# NATO codification system as the foundation for the eOTD, ISO 22745 and ISO 8000



electronic commerce code management association

Peter R. Benson

**Executive Director** 

2980 Linden Street Tel: +1 610 861 5990 Suite E2 Fax: +1 610 861 5992

Bethlehem, PA 18017

E-Mail: Peter.Benson@eccma.org







### **NATO Codification System Chronology**



1945

1949

**SUPPLY CLASSIFICATION** 

US/UK/CA **CLASSIFICATION**  **PL436** 

**CODIFICATION SYSTEM** 

**STANAG 3150** 

**NATO** 

1956 **STANAG 3151** 

> 1966 **DLSC**

> > 1974 NCB CODE

1978 CD-ROM

1991

**PFP** <u>1</u>994 **PACS** 

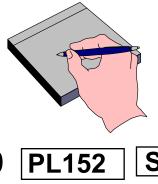
**BASELOG** 

1999

**E-Commerce** 

2002





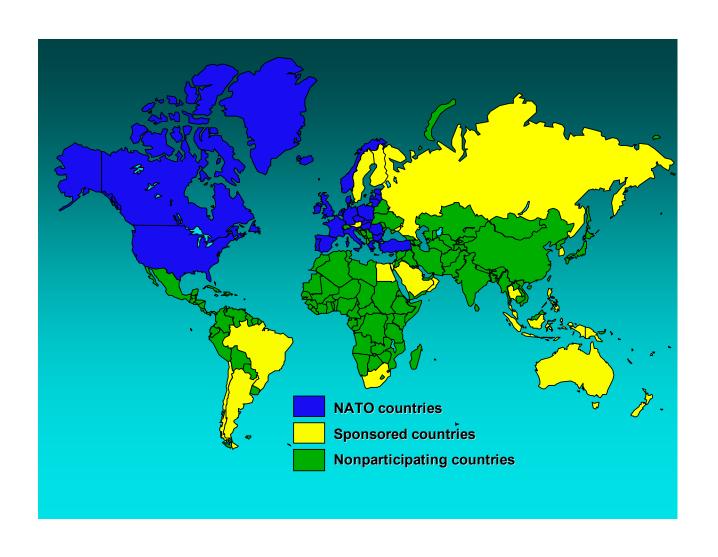






### **Nations Using the NCS Today**

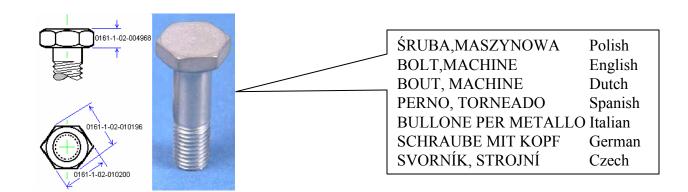






### The NATO Codification System (NCS)

- A standard for logistic information exchange covering 16 million items of supply
- A flexible system that can be tailored to national requirements
- An important cornerstone to logistics interoperability
- 15+ million NATO Stock Numbers have been assigned
  - 7 million by the U.S. and 8 million by the other NATO countries
  - 31 million reference numbers have been registered on these NSNs
  - These NSNs contain more than 22 million user registrations
- 1.5 million manufacturers and other organizations are registered





### Vision for the Future

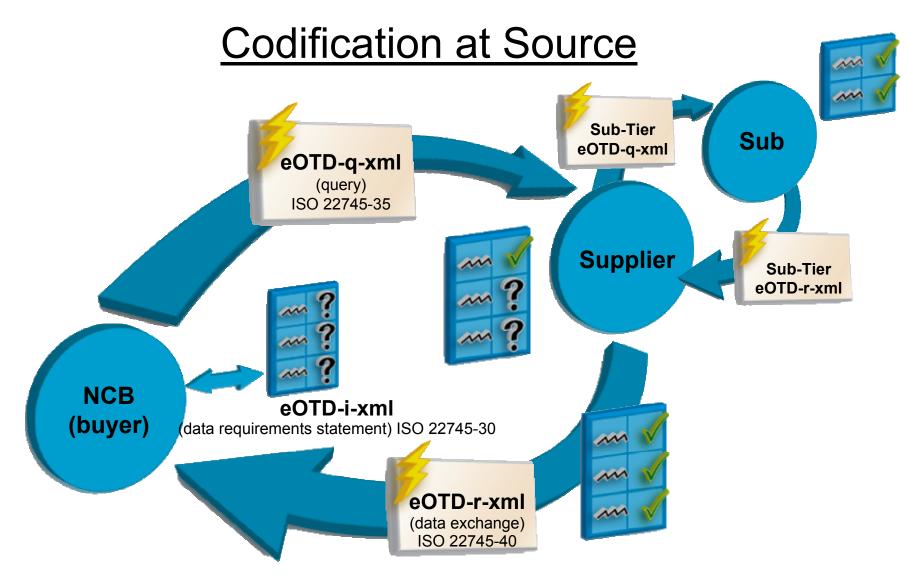
What is impossible to do right now, but, if you *could* do it, would fundamentally change your business?

