Connecting data standards

By using ISO 8000 and ISO 22745 to manage both the exchange of data and to manage the quality of the data, the industry can create **"a single version of the truth"** throughout the asset lifecycle

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BIOGRAPHY

Peter Eales

- Independent maintenance, repair, and operations consultant
- Consultant for ECCMA (electronic commerce code management association)
- Committee member of ISO/TC 184/SC 4/WG 13 – Industrial data quality (ISO 8000)
- Consultant to the Kingdom of Saudi Arabia government on the Vision 2030 project
- Formerly global SME for materials management – Petrofac
- Formerly global SME for master data – BG Group

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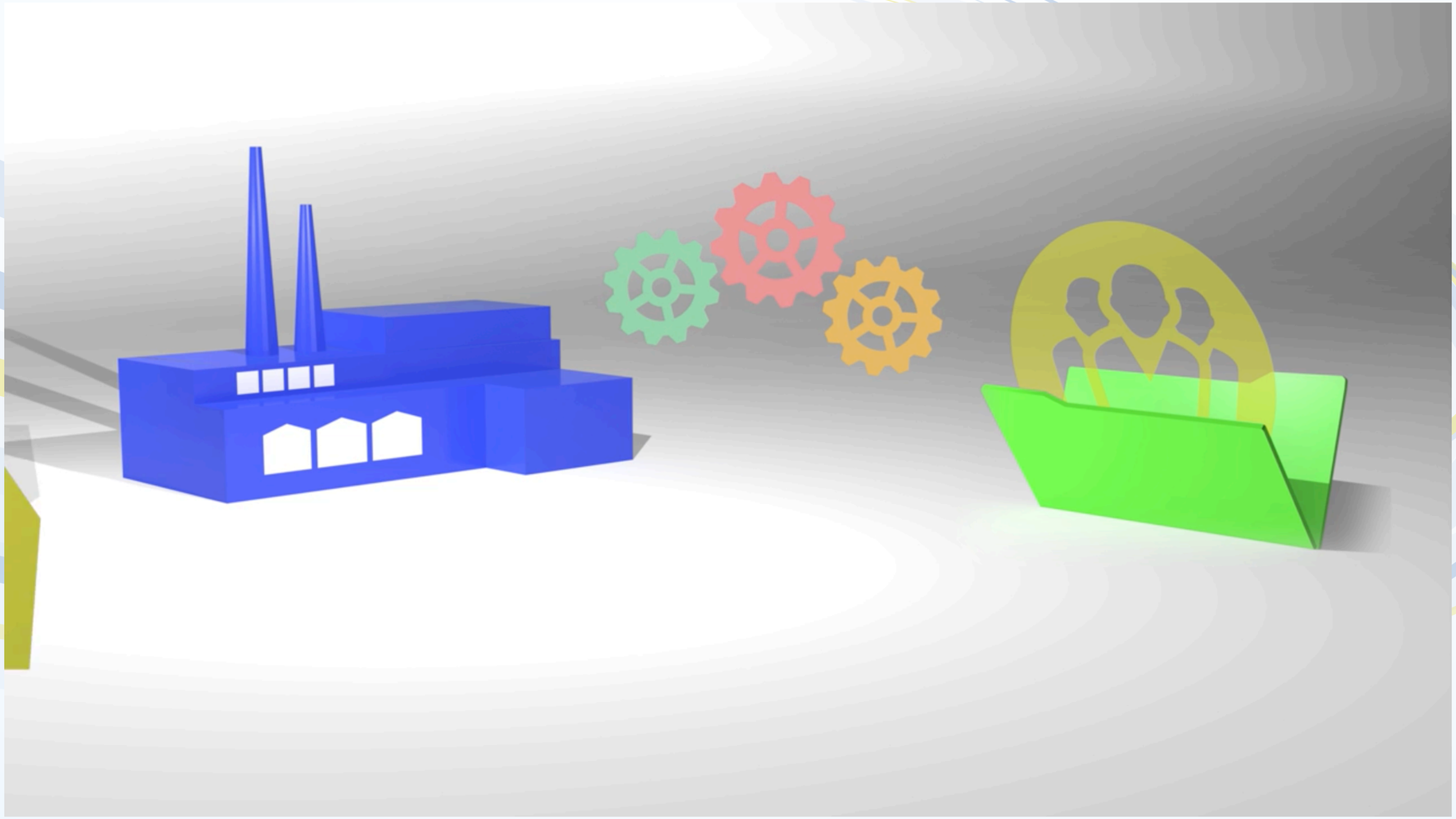
What is the current situation?

