ISO 8000 Data Quality Workshop

Presented by Steven Arnett
Consultant and Member, Board of Directors, ECCMA

NATO Allied Committee 135
World Codification Forum
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About ECCMA

- ECCMA is headquartered in Bethlehem, PA
- Founded in 1999 as an international not for profit association
- It is owned by its members
- Complete information is available at www.eccma.org
ECCMA Manages

- The eOTD, a very large open technical dictionary (includes NATO terminology)
- The eDRR, a library of open cataloging templates (includes simplified IIGs)
- The eTSR, a library of standardized commercial technical specifications (linked to NSN)
- The eDGPR, a library of data governance policies linked to data requirements
ECCMA is the Project Leader for

- ISO 22745 Open Technical Dictionaries and Standard Technical Specifications
- ISO 8000 Data and Information Quality
- ECCMA 1 Natural identifiers for location
- ECCMA 2 Formatting of quality identifiers (now ISO 8000-115)
- ECCMA 3 Natural identifiers for individuals and organizations
ISO 22745 and 8000

- ISO 22745: A standard for formatting and exchanging master data
- ISO 8000: A standard for measuring and certifying data quality
- ISO 22745 and 8000 are managed by ISO Technical Committee 184/Sub-Committee 4 (SC4) – SC4 is responsible for standards related to industrial data
Motivation for ISO 8000

The primary value of ISO 8000 quality data is in promoting data quality throughout the data supply chain.

Master data is data that identifies and describes the entities that a business needs to know about in order to perform transactions. By definition these entities are external to the business and therefore the authoritative source of the data is also external.

*ISO 22745 and ISO 8000 were both developed as a means of improving the speed, quality and cost of obtaining master data from the authoritative source.*

We learned that the solution to Faster – Better – Cheaper access to Authoritative Master Data required that we learn how to ask for the data we need (ISO 22745) then including the requirement to provide quality data in our contracts (ISO 8000).
ISO 8000 - The International Standard for Quality Data

Portable data that meets stated requirements
ISO 8000-110:2009 specifies requirements that can be checked by computer for the exchange, between organizations and systems, of master data that consists of characteristic data.
Authoritative data is data where the author of the data is identified. Legally the author has control over the data but occasionally third party validation is required for data to be considered authoritative. While an “author” may sell the copyright (the “ownership”) in the data, the author remains the authoritative source of the data.
A common definition of “accuracy” is the degree to which something reflects the real world. The problem with this definition is that the comparison with the real world is rarely absolute.

- At the data element level
- Who makes the claim to accuracy (business identifier)
- If the accuracy is covered by a **warrantee**: The Universal Resource Identifier (URI) where the warrantee is located.
- If the accuracy is **asserted** what is the Universal Resource Identifier (URI) where the assertion is located.
Master Data
NSN
eOTD-r-xml
ISO 22745-40

Identification Scheme
ACodP-1
0161-1#nn-nnnn#1
ISO 22745-13

Dictionary
H6+MRD
eOTD-xml
ISO 22745-10

Identification Guide
FIIG
eOTD-i-xml
ISO 22745-30

- is coded using concepts in
- conforms to the constraints in
- constrains the use of

Electronic Commerce Code Management Association
The eOTD is a “dictionary”
“A resource that lists words or phrases from multiple origins and gives their meaning”

- Public domain concept identifiers
- Free identifier resolution to underlying terminology (web services)
- Multilingual terms, definitions and images linked to single concept identifier
The eOTD (ECCMA Open Technical Dictionary) is an ISO 22745-20 compliant central registry of terminology. Each concept and terminological component in the eOTD is assigned a unique and permanent public domain identifier.

Users create their corporate dictionaries as subsets of the eOTD and use the eOTD concept identifiers to manage concept equivalence mapping.

ISO 22745 - ECCMA Open Technical Dictionary (eOTD)

Terms
Abbreviations
Terminology
Definitions
Images

Public Domain Concept Identifier
0161-1#xx-xxxxxx#1
The eOTD is used for “mapping” across systems