1990 Joel Arthur Barker

- Cataloging at source (vendor supplied data)!
  - Common metadata (eOTD)
    - an end to data mapping
  - Requirement specifications (ISO 22745-30 eOTD-i-xml)
    - an end to incomplete data
  - Data provenance (ISO 8000-120)
    - an end to inaccurate information

Faster – Better – Cheaper

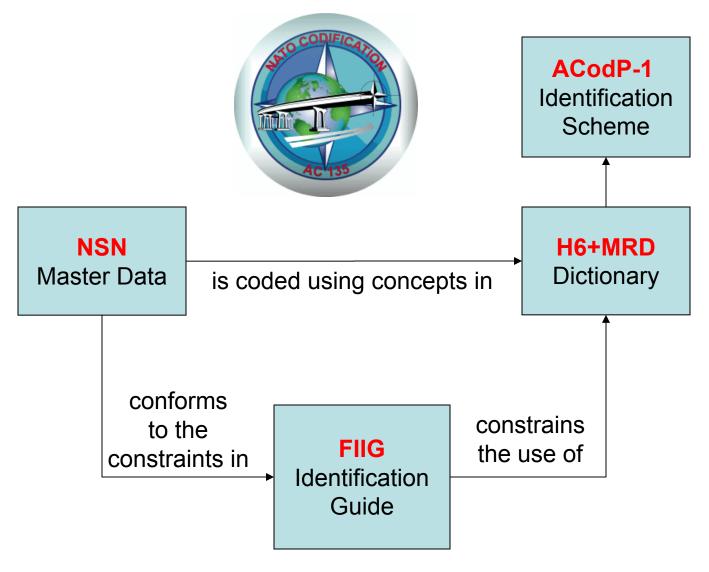
### Automating the data supply chain







### NATO Codification System Architecture

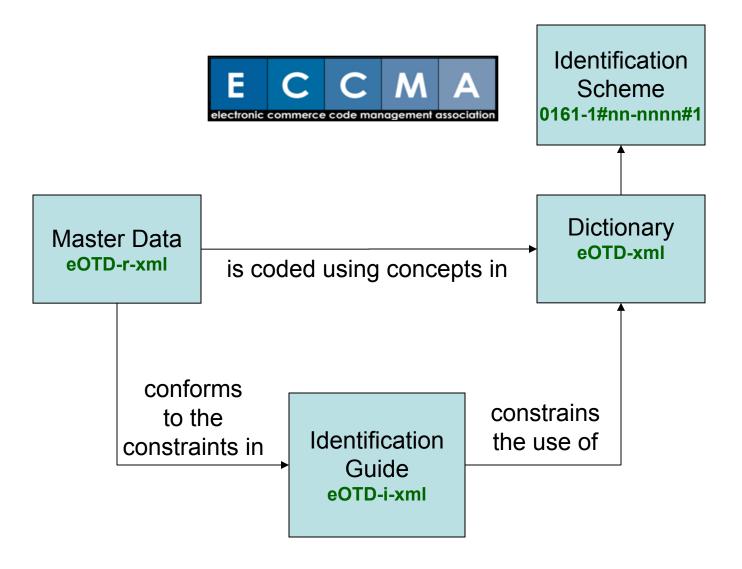




"Data Quality in Practice"



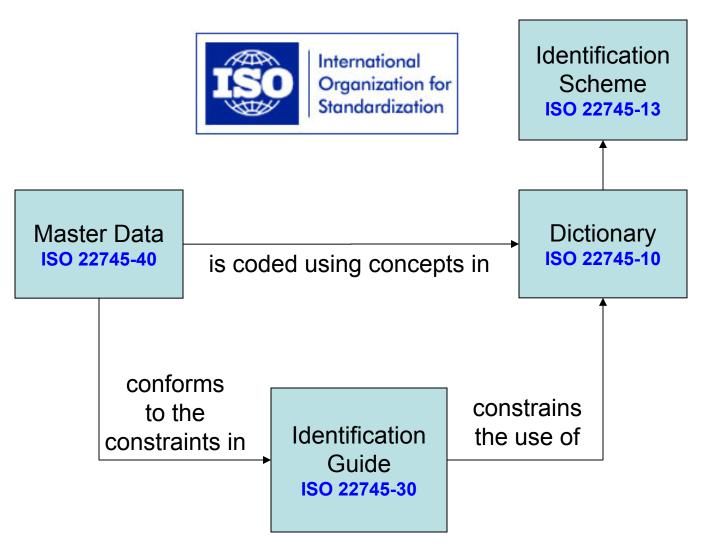
#### eOTD Architecture







#### **ISO 22745 Architecture**







### ✓ Common Concept Encoding

"metadata"

- Across the supply chains
- In design and engineering applications
   CAD-CAM-CAE
- In ERP applications
   vendor-customer-material-service masters
- In production applications
- In product life cycle management
- In asset management applications
- In human resources applications

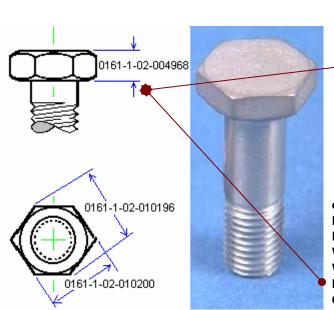






### ✓ Common Concept Encoding

#### "master data"



#### **Property ID**

0161-1#02-046898#1 0161-1#02-027375#1 0161-1#02-023822#1 0161-1#02-010200#1 0161-1#02-010196#1 0161-1#02-004968#1 0161-1#02-027376#1 0161-1#02-027378#1

#### **Value Measure ID** 0161-1#07-014684#1

3225020037 1.0 0161-1#05-000798#1 1.450 0161-1#05-000798#1 1.653 0161-1#05-000798#1 0.591 0161-1#05-000798#1 10

