ISO 80000 MD Introduction

Dr Salomon de Jager
CEO Pilog Group
ISO 8000

alignment to ISO 9000

data = product

quality = conformance to requirements

plan, do, check, act

processes, people & technology

2
ISO 8000 Family of Standards

ISO 8000

General Principles

Part 1 Introduction
Part 2 Terminology

Part 100 Introduction

Part 110

Part 100

Syntax
Semantic encoding
Meets requirements

Part 120 Provenance
Part 130 Accuracy
Part 140 Completeness

Transaction data
ISO 8000 Part 100

deals with the creation and management of

Master Data

that precedes processes and methods

used by organizations
The motivation for ISO 8000 Part 100 was driven by companies looking for quality data.

- Improved data quality
- Allows data integration
- That built long term relationships
ISO 8000 Part 100 and Part 110 standards offers the solution:

**ISO 8000 Part 100** focus on **promoting quality** Master Data by starting with the **data capture** process.

**ISO 8000 Part 110** focus on **Standards** to create quality Master data that can be **processed by a computer**.

**ISO 8000 – 22745** focus on the **exchange** of processed data.

*Whereas*: ISO 9001 states: ‘You have a process and you follow the process’

ISO 8000 Part 100 and 110 provide a set of rules to follow. ISO 22745 tell us how to follow the rules...
The purpose of standards is to be able to claim that your company, software and services are ISO 8000 compliant, which means:

- You are providing data in compliance with a Data Requirement
- You have quality data that is interchangeable between different software applications
- You can formulate your data requirements into a Request for Data
To claim that your company is ISO 8000 compliant you need to understand:

- **OTD is a Dictionary of Concepts**
- **OTD describe Concepts by use of Identifiers**
- **Data Requirements define characteristics according to concept identifiers in the OTD**
Companies looking for Quality Data

ISO 8000 Part 100 and Part 110

To be able to claim that Company is ISO 8000 compliant

Need to understand OTD and Data Requirements
3 BIG QUESTIONS

1. Where we are?
2. Where we go?
3. How to get there?
Examples of how we currently use the Data Dictionary

Examples of the OTD and Data Requirements as explained in ISO 8000 Part 100

Working through requirements and standards documented in ISO 8000 Part 100 to Part 140
**DATA DICTIONARY**

Standardized templates are used to guide the cataloguer

**OPEN TECHNICAL DICTIONARY**

Concepts with Identifiers

Terminology to specify the meaning of concepts

1. Where we are

2. Where we go
Standardized templates are used to guide the cataloguer.
The Data Dictionary: consist out of standardized Templates
ISO 8000

OPEN TECHNICAL DICTIONARY

Concepts with Identifiers

Terminology to specify the meaning of concepts

3 BIG QUESTIONS

1 Where we are?
2 Where we go?
3 How to get there?

Where we go
The Open Technical Dictionary: consist out of **Concepts**

**OPEN TECHNICAL DICTIONARY**

- Concepts with Identifiers
- Terminology to specify the meaning of concepts
Concepts: are anything you can think about
Each Concept is linked to a Concept Type

COLLAR, BEARING = CLASS

WIDTH = PROPERTY
Each Concept is assigned a unique and permanent identifier
Each Concept has a description to specify the meaning of the concept.

**COLLAR, BEARING**

**0161-1#TM-1099479#1**

A thrust bearing having a suitably formed face or faces that resist the axial pressure of one or more collars on a rotating shaft.
### Example OTD

<table>
<thead>
<tr>
<th>Concept Type</th>
<th>Term</th>
<th>Language</th>
<th>Definition</th>
<th>Abbreviation</th>
<th>Label</th>
<th>Org Name</th>
<th>Domain</th>
<th>Manuf</th>
<th>Active Ind</th>
<th>Concept IRDi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>BATTERY, DRY CELL</td>
<td>English US</td>
<td>A battery, composed of one cells forming a single unit which may or may not be recharged and whose electrolyte is not in fluid form.</td>
<td>BATT DRY CELL</td>
<td>-</td>
<td>VOLTEX</td>
<td>PRODUCT</td>
<td>-</td>
<td>Y</td>
<td>1007-1#01-086907#1</td>
</tr>
<tr>
<td>Property</td>
<td>TYPE</td>
<td>English US</td>
<td>A subdivision into a particular classification.</td>
<td>TYP</td>
<td>-</td>
<td>VOLTEX</td>
<td>-</td>
<td>-</td>
<td>Y</td>
<td>1007-1#1002-062726#1</td>
</tr>
</tbody>
</table>
OPEN TECHNICAL DICTIONARY