<table>
<thead>
<tr>
<th>CONCEPT_ID</th>
<th>TERM</th>
<th>REFERENCE</th>
<th>LANGUAGE</th>
<th>ORGANIZATION</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0161-1#01-014161#1</td>
<td>BOLT, MACHINE</td>
<td>FIIG=A003B0;INC=01847</td>
<td>en-US</td>
<td>DLIS</td>
<td>An externally threaded fastener designed for insertion through holes in assembled parts and normally intended to be tightened or released by torquing a nut. The threaded and unthreaded portions are both of one nominal diameter of 0.190 inch (5 mm) or larger. The head is not designed to be held or driven with an inserted driver or by the thumb and fingers. A locking feature may be incorporated in the design of the head or threads. Head dimensions and sizes of threaded and unthreaded portions shall conform to internationally recognized fastener standards. For items having a grip length portion machined to a tolerance of 0.0015 inch (0.038 mm) or less, BOLT, SHEAR. See also SCREW, CAP, HEXAGON HEAD and SCREW, MACHINE.</td>
</tr>
<tr>
<td>0161-1#01-1073082#1</td>
<td>BOLT</td>
<td>IR237</td>
<td>en-US</td>
<td>SABIC</td>
<td>A fastener that is externally threaded on one end and generally with some style of head on the other end and is normally intended to be tightened or released by torquing a nut and designed to fasten objects together.</td>
</tr>
<tr>
<td>0161-1#01-068756#1</td>
<td>bolt</td>
<td>F 1789 - F16</td>
<td>en-US</td>
<td>ASTM</td>
<td>headed and externally threaded fastener designed to be assembled with a nut</td>
</tr>
<tr>
<td>0161-1#01-1091023#1</td>
<td>BOLT, CLOSE TOLERANCE</td>
<td></td>
<td>en-US</td>
<td>Rockwell Automation, Inc</td>
<td>An externally threaded fastener whose unthreaded portion is of a specified grip length, plated or un-plated and is machined to a tolerance of one thousandth (0.001) of an inch (0.025 mm) or less of a specific diameter for items one inch (25 mm) or less in diameter. Items over one inch (25 mm) in diameter shall have a tolerance of fifteen ten-thousandths (0.0015) of an inch (0.038 mm) or less. The nominal major diameter of the threads shall be at least one thousandth (0.001) of an inch (0.025 mm) below the minimum shank diameter, but not below the minimum major diameter for applicable class of fit, as shown in the Screw Thread Standards, FED STD H28 and/or other nationally recognized standards. The head is not designed to be held or driven with an inserted driver, nor is it designed for rotation by the thumb and fingers. A locking feature may be incorporated in the design of the head or threads.</td>
</tr>
</tbody>
</table>
An eSTS is easy to create, no specialized technology nor the purchase of any product or service is required.

An eSTS can be used to create classifications and descriptions automatically.

### Technical Specification

<table>
<thead>
<tr>
<th>Property name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLASS</td>
<td>VALVE,BALL</td>
</tr>
<tr>
<td>THREAD CLASS</td>
<td>2A ALL ENDS</td>
</tr>
<tr>
<td>BODY MATERIAL</td>
<td>STEEL COMP 316</td>
</tr>
<tr>
<td>PIPE SIZE</td>
<td>¼ INCH</td>
</tr>
<tr>
<td>OPERATING METHOD</td>
<td>MANUAL</td>
</tr>
<tr>
<td>MAX PRESSURE</td>
<td>2500PSI</td>
</tr>
</tbody>
</table>

### Descriptions

<table>
<thead>
<tr>
<th>ITEM NAME</th>
<th>VALVE,BALL: SS, ¼”, 2500PSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PURCHASE ORDER</td>
<td>VALVE,BALL: SIZE=1/4 INCH, MAX PRESSURE=2500PSI, BODY MATERIAL=STEEL COMP 316</td>
</tr>
</tbody>
</table>

### Classifications

- **NSC 2013**: 4820: Valves, Nonpowered
- **UNSPSC 15.1101**: 40141607: Ball valves
- **eClass 8.0 (basic)**: 37010490 : Ball valve (unspecified)
- **Harmonized Tariff**: 8481.80.3070: hand operated steel ball valve
Thousands of organizations issue millions of part numbers (or identifiers) each year

Buyers frequently misidentify parts because of confusion with numbers from different suppliers

Failed orders, due to cancellations or corrections to incorrect orders cost business $billions every year...
  » Successful orders are non-events

There are many reasons orders fail
  » Legacy identifiers are hard to validate and lose uniqueness over time
  » Introduction of duplicate and redundant identifiers.

Most failed orders can be eliminated with QUIP

QUIP is based on the ISO 8000 standard
Introducing QUIP – the Solution

The Solution

A QUIP Prefix (QUIP) is simply a unique name or alpha-numeric character string that identifies the manufacturer or distributor of a specific part or service.