0161-1#08-000168#1

#### **Property term**

**eOTD CLASS NAME** PRODUCT NUMBER NOMINAL THREAD DIAMETER WIDTH ACROSS FLATS WIDTH ACROSS CORNERS **HEAD HEIGHT COUNT PER PACK PACK PRICE** 

#### Value

10

0.80

Measure term **BOLT: MECHANICAL** 

3225020037 1.0 **INCHES** 1.450 **INCHES** 1.653 **INCHES** 0.591 **INCHES** 

0.80 **US DOLLAR** 

**eOTD Identifiers** Resolved

**eOTD** 

**Identifier** 

Coded

Machine Bolt; Product Number: 3225020037; Nominal thread diameter: 1.0 inches; Width across flats: 1.450 inches; Width across corners: 1.653 inches; Head height: 0.591 inches; Count per pack: 10; Pack price: \$0.80 (M-Bolt:NTD1.0":WAF1.45":CPP10)

Rendered





### **Buyer contract clause**

The contractor, sub-contractor or supplier shall supply technical data in electronic format on any of the items covered in this contract as follows:

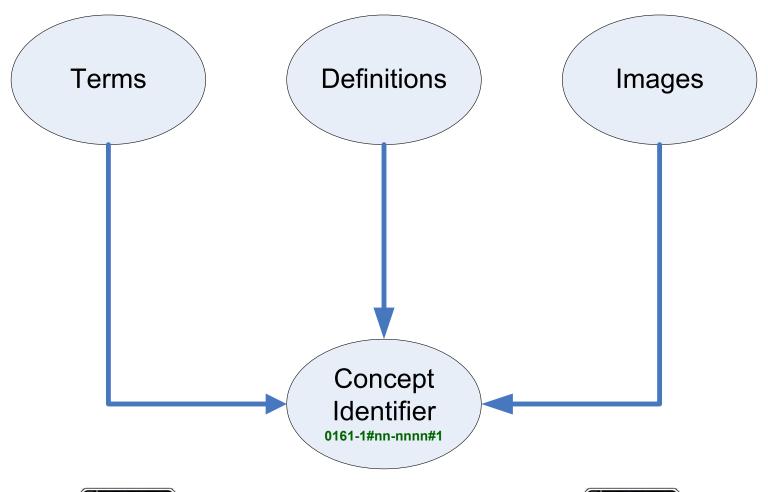
- a. The data shall comply with applicable ISO 22745-30 compliant Identification Guides.
- b. The data shall be encoded using concept identifiers from the ECCMA\* Open Technical Dictionary (eOTD), an ISO 22745 compliant open technical dictionary.
- c. The data shall be provided in eOTD-r-xml, an ISO 22745-40 compliant Extensible Markup Language (xml) format published by ECCMA\*.
- d. The data shall be certified as ISO 8000-110 compliant.





<sup>\*</sup> The Electronic Commerce Code Management Association (ECCMA) (www.eccma.org) is the Dictionary Maintenance Organization for the eOTD, a compliant open technical dictionary as defined by ISO 22745 and can provide technical assistance in meeting this requirement.

## The ECCMA Open Technical Dictionary (eOTD)

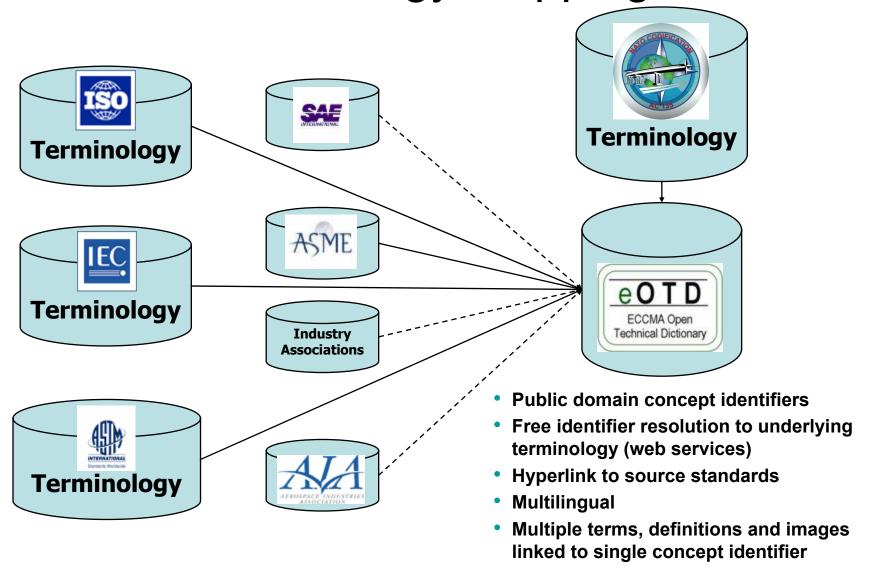




"Data Quality in Practice"