DATA REQUIREMENTS
The **DATA REQUIREMENT REGISTRY** contains:

1. Relationships between concepts
2. Constraints on property values
3. Data types

**Rule:** All information used to create a Data Requirement must first be registered in the Open Technical Dictionary.
**CLASS** = BATTERY, DRY CELL

**Example: DATA REQUIREMENT**

**CHARACTERISTICS OF CLASS**

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Definition</th>
<th>Required</th>
<th>Sequence</th>
<th>Data Type</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
<td>A subdivision into a particular classification.</td>
<td>Mandatory</td>
<td>1</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>POTENTIAL</td>
<td>The rated voltage of the item.</td>
<td>Mandatory</td>
<td>2</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>CURRENT CAPACITY</td>
<td>The amp hour rating.</td>
<td>Mandatory</td>
<td>3</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>COMMERCIAL SIZE</td>
<td>The size of the item as it is commercially known.</td>
<td>Optional</td>
<td>4</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>DIMENSIONS</td>
<td>The overall physical dimensions of the item.</td>
<td>Optional</td>
<td>5</td>
<td>String Type</td>
<td>English US</td>
</tr>
</tbody>
</table>

**Example** of Data Requirement to show *Class BATTERY, DRY CELL* and *Characteristic Data*

**A Data Requirement:** Is a set of rules describing items that belong to a particular class using entries from a Data Dictionary.
Example of Data Requirement to show Property Type with it’s Property Values.
Example of Data Requirement to show Property Potential with its Property Values and Characteristic of Class = Battery, Dry Cell
DATA REQUIREMENTS

ITEMS
Example: ITEM ENTRY CONTROL

1756-BA2 A

1770-XYC A
Lithium Battery, 3 V, PLC-5®, CSA/IEC/UL, 1400 mAh, 1.8 in., 0.68 in., Ser B or Later, Allen-Bradley® 1770-XYC

1763-BA A
Lithium Battery, 3 V, MicroLogix™ 1100, CSA/IEC/UL, 850 mAh, 14 mm, 26 mm, -40 to 85 deg C, Allen-Bradley® 1763-BA

1769-BA A
Lithium Battery, Replacement, 3 V, CSA/IEC/UL, 850 mAh, 14 mm, 26 mm, -60 to 85 deg C, Allen-Bradley® 1769-BA

1757-PLXBAT A
Lithium Battery, ProcessLogix™, Replacement, ProcessLogix™ 1757-PLX52 Controller, CSA/IEC/UL, 144 hr, Allen-Bradley® 1757-PLXBAT
For each item

descriptions are rendered

into multiple languages
### Record Details

- **Record ID**: 40482506B8A04FFBAD5C6043A417D823
- **Class**: Lithium Battery
- **Record #**: 2711P-RY2032 A
- **Catalog #**: 2711P-RY2032
- **Status**: APPROVED

### Descriptions

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Language</th>
<th>Country</th>
<th>Last Generated</th>
</tr>
</thead>
<tbody>
<tr>
<td>MKT</td>
<td>镍电池</td>
<td>Chinese</td>
<td>CN</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>PanelView Plus Lithium Battery</td>
<td>English</td>
<td>US</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>Batterie Lithium PanelView™ Plus</td>
<td>French</td>
<td>FR</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>PanelView™ Plus Ersatz Lithiambatterie</td>
<td>German</td>
<td>DE</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>Batteria Al Litio PanelView™ Plus</td>
<td>Italian</td>
<td>IT</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>Bateria De Litio De PanelView™ Plus</td>
<td>Portuguese</td>
<td>BR</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>MKT</td>
<td>La Batería De Litio PanelView™ Plus</td>
<td>Spanish</td>
<td>MX</td>
<td>2013/10/08 15:44+02:00</td>
</tr>
<tr>
<td>ORIGINAL MKT</td>
<td>PanelView Plus Accessory</td>
<td>English</td>
<td>US</td>
<td>2013/06/03 00:00+02:00</td>
</tr>
</tbody>
</table>
3 BIG QUESTIONS
1. Where are we now?
2. Where do we want to go?
3. How to get there?