A QUIP sub.Prefix is a name that Prefix owners can use to differentiate between their product, brand, geographic or organizational units within a large company.

Examples of Electrical Manufacturers Prefix

- Emerson: LK70LEDAB
  - Amber Mist LED Light Fixture
- Eaton: product number
- Rockwell: product number
- General Cable: product number
- Southwire: product number
- GE: product number
  - GE.Aviation: product number
  - GE.Energy: product number
  - GE.Transportation: product number
- Belden
A QUIP leverages existing investments in ERP systems such as SAP, Oracle, Microsoft Dynamics, Epicor etc.

QUIP is key to lowering the cost of quality master data.

QUIP streamlines the order management process by making a clear connection between a part and the correct supplier for the part.

QUIP VALIDATES the data

- A QUIP enables online validation of identifiers and resolution of identifiers and technical specifications without costly manual input and time. To clean and catalogue the data.

A Quip is a LOW COST solution

- A QUIP leverages existing investments in ERP systems such as SAP, Oracle, Microsoft Dynamics, Epicor etc.
- QUIP is key to lowering the cost of quality master data.

A QUIP helps PROMOTE and PROTECT the company’s brand name

- A QUIP is similar to a Domain Name
- By securing the Prefix, no other company can use your branded name with its product

Suppliers use QUIP to secure their brands, promote their products, and help their customers simplify procurement and order management

Buyers use QUIP to identify preferred suppliers, simplify procurement and order management, and reduce order cancellations and corrections.
Steps to Adopting ISO 8000 – Quality Data and Information

1. Register your Quality Identifier Prefix at www.QUIPLAB.com

2. Collect and define terms from your suppliers and existing data with help from ECCMA Open Technical Dictionary (eOTD) or your existing definitions.

3. Upload the defined terms and definitions into the eOTD.

4. Create and register your Standard Technical Specifications using tools provided by ECCMA (use eSTS Builder 1, 2 or 3 or build your own XML interface).
   - Each record will contain 3 key pieces of information: Class name, the Properties and their value and the associated QUIP Prefix and part number.

5. Create and Upload Catalogue items to ECCMA’s Technical Specification Registry eTSR (no fee required).
   - These specifications consist of a QUIP Prefix and part number, Class name, Characteristic name, Characteristic value(s), Unit(s) of measure, Date verified, Provenance and Definition.

6. Exchange your QUIP Prefix with your customers so they can download from the eTSR (no fee required).
Providing a product specification is becoming a commercial norm.
Current Commercial Situation

Repetitive and costly

MANUFACTURER

Data Cleansing

Cataloging

Technical Specification

Data Cleansing

Codification

Data Enriching

End User Company
The Benefits are Substantial

No data cleansing, better duplicate and substitute identification, more accurate spend analysis

Infinite ability to search and aggregate data
Case Study: Fortune 500 Company

The company is a major manufacturer with global operations:

- They are implementing ISO 8000 under contract with ECCMA
- They are standardizing their buy side catalog and creating eSTSs for their items of supply using the ECCMA Master Data Validation (eMDV) tool
- Although they are still in the process of deploying this project across their operations, they have found:
  - About 10% of their inventory represents duplicate items, representing a potential savings of $18 million on inventory alone
  - Additional savings will accrue from reduction of requirements for warehouse space and procurement resources
- As a result of this project, the company will be able to substantially reduce the number of products they buy, warehouse, and distribute
Using ISO 8000 and the NCB to Support Localization
The goal of this project is to support the localization efforts of the Ministry of Defense and large commercial firms\(^1\) through the creation of a KSA NATO Codification Bureau (NCB) and the implementation of standard codification practices.

\(^1\)Aramco, SABIC, SWCC and SEC participated in the 2013 pilot project, current stakeholders include the seven largest industrial groups and all seven armed forces.
Use ISO standardized technical specifications (eSTS) to increase the visibility of Saudi manufactured products

- Easier for government and commercial companies to meet localization goals
- Easier for government to monitor import tariff exemption and industrial license compliance
- Easier for international buyers to find Saudi made products
Project Scope

1) Establish a KSA NATO Codification Bureau to manage a common Saudi Dictionary, codification templates, and training

2) Use international standards for codification, to create and manage an open catalog of ISO 8000 quality material and vendor master data to allow:
   a) The identification of Made in KSA
   b) The ability to identify duplicate and substitutable materials