### Terminology mapping







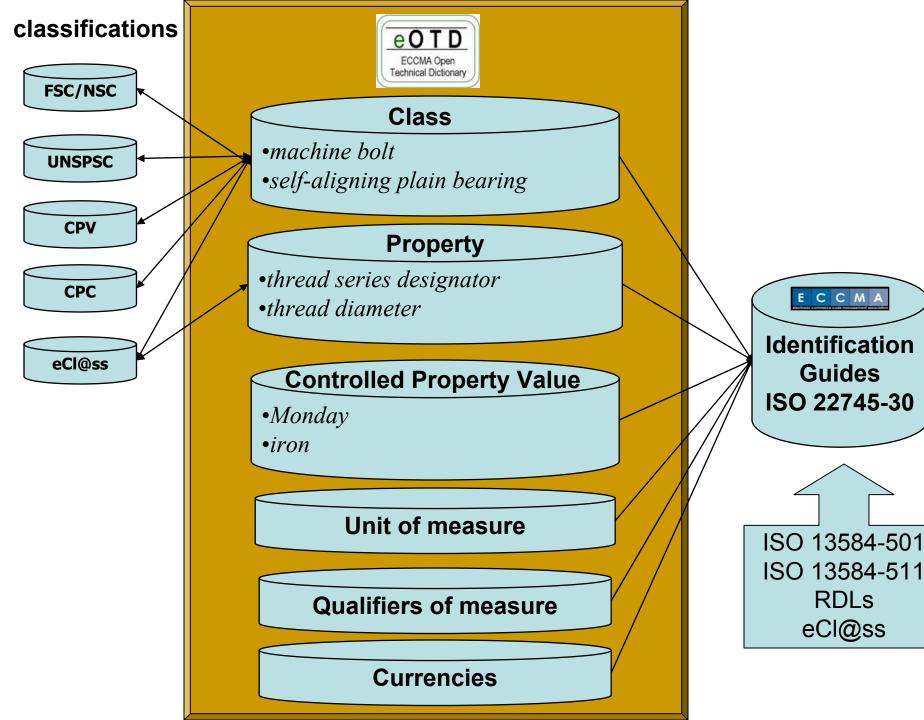
### eOTD Dictionary

- Contains
  - Concepts with identifiers
  - Terminology to specify meaning of concepts
- Does not contain
  - Classifications
  - Relationships between concepts\*
  - Constraints on property values\*
  - Data types\*
  - Reply instructions\*

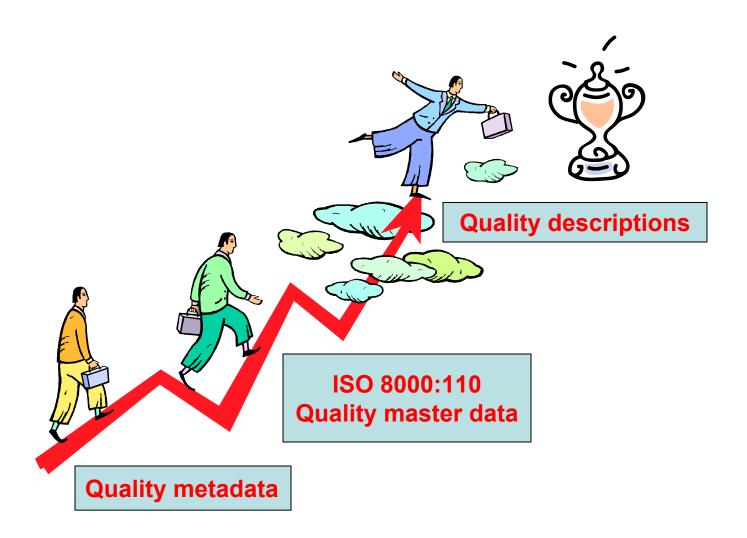
\*These are all contained in identification guides.







### The steps to quality descriptions







#### **Original ERP Short Description**

#### **ELECTRIC MOTOR**

#### **Original Supplier Catalog Description**

P/N 1234EF: 400KW 6 POLE 525VOLT FRAME HGF355E: FT MOUNTED RPM 988 SF1,0

CODE G:IP65:INS F:IL/IN 6.6:DUTY SI: NR.88695 11 00:AMB 40DEGREE C:DELTA T

**80DEG: COS 0,86:COOLING IC 411:ALT1000M** 



#### **Standardized ERP Short Description**

**MOTOR, ELEC: 400 KW, 525 V, 988 RPM** 

#### **Standardized ERP PO Description**

MOTOR, ELECTRIC: POWER RATING 400 KW, ELECTRICAL RATING 525 V, FRAME HGF355E, FOOT MOUNTING, SPEED 988 RPM, INSULATION CLASS F, 6 POLES, SERVICE FACTOR 1.0 CODE G, ENCLOSURE IP65, MNFR P/N: 1234EF MNFR: WEG, FFT: IL/IN 6.6: DUTY SI: NR.88695 11 00:AMB 40 DEGREE C:DELTA T 80DEG: COS

0,86:COOLING IC 411:ALT 1000M

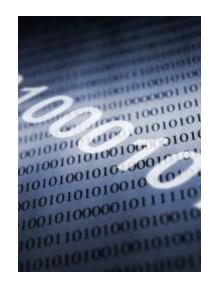




### **Motivation for ISO 8000:2008**

#### Supplier and Manufacturers recognize that:

- data integration is one of the keys to a long term relationship
- the ability to provide their customers with quality data is a significant differentiating factor.



#### Suppliers and Manufacturers are:

- publishing the specifications of their products, capabilities and services on their web sites.
- looking to increase their visibility and understand that the best way to do this is to improve the quality of their data.

Suppliers and manufacturers are looking for a Standard that they can use to identify the quality of their data.







### ISO 8000-110:2008

#### **Syntax**

Each data set shall contain a reference to the syntax to which the data set complies....The reference shall be resolvable to the specification of the syntax through a mechanism that is publicly available.

#### Semantic encoding

Each data element value shall reference all concepts necessary to unambiguously define its meaning. Each reference shall be to a concept dictionary entry contained in a concept dictionary that supports an interface for resolution of a concept identifier.