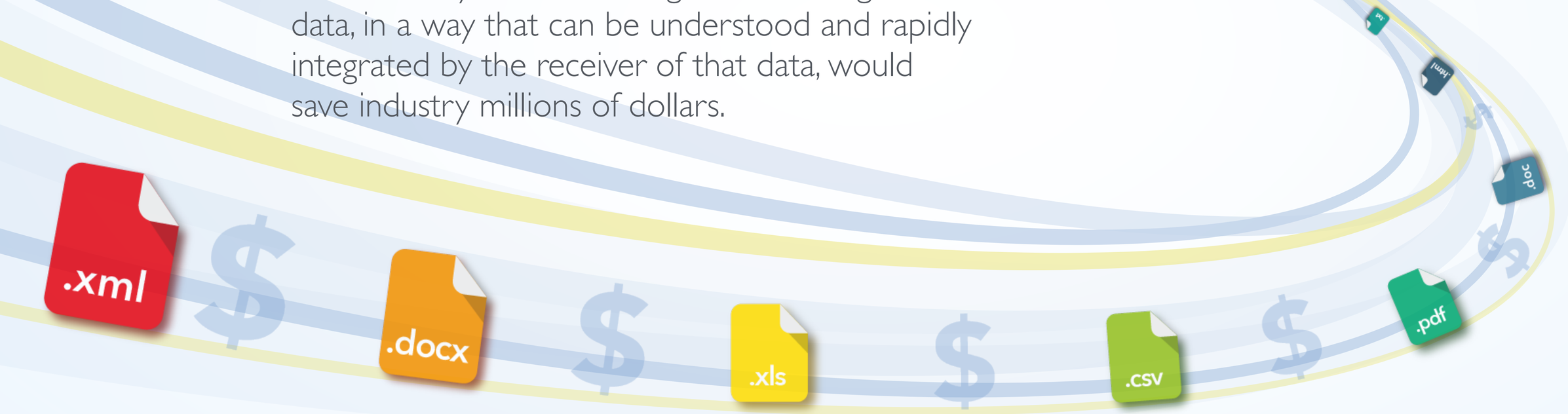


Click here to view

Lots of different data types

.xml .docx .xls .pdf .csv .doc .html .txt

Having a process for describing a product, and a standard way of transmitting and receiving that data, in a way that can be understood and rapidly integrated by the receiver of that data, would save industry millions of dollars.



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There are two approaches for creating data

Industry led

This approach is usually spreadsheet driven – with each user adding their own version of the truth, therefore we could argue that this approach is information led rather than data driven.

Approaches that are driven by industry or regional initiatives not based on ISO or IEC standards (e.g. PIDX UNSPSC-IDEA, eCl@ss, GS1-GPC, EU-CPV, NATO Codification System).

