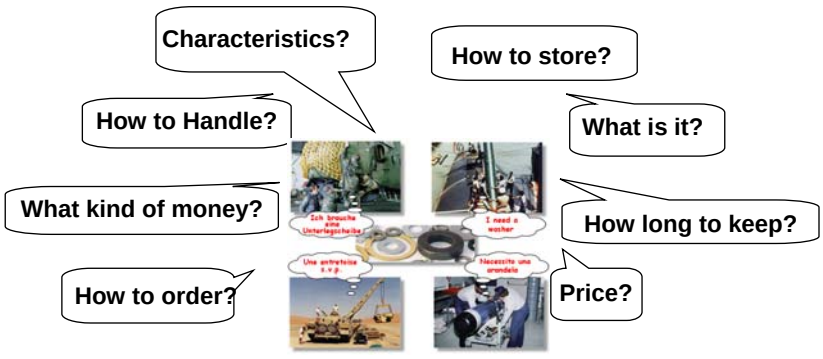
... **they are fit for their intended uses** in

- Operations
- Decision making and
- Planning

(Joseph M. Juran)

Codification answers Logistic Questions and raises the quality of data and services

TURNING SYSTEM EXPERTISE INTO VALUE



5310-17-1032154

One answer: The NSN plus data

NATO Stock Number NSN data

TURNING SYSTEM EXPERTISE INTO VALUE

Identified

NSN	Date NIIN	Changed SC Repl NSN	Cancelled	Type	RPDMRC Users
2920002388383	1969-04-09	0		1	YA , ZC , ZE , ZG , ZP , ZR , ZZ

Versionized

Item Name		FMSN	FMSN NAT	INC	FIIG	National users
SPARK PLUG		017	017	00294	A10400	

Classified

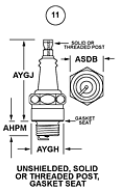
Shared Internationaly

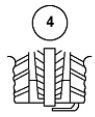
Demilitarization Code	SAP Action	ISC	NIIN-Type
A	ZE		0

ERP integrated

	Reference Number	NCAGE	F	C	V	D	AA	S	J	Manufacturer	Documentation
1	A3X	23040	3	5	9	6	AX	B		FORD MOTOR CO FORD PARTS AND SERVICE DIV GOVERNMENT PART SALES	
2	J6J	0AFL4	4	5	9	6	AX	B		FEDERAL-MOGUL AVIATION INC DIV CHAMPION AEROSPACE INC	
3	593871	80256	3	5	9	6	AX	B		OUTBOARD MARINE CORP	
4	593871	32195	4	5	9	E	AX	B		OUTBOARD MARINE CORP JOHNSON MOTORS DIV	
5	M44C	70040	3	3	2	6	AX	D		GENERAL MOTORS CORP AC ROCHESTER DIV	
6	M44C	9S842	4	3	2	6	ZZ	D		MOTOR PARTS AND EQUIPMENT WAREHOUSE	
7	WS506	81348	3	4	1	E	AX	D		FEDERAL SPECIFICATIONS PROMULGATED BY GENERAL SERVICES ADMINISTRATION WASHINGTON DC	
8	593871	21119	4	5	9	E	AX	B		EVINRUDE MOTORS PRODUCT GROUP OF OUTBOARD MARINE CORP	

Manufacturer Independent





SINGLE "J" TYPE GROUND ELECTRODE (SEE ALSO STYLE 1 & 17)

MRC	Requirement	Cleartext Reply
NAME	ITEM NAME	SPARK PLUG
AAQL	BODY STYLE	A11 UNSHIELDED, SOLID OR THREADED POST, GASKET SEAT
AHPM	REACH LENGTH	0.375 INCHES NOMINAL
ALBY	USAGE DESIGN	ENGINE OTHER THAN AIRCRAFT
ASDB	WIDTH ACROSS FLATS	0.812 INCHES NOMINAL
AYGA	ELECTRODE STYLE	B4 SINGLE J TYPE GROUND ELECTRODE
AYGB	THREAD SIZE AND SERIES/TYPE DESIGNATOR AND LOCATION	14-1.25MM BASE
AYGF	MEAN EFFECTIVE PRESSURE RATING	250.0 POUNDS PER SQUARE INCH MINIMUM AND 255.0 POUNDS PER SQUARE INCH MAXIMUM
AYGH	SEAT MAJOR DIAMETER	0.812 INCHES MAXIMUM
AYGJ	HEIGHT ABOVE MOUNTING SURFACE	ANY ACCEPTABLE