#### **Conformance to requirements**

Each data set shall contain a reference to the data requirements statement to which the data set complies. The reference shall be a globally unambiguous identifier that was used to encode the data set. The reference shall be resolvable to the data requirements statement. The data requirements statement shall be publicly available.

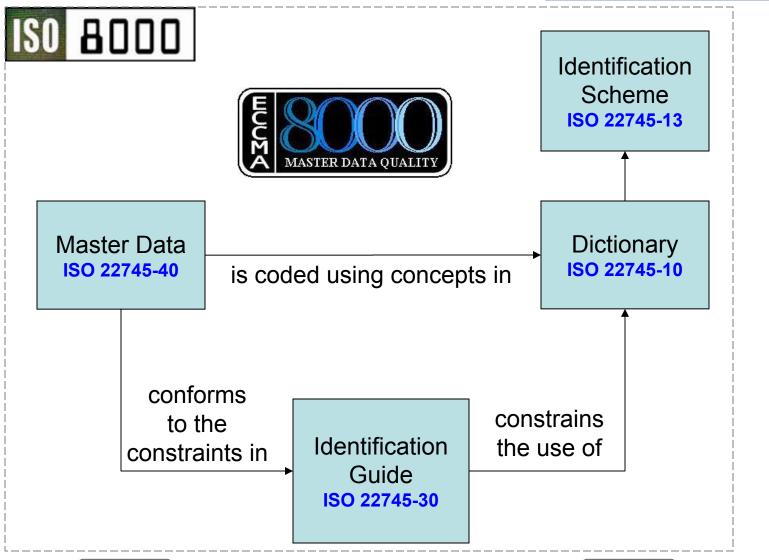
Syntax and semantic resolution shall be available at no charge unless the data carries a "fee based encoding" warning label.





#### ISO 8000:2008







"Data Quality in Practice"



### Extra slides







An international non-profit membership association of industry and government <u>master data managers</u> and their application or service providers

#### **Our Mission**

To increase the quality and lower the cost of descriptions through developing and promoting the implementation of International Standards for Master Data Quality





#### master data

data held by an organization that describes the entities that are both independent and fundamental for an enterprise, that it needs to reference in order to perform its transactions

Master data describes individuals, organizations, locations, goods, services, rules and regulations.

- Customers
- Suppliers
- Materials
- Services

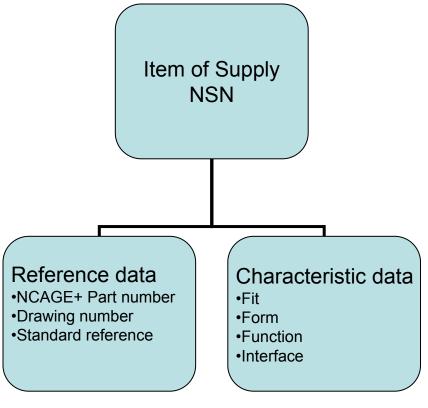
- Assets
- Locations
- Employees
- MSDS
- .......





### Justification for codification

- Manufacturers and suppliers identify items of production by their reference numbers (part number)
- Master data managers identify items of supply by their characteristic data







### Justification for codification

- Item reduction studies (identification of duplicates)
  - Save up to 15% of total inventory cost
- Better sourcing and contracting
  - Save up to 20%
- Substitution and interoperability
  - Part standardization during design and manufacture
    - Increases equipment availability
    - Can be mission critical







### Justification for codification

"Boeing currently buys 200 different kinds of safety glasses and 80 different shades of white paper. The defense and commercial aircraft divisions each negotiate for their own aluminum and titanium. Why can't we buy two or three kinds of safety glasses? Why can't we have standard part numbers that go across the enterprise?"

James F. Albaugh, CEO Boeing Integrated Defense Systems, Business Week March 13, 2006

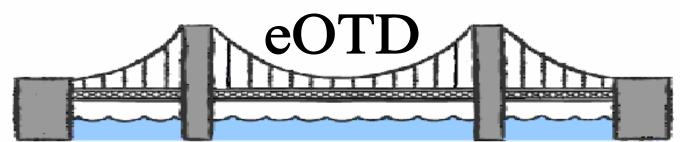




### Military/Commercial Bridge

"There is and always has been a philosophical gulf between the application of cataloging for military purposes and ... for commercial. ...commercial practices are not precise enough to support costeffective military inventory management and military cataloging is far too detailed and costly for commercial purposes ...ECCMA offers a way to bridge the gulf" Mr. Alan Williams, Asst Dept Minister, Canadian Dept of National Defence.





Commercial







### Phantom

### The eOTD is a foundation for design collaboration and industry standards.

ISO 22745 and the eOTD are the foundational enablers for the breakthrough our industry needs in the next generation of direct, accurate, and effective collaboration across the supply chain at meaningful and granular levels of data exchange never before imagined.

Alton Sanders
Senior Manager,
IDS Engineering Standards Control Function
PW Knowledge and Reuse Management (KARMA)



### **Goal and Guiding Principles**

All sites will catalogue the same items in the same fashion, including names, descriptions and associated classification links (catalog and associated data).