3) Create the ability to identify local and previously exempted products as part of the exemption application process

4) Create an e-collaborative platform to allow Saudi companies to register their products as well as other future functionality such as listing surplus materials
Building Out the NIIC Server

**Methodology**

1. Obtain master data and procurement data from armed forces and commercial stakeholders, conduct ISO 8000 audit and scoping study
2. Assign KSA NCAGE code to Saudi Manufacturers and suppliers
3. Convert product data to ISO standard technical specification format
4. Obtain data from MEIM (Industrial license, Exemption and Made in KSA)
5. Validate data (C@S)
6. Request on-line validation by suppliers
7. Assign KSA NSN to Saudi products used by the armed forces
KSA NCB

Role and Responsibility

1. Assigns KSA NCAGE codes to Saudi manufacturers and suppliers to the Saudi armed forces
2. Assigns KSA NSN codes to products used by the Saudi armed forces and made by Saudi Manufacturers
3. Provides Saudi armed forces with access to the NIIC server and NATO NMCRL
4. Provides Saudi armed forces with training in NATO cataloging and in the use of the NIIC server and NATO NMCRL
5. Represents KSA at AC/135 meetings

MEIM data
- Industrial license
- Exemption
- Made in KSA

Automated Validation request

Local supplier
Foreign supplier
Foreign supplier
Foreign supplier

Public data only
Commercial data

NIIC Server

KSA NCB

NATO Application

Data from other NCBs

KSA NCAGE

KSA NSN
In the future, we believe that nations will require product descriptions to be submitted for imported products

- Harmonized Trade System (HTS) codes can be validated using ISO 8000/eSTS standardized descriptions
- Beginning in September 2017, Saudi Arabia will require importers to provide eSTSSs
- Lack of them could delay entry of products into KSA or prevent them from being eligible for exemption from the 10% import tax
- We expect other nations to require descriptions with imported products in the future to validate HTS codes
Providing the Data Necessary for the Safe and Efficient Operation of Plant, and Equipment Is a Legal Requirement in Most Countries

The contractor, sub-contractor or supplier shall, as and when requested to do so, supply a standard technical specification for any the items covered in this contract as follows:

- The data shall be ISO 8000-110:2008 compliant
- The data shall comply with registered ISO 22745-30 compliant data requirements
- The data shall be encoded using concept identifiers from an ISO 22745 compliant open technical dictionary that supports free resolution to concept definitions
- The data shall be provided in an ISO 22745-40 compliant Extensible Markup Language (XML) format
Data is like any other asset, it costs money to acquire and to maintain

- What is the business function that creates the requirement?
- What is the value of the data?

Ask only for the data you need
(and be prepared to explain why you need it)
The useful life of data exceeds that of most software applications
Data that cannot be separated from a licensed software application is also licensed data
ISO 8000 quality data is portable data
An ISO 8000 compliant software application is an application that can export portable data.
Data encoded using an ISO 22745-10 open technical dictionary and formatted in XML in accordance with ISO 22745-40 meets the requirements of ISO 8000
Data that cannot be separated from licensed software is licensed data!

Proprietary **metadata** and **identifiers** are copyright

We can expect to see copyright rigorously enforced in the years ahead

**Data coded using a licensed dictionary or validated using licensed data requirements or created using licensed description rules is subject to the terms of the license**
ISO Data Standards are the Antidote to Application “Lock-in”

Quality data is portable data; it is independent of the software application and accessible by any application.
ECCMA manages the certification of individuals who demonstrate and understanding of ISO 8000 in its application to Master Data. It is an on-line open book test, you may use the course materials and on-line research freely, but you may not receive help from any other person.

There are 60 questions designed to assess your ability to remember or recall basic and fundamental pieces of knowledge related to ISO 8000 as well as assess your ability to think critically about the subject.

If you are interested in obtaining a certificate please contact Brandi Fisher at brandi.fisher@eccma.org.
Websites for More Information

- QUIPLAB: www.quiplab.org
- ECCMA: www.eccma.org
Questions and Comments

ECCMA is leading the way in implementation of the ISO 8000 series of standards and a global standard for e-cataloging and master data exchange between trading partners.

STEVEN ARNETT
Member of the Board
Consultant
steven.arnett@eccma.org
www.eccma.org
2980 Linden Street, Suite E2
Bethlehem, PA 18017
Tel: +1 269-746-4462
Fax: +610-625-4657

Linking the KNOWLEDGE of Today
With the POWER of Tomorrow