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Current process

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There are two approaches for creating data

Standards led

An ISO international standard is a document that provides requirements, specifications, guidelines or characteristics that can be used consistently to ensure that materials, products, and services are fit for purpose;

For business, ISO standards are strategic tools that reduce costs by minimising waste and errors, and increasing productivity;

Source: http://www.iso.org/iso/home/standards/htm

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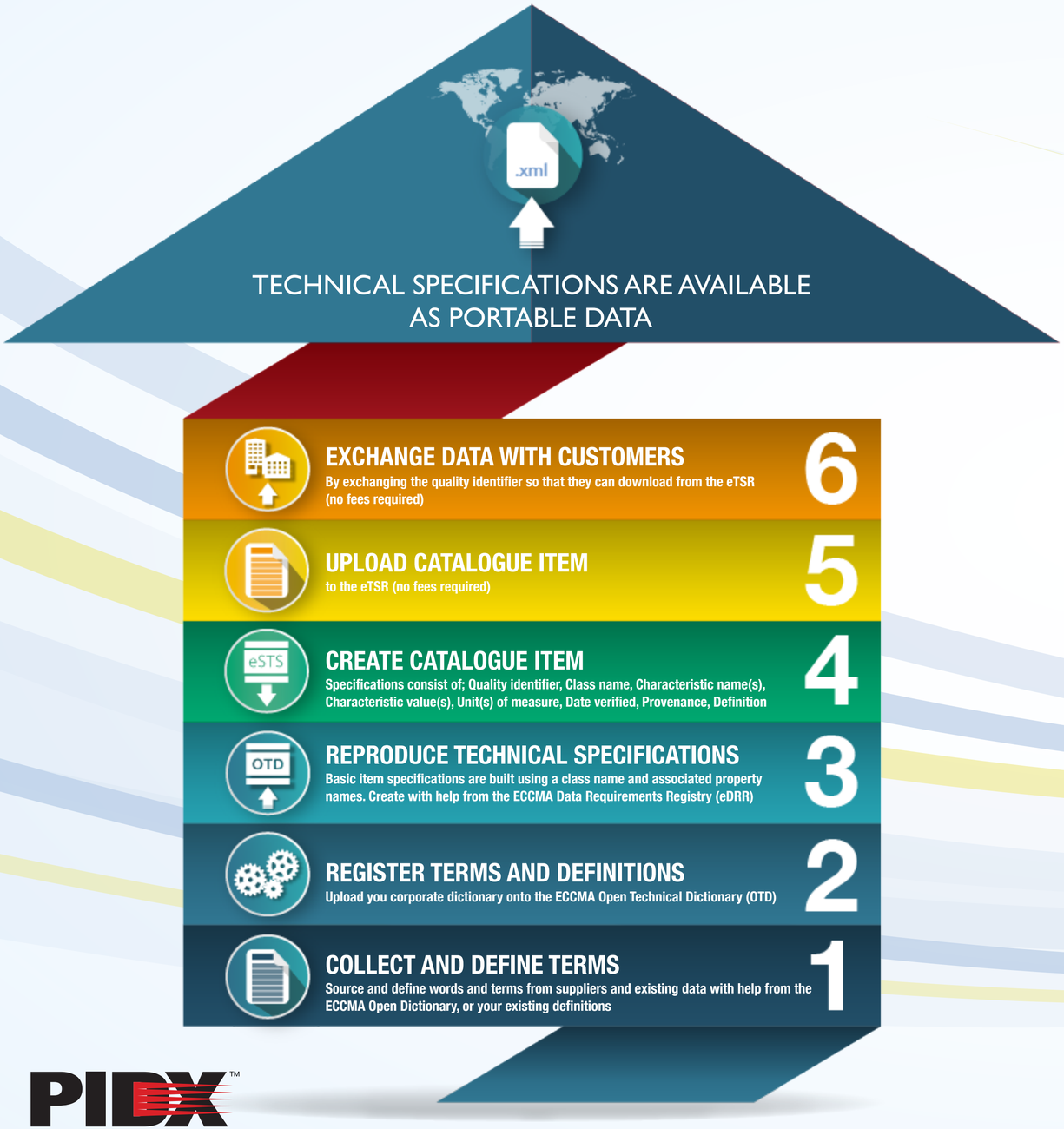

Steps to creating standardised data

Exchanging technical specifications is made possible by existing, proven, international standards.