Master Data

Agenda

TURNING SYSTEM EXPERTISE INTO VALUE

1. NATO Codification System NCS in brief
2. Talking about Data Quality
3. Nations introducing NCS Codification System
4. Integration of independent links in logistic chain
5. Questions

Non-NATO Country starting NCS Codification

TURNING SYSTEM EXPERTISE INTO VALUE

The existing data often is not current

- **contains errors & mistakes**
- **has a lack of information and is**
- **not compatible between the national users**

not according NCS ACodP-1

To do:

Find

- **Manufacturers**
- **Manufacturers Part Number**

for Material

fnd Screen against NMCRL

Non-NATO Country starting NCS Codification

TURNING SYSTEM EXPERTISE INTO VALUE

Data are of high quality if they are

- Identified within NATO Master Cross Reference List NMCRL
- **Maintained by responsible foreign countries**
- Codified according NCS classification for data to be shared international
- Described according any well defined classification schema for national use
- shown as historical data if not needed for actual work

Real Project 2009 - Data Status after NMCRL screening

TURNING SYSTEM EXPERTISE INTO VALUE

NSN Data Status

Data Groupings	Complete	Rejected	Waiting	New	Totals
NSN - Batch	41 241	248	16 193	15 497	**73 179**
Part - Batch 1	84 836	24	38 355	2 990	**126 205**
Part - Batch 2	126		74	26 803	**27 003**
Add - NSN				4 144	**4144**
Add - Part				4 885	**4 885**
Totals	**126 203**	**272**	**54 622**	**54 319**	**235 416**

84% from foreign nations

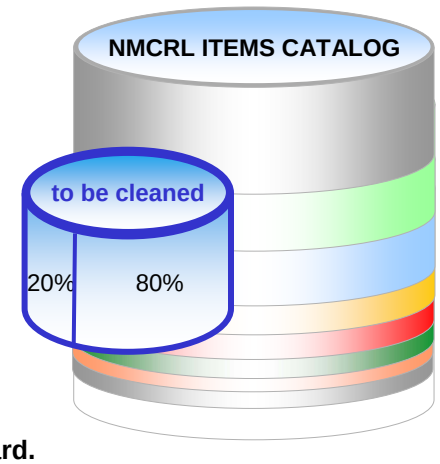
16% manually work required

Complete – Data Response from Foreign NCB
Rejected – NSN's rejected by Foreign NCB
Waiting – NSN's Submitted waiting for Foreign NCB Response
NEW – Items Still to be Submitted

Non-NATO Country starting NCS Codification

TURNING SYSTEM EXPERTISE INTO VALUE

Data Cleansing effort
Is reduced dramatically
by usage of NMCRL Items Catalog for screening out Items maintained by foreign countries.



The result is not only clean, but also according NCS standard.