MOTIVATION
Companies looking for Quality Data

SOLUTION
ISO 8000 Part 100 and Part 110

How to get there

Quality Data
Let's go invent tomorrow instead of worrying about what happened yesterday.
We have all the technology we need...

In a way it mirrors our thought processes
We need to use technology better....
ISO 8000 Part 100

holds the key to

Quality Data

by focusing on the true meaning of

Data, Information, Knowledge, Intelligence, Wisdom
Achieved by combining the following:

**Data Pyramid**
- **Data** (Symbols and Sense) - Meaning given to symbols is used to make sense of everything in life. Meaning of a word without further information is based on perception.

**Language Pyramid**
- **Language** (Truth Build Intelligently)
  - **Awareness** - Improvement, New ideas, New solutions
  - **Attention** - Opportunities to make decisions without fear of making mistakes
  - **Agreement** - Associate words with pictures in mind what we believe to be true
  - **Perception** - Old perceptions frozen into language force people to experience the world in old fashioned ways

**Maslow Human Needs**
- **Self-Actualization** - Morality, Creativity, Spontaneity, Problem solving, Lack of prejudice, Acceptance of facts
- **Esteem** - Self-esteem, confidence, achievement, Respect of others, respect by others
- **Love/Belonging** - Friendships, Family
- **Safety** - Security of body, of employment, of resources, of morality of the family, of health, of property
- **Physiological** - Breathing, food, water
To create authentic data based on truth
We need to awaken to new possibilities.
Maslow Human Needs

- **Physiological**
  - Breathing, food, water

- **Safety**
  - Security of body, of employment, of resources, of morality of the family, of health, of property

- **Love/Belonging**
  - Friendship, family

- **Esteem**
  - Self-esteem, confidence, achievement; respect of others, respect by others

- **Self-Actualization**
  - Morality, creativity; spontaneity, problem solving; lack of prejudice, acceptance of facts

By letting go of habits that no longer serve us
You are here now

You can get there!

Let the journey begin.
In the new Oxford American Dictionary, **Data** is defined as:

‘**facts** and statistics **collected** together for **reference** or analysis’
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**Data** is defined as:

‘**facts** and statistics **collected** together for **reference** or analysis’.
In the new Oxford American Dictionary, Data is defined as: ‘facts and statistics collected together for reference or analysis’.

Perception is defined as: ‘the way in which something is regarded, understood or interpreted.’

What we call facts can vary from person to person based on individual Perception.
Data and Perception

What we call **facts** can vary from person to person based on individual **Perception**.

---

**Data** is defined as:

‘facts and statistics **collected** together for **reference** or analysis’.

**Perception** is defined as:

‘the way in which something is regarded, understood or interpreted.’

---

It becomes clear that **Data** is not **Information**.

**Data** is based on individual **Perception** of a word.
A collection of data for which there is no relation between the pieces of data is not information. **Information** relates to description, definition or perspective.
A collection of data for which there is no relation between the pieces of data is not information. **Information** relates to description, definition or perspective.

We need to reach **Agreement** in understanding the relationships among data.
A collection of data for which there is no relation between the pieces of data is not information. **Information** relates to description, definition or perspective.

**The Problem:**
We associate words and pictures in the mind what we believe to be true.
A collection of data for which there is no relation between the pieces of data is not information. **Information** relates to description, definition or perspective.

**The Problem:**
We associate words and pictures in the mind what we believe to be true.

**The Solution:** We need to reach **Agreement** upon the meaning of the word.
Beliefs tells us how something may be. **Knowledge** tells us how something is. **Learnt knowledge** is distilled out of beliefs.
Beliefs tells us how something may be. **Knowledge** tells us how something is. **Learnt knowledge** is distilled out of beliefs.
Beliefs tells us how something may be. **Knowledge** tells us how something is. **Learnt knowledge** is distilled out of beliefs.

We need to change the power of belief we invested in symbols. **Focus Attention** on making decisions without the fear of making mistakes.
Beliefs tells us how something may be. Knowledge tells us how something is. Learnt knowledge is distilled out of beliefs.

Knowledge is not about what we know, but what we don’t know and need to find out.