It is achieved by following a simple series of one-off steps.

Once your data requirements are set, it is straight forward to measure the quality of your data, If values are missing you can simply send a message to the manufacturer of the product and they can complete the data and return it to you, ensuring that you have quality data that has the provenance of the manufacturer.

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With both approaches a dictionary is at the core

At the core of each process is a dictionary, while the industry led dictionary is not resolvable, a data led dictionary is built according to ISO Standards, and is;

- Portable
- Exchangeable without loss of meaning
- Machine readable

ISO 22745 enables the "single version of the truth" rather than being distributed in multiple versions of the original spreadsheet.

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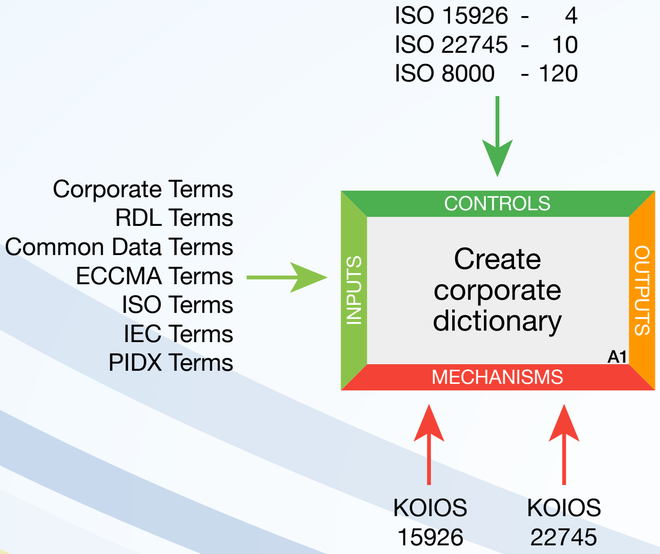

A1

A1.1	Add Corporate Terms, Definitions and References
A1.2	Add RDL Terms, Definitions and References
A1.3	Add Common Data Terms, Definitions and References
A1.4	Add ECCMA Terms, Definitions and References
A1.5	Add ISO Terms, Definitions and References
A1.6	Add IEC Terms, Definitions and References

IDEF0 Model

The data journey

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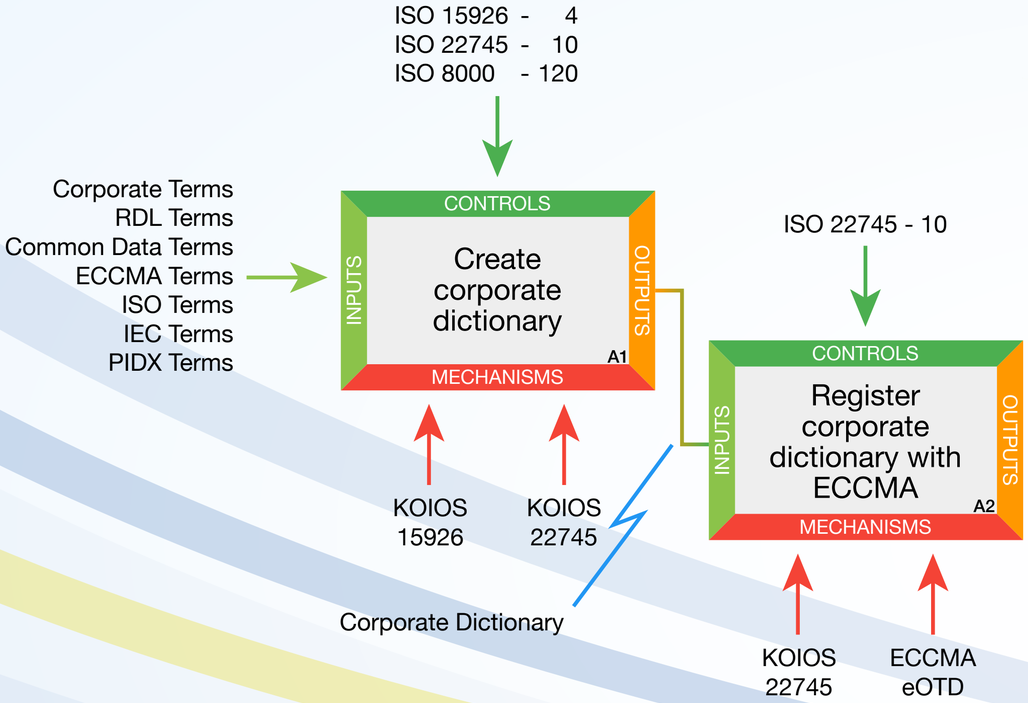