#### **Guiding Principles**

Adopt an open standard (eOTD)

Based on NATO Schema – familiarity and system base

Linked to UNSPSC for global spend analysis

Design a system and process to lower the pain across the sites

Level of effort - resources

Cost

Catalog the 'right' items

Remove duplicates and obsolete (archive)

Integrate eProcurement program to move items to Suppliers catalogs





### The Value

#### **ACW Common Coding**



#### **One Common Anglo Number**

#### **Standardised Long Description:**

Tire: Pneumatic, Vehicular: Service Type for Which Designed: Loader Tire Rim Nominal Diameter: 25' Tire Width: 445mm Aspect Ratio: 0.95 Tire Ply Arrangement: Radial Ply Rating: 2\* Tire & Rim Association Number: E3 Tread Material: Standard Tire Air Retention Method: Tubeless Tire Load Index and Speed Symbol: NA Tread Pattern: VHB TKPH Rating: 80

#### **Standardised Short Description:**

Tire Pneumatic: Loader 25' 445mm 0.95 2\*

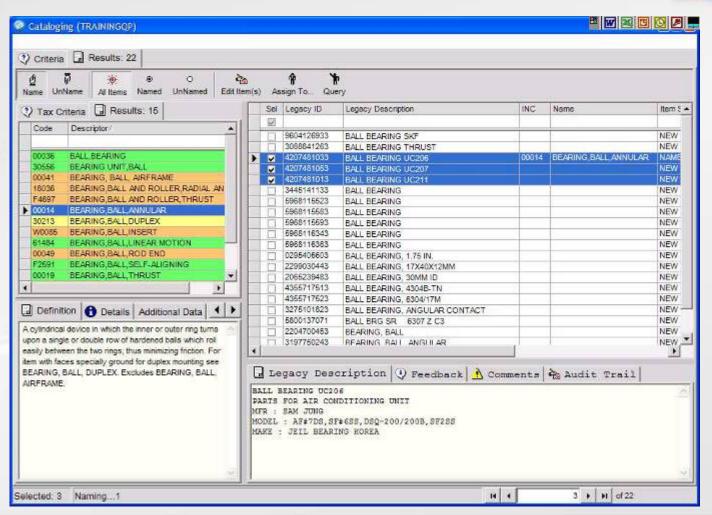
# masterpiece\_sparesFinder

Original Data			Local Catalogue Matches							
Manufacturer	Part No.	Description	Price(USD)	Working Part No.	All	Manufacturer	Master Part No.	Description	Scor	e
WARMAN INTERNATIONAL LTD	B217	SEAL, O-RING	0	B217		WARMAN INTERNATIONAL LTD	B217	1.094IN; 0.094IN; RBF	0	•
WARMAN INTERNATIONAL LTD	B109	SEAL, O-RING	0	B109		WARMAN INTERNATIONAL LTD	B109	1.38IN; 0.11IN; RBR	0	•
JAMES WALKER	0BO34107	SEAL, O-RING	0	0BO34107		JAMES WALKER	0B034107	2-3/8IN; 1/8IN; RBR; BLK	0	•
IGHTNIN MIXERS PTY LTD	115763VIT	SEAL, O-RING	0	115763VIT		LIGHTNIN MIXERS PTY LTD	Location: Peru Stock Code: 000	201210		
LIGHTNIN MIXERS PTY LTD	115861PSP	SEAL, O-RING	0	115861PSP		LIGHTNIN MIXERS PTY LTD	INSIDE DIAMETE	R 2-1		
SEW EURODRIVE	32303AV	RING	0	32303AV		SEW EURODRIVE	OUTSIDE DIAMET CROSS-SECTION		IN IN	
STERLING FLUID SYSTEMS	45.8 - 041OB	RING	0	45.8 - 0410B		STERLING FLUID SYSTEMS	MATERIAL RUBBE TEMPERATURE RATING			GF
FRANKLIN ELECTRIC	275743133	SEAL, O-RING	0	275743133		FRANKLIN ELECTRIC	HARDNESS RATIN		ACK	
MOYNO CO	3207905210	SEAL, O-RING	0	3207905210		моумо со		STANDARD DATA		
LECO CORPORATION	611-476	SEAL, O-RING	0	611-476	Г	LECO CORPORATION	611-476	1.811IN; 0.3740IN; RE	R 0	•
LECO CORPORATION	611-477	SEAL, O-RING	0	611-477		LECO CORPORATION	611-477	2-1/16IN; 0.2IN; RBR; BLK	0	•
INGERSOLL DRESSER PUMP COMPANY	20A11CM268	SEAL, O-RING	0	20A11CM268		INGERSOLL DRESSER PUMP COMPANY	20A11CM268	8.50MM; 8.75MM; RBF	0	•
LIGHTNIN MIXERS PTY LTD	11581PSP	SEAL, O-RING	0	11581PSP		LIGHTNIN MIXERS PTY LTD	11581PSP	11.8IN; 1/4IN; RBR; E	LK 0	•
MARATHON PUMPS	560020360	SEAL, O-RING	0	560020360		MARATHON PUMPS	560020360	1.19IN; 0.094IN; RBR	0	•
MARATHON PUMPS	560022360	SEAL, O-RING	0	560022360		MARATHON PUMPS	560022360	1.47IN; 0.094IN; RBR; BLK	0	•
<ul> <li>Activity History / Assign User / Add Note</li> <li>Niew Long Description</li> <li>Rematch →</li> <li>Approve Match →</li> </ul>										

### Catalog Compose: Cleansing Productivity Tool



Driving business performance.