We need to change the power of belief we invested in symbols. Focus Attention on doing things different without the fear of making mistakes.

The Solution: We need to create a future no longer based on past experiences.
Intelligence is a process or innate capacity to use pure knowledge in order to respond to ever-changing requirements.
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Awareness leads to new improvements, new ideas and new solutions.
Knowledge and Attention

Through pure thought and Intelligence, Awareness is achieved

--- ADAPTION ---

is the centre point between Intelligence and Awareness

that determine how an organization grow and flow

Pure thought activates creative thinking that results in Intelligence that leads to Wisdom...
Wisdom arise when one understands the foundational principle of **Intelligence** is the **ability to adapt** by looking for real **truth** and then make decisions out of that what is known.
Wisdom and Truth

ISO 8000 Part 100

turn thoughts into Ideas

Data Pyramid

Wisdom
‘Messenger of Truth’

Intelligence
(Value, Vision, Integrity)
The good can only be known by pure thought and intelligence

Knowledge
(Experience, Reflection, Understanding)
The past is relived and we create the future based on the past

Information
(Meaning and Memory)
Symbols can reproduce an image or feeling in the mind that we believe to be true as the ‘voice in the head’ tell us so

Data
(Symbols and Senses)
Meaning given to symbols is used to make sense of everything in life

Language Pyramid

Truth
Build intelligently organized Knowledge Base

Awareness
Improvement, New ideas, New solutions

Attention
Opportunities to make decisions without fear of making mistakes

Agreement
Associate words with pictures in mind what we believe to be true

Perception
Old perceptions frozen into language force people to experience the world in old fashioned ways
Creative Ideas expressed and Governed by Dictionary driven DATA

Through global acceptance of the meaning of words we become 'Messengers of Truth'

HUMAN NEEDS
Self-Actualization
- Morality, Creativity
- Spontaneity, Problem solving
- Lack of prejudice, Acceptance of facts

LEADERSHIP

DATA NEEDS
Virtue
-'Messenger of Truth'
Quality Data is an essential characteristic that determines the reliability of Master Data.
Master Data is at the heart of every business transaction, application, and decision.
Master data is business critical information about products, services, customers, suppliers, partners, employees and more.

Master Data is the high-value core information used to support critical business processes across the enterprise.
Quality Master Data

1. are encoded using identifiers from a Data Dictionary
2. are recorded using formal syntax
3. conform to an agreed upon set of data specifications
Quality Master Data results in standardized Products and Services that are:

- Safer
- More healthful
- Higher quality
- More flexible

Vital for communication

Promote Trade and Commerce
Characteristic Data: The description of an entity by the class to which it belongs and a set of property values.
The rules formulated in

ISO 8000 Part 100 Standards

to ensure Quality Master Data by doing things in a consistent way in addressing the key components
ISO 8000 Components
ISO 8000

Address the key components of quality data as follows:

Components of ISO 8000
- Data that meets requirements
- Data that is unambiguously encoded
- Data that is application independent

Step 1: Data that meets requirements
Step 2: Data that is unambiguously encoded
Step 3: Data that is application independent
ISO 8000

These key components are all dependent on

The quality of the Data Capture Process

Components of ISO 8000

- Data that meets requirements
- Data that is unambiguously encoded
- Data that is application independent

Step 1

Data that meets requirements

Step 2

Data that is unambiguously encoded

Step 3

Data that is application independent
The key to data quality success resides in the Intelligent construction of software applications to prevent data capture error.
ISO 8000 Standards offer the solution:

- **Data Requirement templates** must be created

- These data requirement templates are constructed by retrieving **coded concepts** recorded in the dictionary

- Information must be stored in an open format for **portability** between software applications
ISO 8000 STANDARDS
The structure of ISO 8000 forms the base of quality data once recorded in an Open Technical Dictionary (OTD).
ISO 8000 standards can be divided into parts

Structure: ISO 8000

- Part 100
  - Data
  - Information
  - Knowledge
  - Intelligence
  - Wisdom

- Part 110
  - Syntax
  - 2. Semantic Encoding
  - 3. Meets Requirements

- Part 120
  - Provenance

- Part 130
  - Accuracy

- Part 140
  - Completeness
ISO 8000

Each part being a standard in its own right....