A2

A2.1	Map like terms and definitions
A2.2	Upload the Corporate Dictionary to the ECCMA eOTD
A2.3	Store the ECCMA eOTD generated concept Identifiers

IDEF0 Model

The data journey

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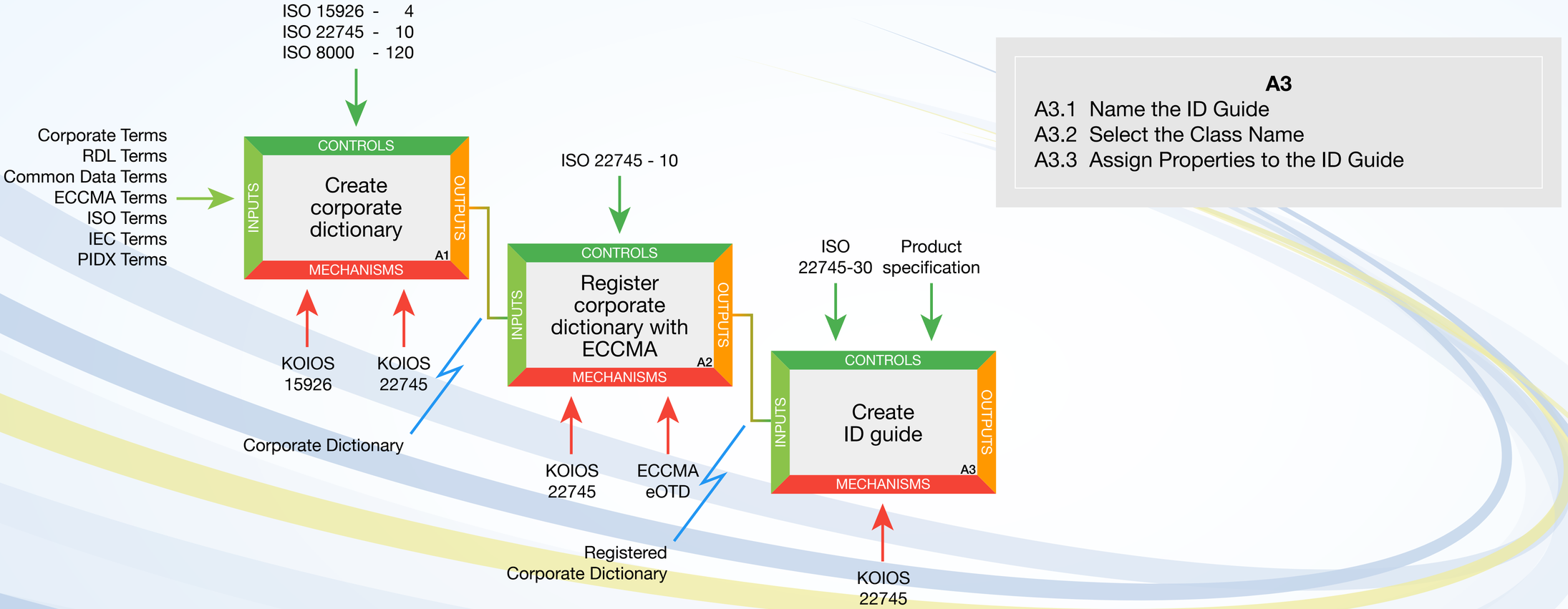