NATO Country introducing new NCS System

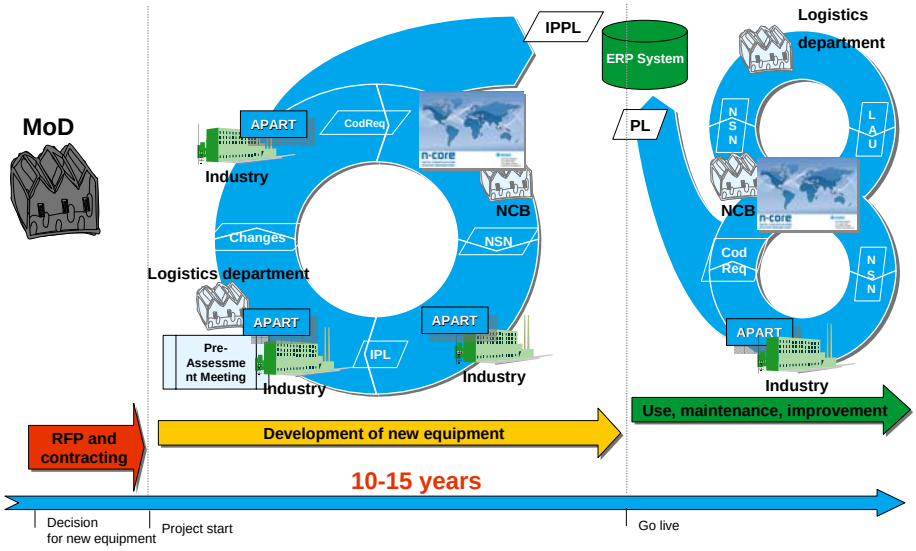
TURNING SYSTEM EXPERTISE INTO VALUE

Data are of high quality if they are

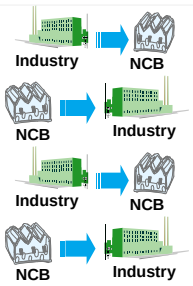
- Identified within NMCRL √
- Maintained by responsible foreign countries √
- Codified according NCS classification √
- **Integrated in logistic processes**
- **Available low-cost and quickly**
- **Verified with supplier information**
- **Up to date**

Processes, actors and systems on the time line

TURNING SYSTEM EXPERTISE INTO VALUE



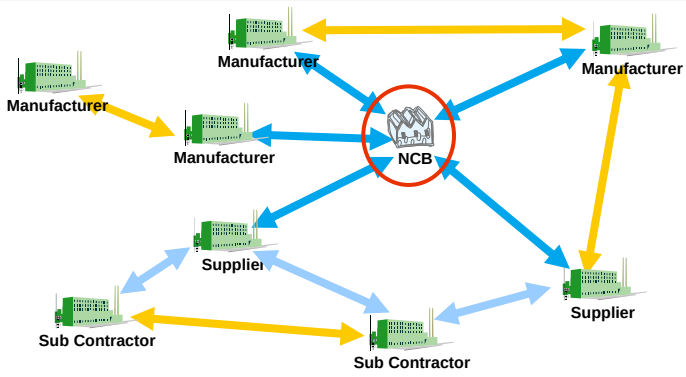
Required Data Interchange



All parties need to understand
format and content of data

- **Some data are easy to understand: Manufacturer Name, Part Number, Price**
- **Some depend on used Ontology : Description of material**

Required Data Interchange



All parties need to understand
format and content of data

There is more than one way to achieve this...

Agenda

TURNING SYSTEM EXPERTISE INTO VALUE

1. NATO Codification System NCS in brief
2. Talking about Data Quality
3. Nations introducing NCS Codification System
4. Integration of independent links in logistic chain
5. Questions

There is more than one way to achieve this...

TURNING SYSTEM EXPERTISE INTO VALUE

I All parties should use NCS for Material classification and description! ???
Did not happen last 50 Years.
Manufacturer also have other customer than NCB

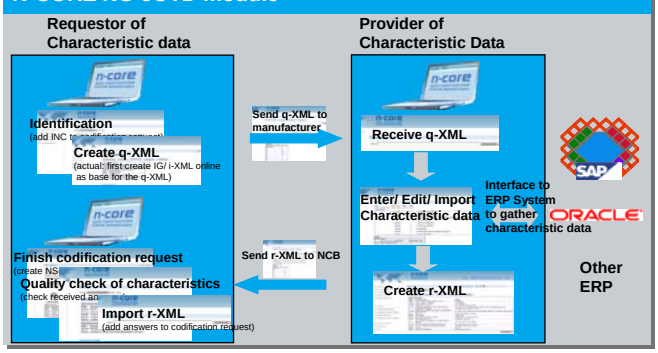
II Provide Mapping between ONE Classification Schema and NCS and All Parties should use this! ??
Will most probably not happen next 50 Years.

III Define all required Classification Schemas according ISO 22745 (including NSC) and provide them in the eOTD Dictionary.
The mapping problems to overcome different Ontologies here.
All parties should use this!