STRUCTURE: ISO 8000

Part 100

Data
Information
Knowledge
Intelligence
Wisdom

Part 110

1. Syntax
2. Semantic Encoding
3. Meets Requirements

Part 120

Provenance

Part 130

Accuracy

Part 140

Completeness

ISO 8000 Part 100: Master Data
1. Specify a formal **syntax**.

2. Specify data requirements that are **machine-readable**.

3. **Refer** explicitly to the data requirement and the syntax to which it **complies**.

4. Have syntax and data requirements that are **computer verifiable**.

5. Refer to data dictionary entries in the form of unambiguous **identifiers** belonging to an **international recognized scheme**.

---

The Master Data message must unambiguously state all needed information:
Part 100: Deals with insight into the whole truth around quality data which lie at the root of our thinking.

Deals with the ability to understand information and being able to communicate the meaning of the information to others.
ISO 8000

Incorrect information produces incorrect Knowledge

Incorrect knowledge is misleading and can lead to incorrect decisions, wasted effort and damaged processes
ISO 8000

Master Data Management

requires an understanding and agreement

about the meaning of terminology

Hence, the natural role of taxonomy
ISO 8000

Taxonomy is about naming concepts, coming to a consensus on the exact meaning of each named concept and then using these names consistently across the enterprise.
Part 110: Describes the use of syntax, semantic encoding and meets requirements.

Syntax and Semantic Encoding are terms used in relation to aspects of language.
Syntax is achieved in the way that words are put together to form phrases and sentences.

**Example Syntax**: in the OPEN TECHNICAL DICTIONARY:

<table>
<thead>
<tr>
<th>Concept Type</th>
<th>Term</th>
<th>Language</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>BATTERY, DRY CELL</td>
<td>English US</td>
<td>A battery, composed of one cells forming a single unit, which may or may not be recharged and whose electrolyte is not in fluid form.</td>
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</table>
**ISO 80000**

**Semantics:** refers to the set of rules which give the meaning of the statement

**Semantic Encoding:** is the technique of replacing natural language terms in a message with identifiers that reference data dictionary entries.

**Example Semantic Encoding:** in the OPEN TECHNICAL DICTIONARY

<table>
<thead>
<tr>
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<th>Term</th>
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<td>Y</td>
<td>1007-1#01-086007#1</td>
</tr>
</tbody>
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ISO 8000

Meeting Requirements is the sum total of

ISO 8000 Part 100 and 110

Components of ISO 8000
- Data that meets requirements
- Data that is unambiguously encoded
- Data that is application independent

The quality of the Data Capture Process
ISO 8000 Part 100:

Deals with the ability to understand information and being able to communicate the meaning of the information to others.

ISO 8000 Part 110:

Deals with the intellectually disciplined process to actively and skilfully conceptualize, apply, analyze, synthesize and evaluate information.

Components of ISO 8000:
- Data that meets requirements
- Data that is unambiguously encoded
- Data that is application independent

The quality of the Data Capture Process

Meeting Requirements
Provenance: Is the derivation history of a data property starting from its original source.
Provenance describes the context of database systems

Provenance provides descriptions of the original data

Provenance explains the process by which it arrived in the database

Provenance provides a validity check of the source of the information
Provenance used in conjunction with Part 100 and Part 110

bridge the solution in overcoming

Big Data Security issues in Cloud
Provenance

Authentic data with No duplications results in Actionable Information

Actionable Information: means having Quality Data Information immediately available in order to deal with the situation at hand.

Authentic data

PART 100

Data
Quality
Knowledge
Intelligence
Wisdom

Provenance

Syntax
Semantics
Requirement

No Duplications

PART 110

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MASTER DATA QUALITY SOLUTIONS
ISO 8000 Part 130
Part 130: Describe the need for accuracy in data quality.

Accuracy: Refer to the derivation of a property value starting from its original source.
Accuracy describes the context of dictionary

Accuracy provides descriptions of the original property values

Accuracy explains the process by which it arrived in the dictionary

This information must be verifiably accurate....
To ensure verifiable accuracy...

Provenance determine the Accuracy
to which results are produced
Provenance provides a validity check of the source of the information.

Accuracy provides true values which predicts future performance.

Track Info

Open Technical Dictionary
ISO 8000 Part 140
Part 140: Covers completeness at the data element level.