#### Stock Code Catalogue Data Sheet

Stock Code 000408187

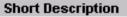
Corporate Stock Code PIGO-028721

Unit of Issue EA

Object VALVE

Qualifier BALL

Status NOT DONE



VALVE, BALL: 32MM, PUSH ON, PVC BODY, BALL & SEAT EPDM, EPDM, HANDLEVER

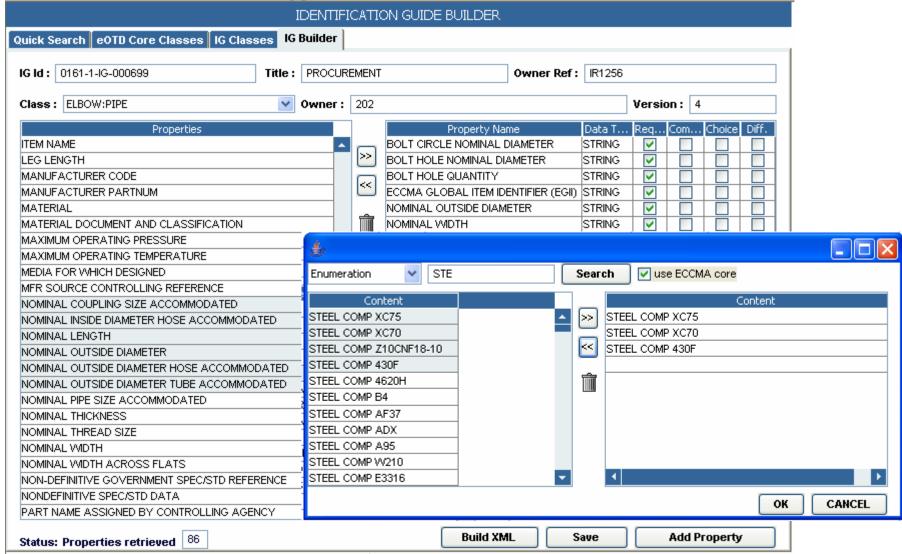
OPERATED

#### **Purchase Description**

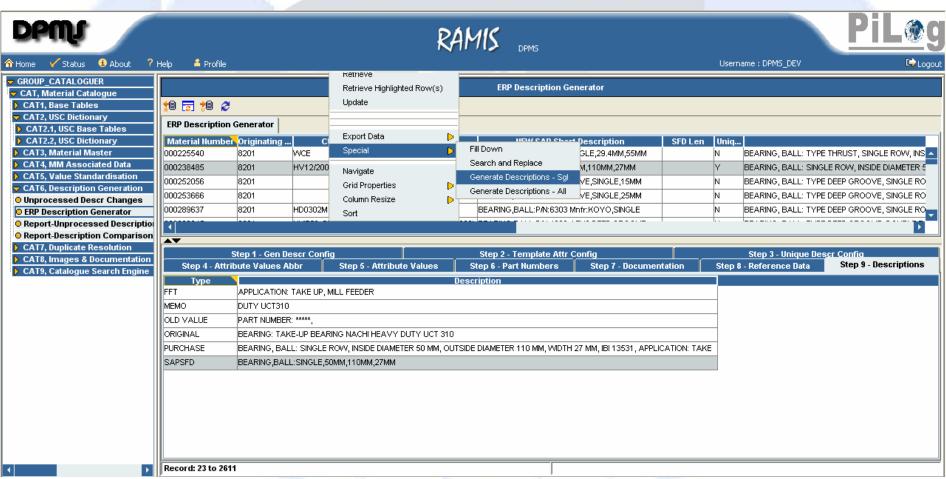
VALVE, BALL: SIZE 32MM, CONNECTION PUSH ON, PVC BODY MATERIAL, TRIM BALL & SEAT EPDM, SOFTGOODS EPDM, HANDLEVER OPERATED

Attribute	Value			
BODY MATERIAL	PVC			
CONNECTION	PUSH ON			
DESIGN RATING	****			
OPERATED	HANDLEVER			
SIZE	32MM			
SOFTGOODS	EPDM			
SPECIFICATION	****			
STYLE	****			
TEMPERATURE RATING	****			
TRIM	BALL & SEAT EPDM			