Integration of eOTD in the codification process

TURNING SYSTEM EXPERTISE INTO VALUE

N-CORE NG eOTD module

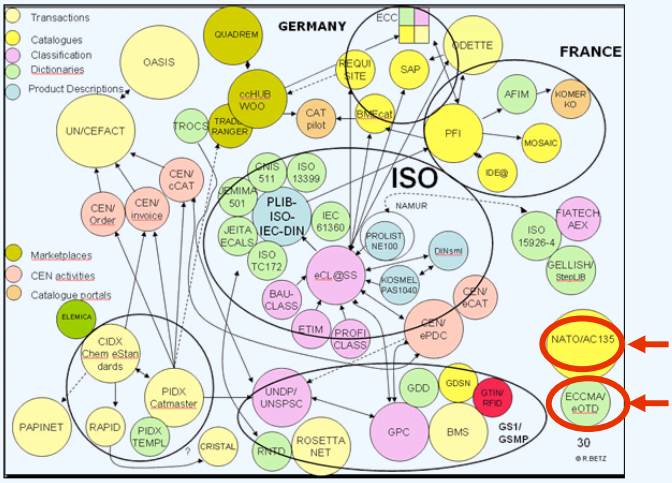


Functionality	▶create eOTD queries (q-XML) and eOTD response (r-XML) ▶ export and import of eOTD XML files and IGs (i-XML) online
Approved by	▶ Supplier Sourced Codification Project SSC Phase III and IV ▶ New Zealand and Argentina are going to introduce integrated eOTD

All parties should use eOTD!
An European Point of View

TURNING SYSTEM EXPERTISE INTO VALUE

Why do SME need support?



An European Point of View

TURNING SYSTEM EXPERTISE INTO VALUE

"eCl@ss for small and medium-sized enterprises"

eCl@ss® FÜR DEN MITTELSTAND

Supported by Federal Ministry of Economics and Technology

Acceleration of the introduction of eCl@ss in small and medium-sized enterprises by establishment of the continuous eCl@ss - extension with requirements of the medium-sized companies.

Target group > 90 % of all companies in Germany / Europe

More than 100 small and medium sized and 10 large member companies like Deutsch Bahn AG, BASF EG, AUDI AG, TOTAL S.A., e-On AG and Siemens AG

Henriette Schromm MIT Information Quality Industry Symposium July 13-15, 2011 23

There is more than one way to achieve this...

TURNING SYSTEM EXPERTISE INTO VALUE

I All parties should use NCS for Material classification and description! ???
Did not happen last 50 Years.
Manufacturer also have other customer than NCB

II Provide Mapping between ONE Classification Schema and NCS and ??
All Parties should use this!
Will most probably not happen next 50 Years.

III Define all required Classification Schemas according ISO22745 (including NSC) and provide them in eOTD Dictionary. ?
Solve the mapping problem there.
All parties should use this!
Hard to believe, that this will happen:
Classification Schemas being involved will feel becoming dependent from eOTD.
Some countries or Manufacturer prefer some national or domain-specific classification schemas.

Henriette Schromm MIT Information Quality Industry Symposium July 13-15, 2011 24

Product Classifikation Standards

TURNING SYSTEM EXPERTISE INTO VALUE

- **UNSPSC**
- **eCl@ss**
- **ETIM**
- **ProfiCl@ass**
- Standardwarenklassifikation
- **GPC**
- **eOTD**
- **CPV**
- **NCS**
- EDIBATEC
- CECED PI
- RosettaNet Technical Dictionary
- Bau:Class
- PROLIST

There is more than one way to achieve this...

TURNING SYSTEM EXPERTISE INTO VALUE

IV The ESG Approach: Solution by Software
Provide one SW System dealing with
multiple Classification Schemas.

!!!

Solve the mapping problem between different Ontologies here.