Every data requirement has mandatory as well as optional aspects.

Incomplete optional information can meet the expectations of the user.

‘Expected completeness’ is achieved...
‘Expected Completeness’ in data is considered complete with the following elements in place:

Part 100: To understand and communicate information
Part 110: To conceptualize, apply, analyze and synthesize information
Part 120: Authentic data with no duplications, results in Actionable Information
Part 130: True values predict future performance
Part 140: Completeness, is based on Truth
Application of Requirements as described in ISO 8000 Part 100 to Part 140
Construction of the OPEN TECHNICAL DICTIONARY according to ISO 8000 Standards Part 100 - 110
1. The **dictionary** must consist out of **coded concepts**

<table>
<thead>
<tr>
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<th>Term</th>
<th>Definition</th>
<th>Language</th>
<th>Concept Id</th>
</tr>
</thead>
<tbody>
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<td>a mechanism for discharging products from aerosol-type dispensers</td>
<td>English US</td>
<td>1007-1#01-077516#1</td>
</tr>
</tbody>
</table>

2. Each **concept type** must be linked to a **unique Identification Number**

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</table>

3. **Meaningful definitions** need to be constructed

<table>
<thead>
<tr>
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HOW TO: Example of OPEN TECHNICAL DICTIONARY

Structure

(1) ISO 8000 Standard Requirement:
Master data consist of the following elements:
1. It is coded concepts in a Dictionary
2. It conforms to formal syntax
3. It conforms to a data specification

About ISO 8000 and Master Data - Part 100

(1) See PiLog MDRM Compliance
ISO 8000

OPEN TECHNICAL DICTIONARY

Coded Concepts

Concept Types

Definitions

Terminology

Terms Definitions

Images Documents

OTD Public domain Concept Identifier

XXXX-1#G-01#1

Unique Identifier
Example SEARCH: OPEN TECHNICAL DICTIONARY

Search any technical Term (or) Definition available in Open Technical Dictionary (ISO 22745). Eg: BREAKER, CIRCUIT; VALVE: CONNECTION T
PiLog Preferred Ontology

is developed by Industry specialists

and highly recommended by PiLog to be used

across different industry verticals
ISO 8000

PILOG PREFERRED ONTOLOGY

Coded Concepts
Concept Types
Definitions

Coded Concepts
Concept Types
Definitions

Unique Identifier

OTD Public domain Concept Identifier
XXX-1#G-01#1

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Example SEARCH: PILOG PREFERRED ONTOLOGY
Client Preferred Ontology

is specific to an organization
Example SEARCH: CLIENT PREFERRED ONTOLOGY
HOW TO: Example of Meeting Requirements of OPEN TECHNICAL DICTIONARY

ISO 8000 - Part 110

(6) ISO 8000 Standard Requirement:
Must be a specification of characteristic data
i-XML is a representation of data requirements in XML
d-XML is a representation of a rendering guide in XML

(6) See PiLog MDRM Compliance
Construction of DATA REQUIREMENTS according to ISO 8000 Standards Part 100 - 140
Data Requirements

Is a set of rules

describing items belonging to a particular Class

using entries from the Data Dictionary
Data Requirements are required as a pre-requisite to measure Data Quality.
Collect

- Information collected during the specification phase

Analyze

- must be analysed

Identify

- by identifying attributes to determine the structure and quality of the Data Requirement
Rules:
1. All identified concepts required in the construction of a **data requirement** must exist in the **Data Dictionary**

*2. If not, it must be registered in the Open Technical Dictionary*
ISO 8000

During construction of the Data Requirement:

1. Each concept collected from the Open Technical Dictionary

2. Must be linked to a Data Type
Descriptions

Descriptions are rendered that include all the properties and property values that form part of the Data Requirement

<table>
<thead>
<tr>
<th>Material #</th>
<th>Catalog #</th>
<th>Record Status</th>
<th>Record Created By</th>
<th>Description Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGA0000163</td>
<td>CN163</td>
<td>CREATED</td>
<td>PETER</td>
<td>TECH (en_US)</td>
<td>BEARING, BALL, 10 MM, 20 MM, 30 MM, 4, Stainless Steel, 5000 RPM, Box; FFT163; PART NUMBER: 6203/A OEM: SKF; DRAWING NO: DR123 v1 Par.12</td>
</tr>
</tbody>
</table>
Upon completion a Data Requirement Template is produced for future use.