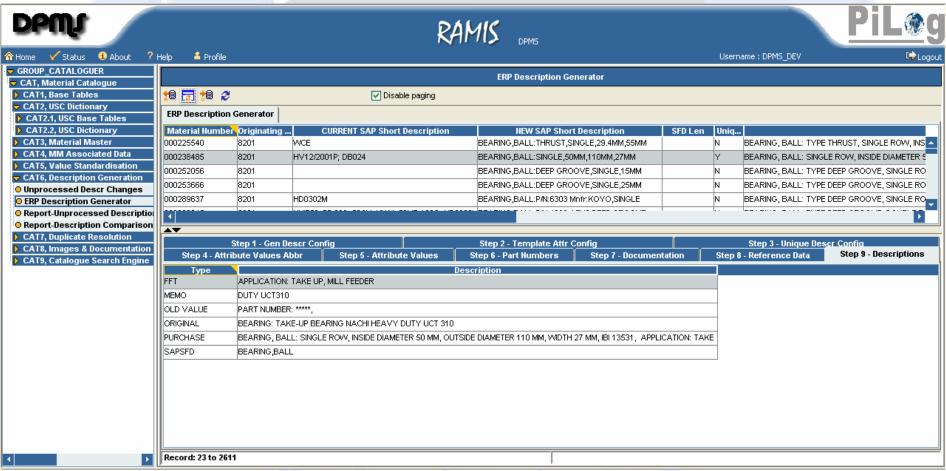




### Generate new descriptions

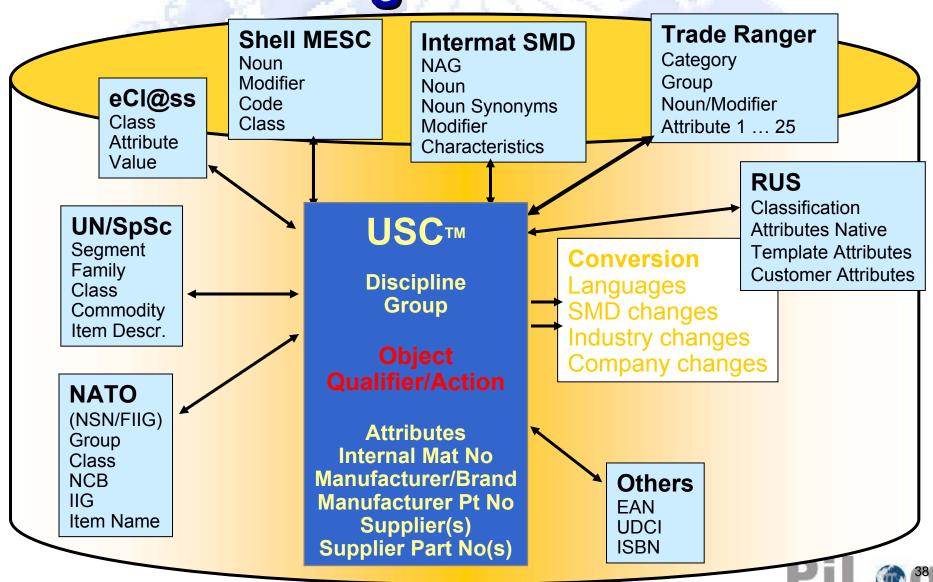


### **Description changed**

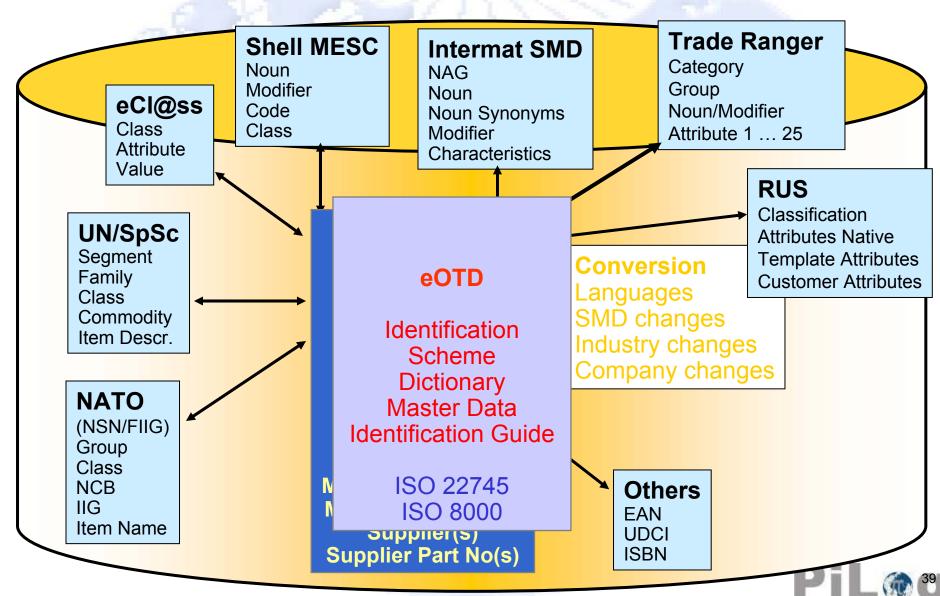




# Universal Standard Catalog Translation Model



# Universal Standard Master Data Translation Model



### A last word of caution

#### Data quality and Intellectual Property (IP)

All identifiers are copyright. They belong to the organization that issued them and their use is subject to the terms and conditions imposed by the issuer.

- Unless identifiers have been declared available for public use without a licence, they should never be used to retrieve data that was not supplied by the owner of the identifier unless you have specific permission to do so.
- In order to protect your data from claims of "joint work" you should not use proprietary identifiers as metadata.

The NCS and the eOTD concept identifiers are in the public domain.



#### **Peter Benson**

Mr. Peter Benson is the Executive Director and Chief Technical Officer of the Electronic Commerce Code Management Association (ECCMA).

Peter is an expert in distributed information systems, content encoding and master data management. He designed one of the very first commercial electronic mail software applications, WordStar Messenger and was granted a landmark British patent in 1992 covering the use of electronic mail systems to maintain distributed databases.

Peter designed and oversaw the development of a number of strategic distributed database management systems used extensively in the UK and US by the Public Relations and Media Industries. From 1994 to 1998, Peter served as the elected chairman of ANSI ASCX 12E, the US Standards Committee responsible for the development and maintenance of EDI standard for product data.

Peter is known for the design, development and global promotion of the UNSPSC as an internationally recognized commodity classification and for the design of the eOTD, an internationally recognized open technical dictionary based on the NATO codification system.

Peter is the project leader for ISO 8000 the new international standard for data quality and for ISO 22745 the new standard for open technical dictionaries, he is also the ISO TC184/SC4 Quality Committee convener. He is an expert on the creation and maintenance of unambiguous language independent master data and the generation of high quality descriptions that are the heart of today's ERP applications and the next generation of high speed and high relevance internet searches.

Peter is an internationally recognized proponent of open standards and public domain metadata critical to ensuring data portability and data preservation. Peter has been instrumental in focusing international attention not only on data quality issues but also on the serious intellectual property issues caused by proprietary metadata that can lead to an organization's loss of rights in its own data.