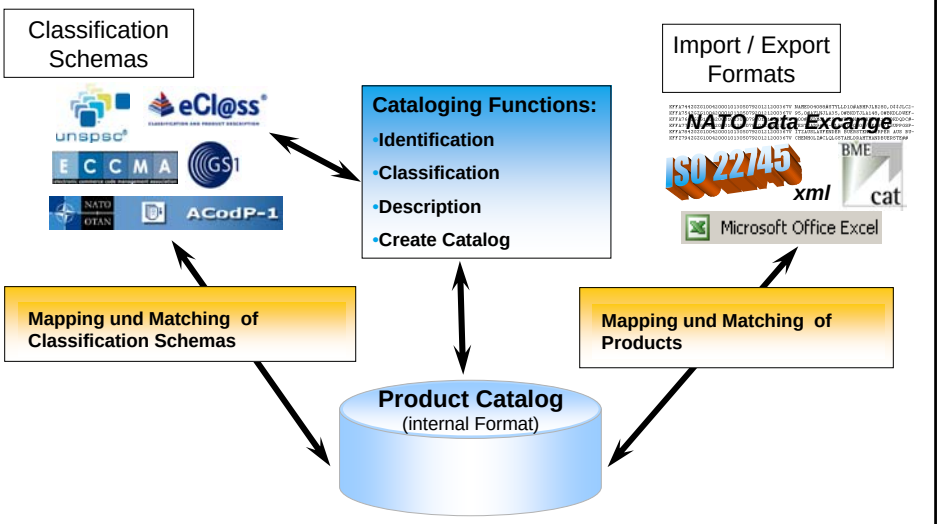
Only parties requesting others schema information
need to use this!

The non technical aspect:

- Classification Schemas being involved keep their independency.
- National and domain specific preferences are respected.

Solution by Software

TURNING SYSTEM EXPERTISE INTO VALUE



N-CORE NG is an intelligent, powerful solution for codification across different standards ...

TURNING SYSTEM EXPERTISE INTO VALUE

... based on the experience with the NATO Codification System (NCS).

- Standardized, best practice, "end-to-end" processes
- Centralized database
- Powerful search functionality for fast and user-oriented provision of Material data
- Various standard interfaces available e.g. Certified SAP interface
- Support of mass change processes and project driven tasks
- Multilingual user interface and data
- Supporting classification according NCS, eOTD, eCl@ss, UNSPSC, ...
- Data export in various format

Customer benefits

- Better codification results
- Reduced (routine) workload
- Time savings due to standardized processes
- Increased productivity
- Earn the experience of 15 user countries and
- Over 12 years of successful ESG codification projects

Questions ?

TURNING SYSTEM EXPERTISE INTO VALUE

With Acknowledgements to

TURNING SYSTEM EXPERTISE INTO VALUE

[1] Steven Arnett
[2] ECCMA
[3] eCl@ss
[4] PiLog
[5] UniBw München

Contact

TURNING SYSTEM EXPERTISE INTO VALUE

ESG Elektroniksystem- und Logistik-GmbH

Livry-Gargan-Str. 6
D-82256 Furstenfeldbruck

Phone +49 (89) 92 16 - 0
Fax +49 (89) 92 16 - 2236
www.esg.eu
www.ncore.esg.de

Henriette Schromm

Project Management Codification
IT-Solutions Material Management
Phone: +49 (89) 92 16-2442
Cell: +49 (171) 2875121
Henriette.Schromm@esg.de

Turning system expertise into value

Certified to: DIN EN 9100 DIN EN ISO 9001 DIN EN ISO 27001	TOP 100 2010 Top-Innovator	Contractor for Bundeswehr Aircraft Systems & Equipment EASA Part 21J and EASA Part 21G Approval

Codification supports technology transfer across industries with high quality data

TURNING SYSTEM EXPERTISE INTO VALUE

Aviation | Naval Systems | Logistics | Telecommunications
Vetronic Systems | IT & Communication | Automotive | Industrial Goods & Commercial Vehicles

BUSINESS AREAS
Transfer of technologies, methods and processes

SERVICE PORTFOLIO

12%	35%	17%	11%	5%	17%	3%
Consulting	Electronic system development	IT system development	Logistics	Training	Lifecycle services	IT services

eCl@ss Members

ESG

TURNING SYSTEM EXPERTISE INTO VALUE

The internationale eCl@ss association presently 105 members

eCl@ss

CLASSIFICATION AND PRODUCT DESCRIPTION