### Data Requirement (Template) of BATTERY, DRY CELL

<table>
<thead>
<tr>
<th>Property Name</th>
<th>Definition</th>
<th>Required</th>
<th>Sequence</th>
<th>Data Type</th>
<th>Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE</td>
<td>A subdivision into a particular classification.</td>
<td>Mandatory</td>
<td>1</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>POTENTIAL</td>
<td>The rated voltage of the item.</td>
<td>Mandatory</td>
<td>2</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>CURRENT CAPACITY</td>
<td>The amp hour rating.</td>
<td>Mandatory</td>
<td>3</td>
<td>String Type</td>
<td>English US</td>
</tr>
<tr>
<td>COMMERCIAL SIZE</td>
<td>The size of the item as it is commercially known.</td>
<td>Optional</td>
<td>4</td>
<td>String Type</td>
<td>English US</td>
</tr>
</tbody>
</table>
HOW TO: Example of Item Entry Control for Master Data

(2) ISO 8000 Standard Requirement:
1. The quality of the data capture process
2. Data that meets requirements
3. Data that is unambiguously encoded
4. Data that is application independent
EXCHANGE OF DATA
according to
ISO 8000 22745
ISO 22745 is a specific implementation of ISO 8000 Part 110 for parts cataloguing based on XML.

The Data Requirement is stored in the database in XML format.

ISO 22745 is a specific implementation of ISO 8000 Part 110 for parts cataloguing based on XML.

The ISO 8000 Part 110 implementation adopted by NATO defines all of the components necessary to meet ISO Part 110 Standards.
XML provides a robust and durable format for information storage and transmission.

```xml
<?xml version="1.0"?>
<html>
<head>
  <title>Service Subscription</title>
</head>
<body>
  <h1>Service Subscription</h1>
  <form action="http://URI_of_subscription servlet">
    <table class="subscription_info" width="350">
      <tr class="name">
        <td>
          Service Name:
        </td>
        <td>
          <input name="service_name"/>
        </td>
      </tr>
      <tr class="method">
        <td>
          Payment Method: &amp;#160; &amp;#160; &amp;#160;
        </td>
        <td>
          VISA <input type="radio" name="payment_method" checked="checked"/>
        </td>
      </tr>
    </table>
  </form>
</body>
</html>
```
XML provides a common syntax for messaging systems for exchange of information between applications.
Data Portability is the ability to move data among different application programs, computing environments and cloud services.

Data should be independent with respect to any and all software applications that access it at the current time, or might access it at a later time.
ISO 8000

Data that is independent from any licensed software application is referred to as Portable Data.

Data that is dependent on any licensed software application is in actual fact also licensed data.

ISO 8000 DATA is portable data independent of any software application.
HOW TO: Example of Data Exchange

About ISO 8000-110 and Data Exchange ISO 22745

(3) ISO 8000 Standard Requirement:
To be able to create clear and unambiguous requests for:
1. Characteristic data
2. Reference data
3. The validation of characteristic and reference data

(4) ISO 8000 Standard Requirement:
Automate generation and distribution of requests for data:
1. In a simple format that can be automated by the recipient
2. To create an integrated data exchange system
ACTIONABLE INFORMATION

ISO 8000

BETTER DECISIONS FASTER

is achieved through the combination of

Provenance, Accuracy and Completeness
ISO 8000

HOW TO: Measure ACTIONABLE INFORMATION

(7) ISO 8000 Standard Requirement:
Provenance is the history of ownership:
1. At the data element level
2. When was it extracted from the database
3. Who is the owner of the database

Provenance

ISO 8000 - Part 120

(8) ISO 8000 Standard Requirement:
Accuracy is measured as follows:
1. At the data element level
2. Who makes the claim to accuracy (Business Identifier)
3. If the accuracy is covered by a warranty

Accuracy

ISO 8000 - Part 130

(9) ISO 8000 Standard Requirement:
Completeness is measured as follows:
1. At the data element level
2. Who makes the claim to completeness

Completeness

ISO 8000 - Part 140

Complete

with the following elements in place

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“If you are working on something exciting that you really care about, you don’t have to be pushed. The vision pulls you.” ~ Steve Jobs