IDEF0 Model

The data journey

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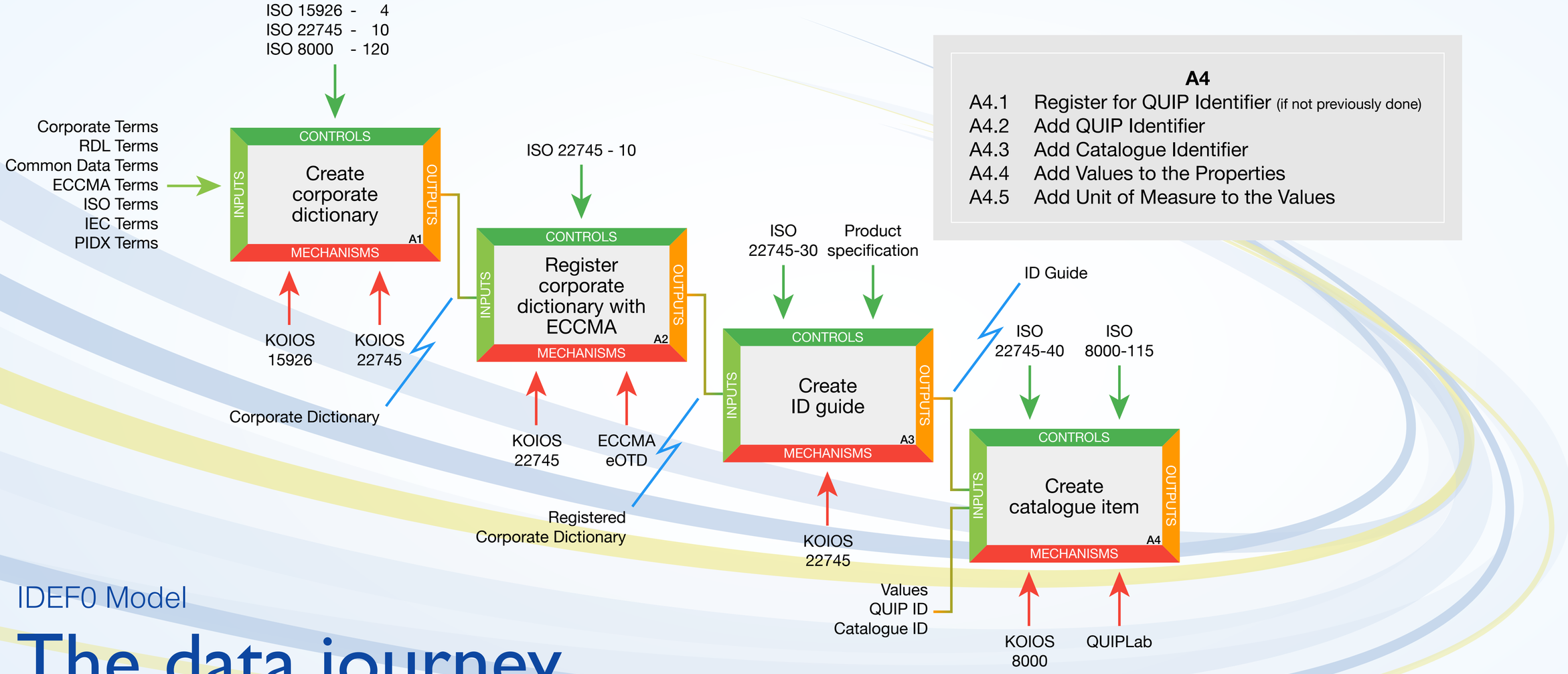
IDEF0 Model

The data journey



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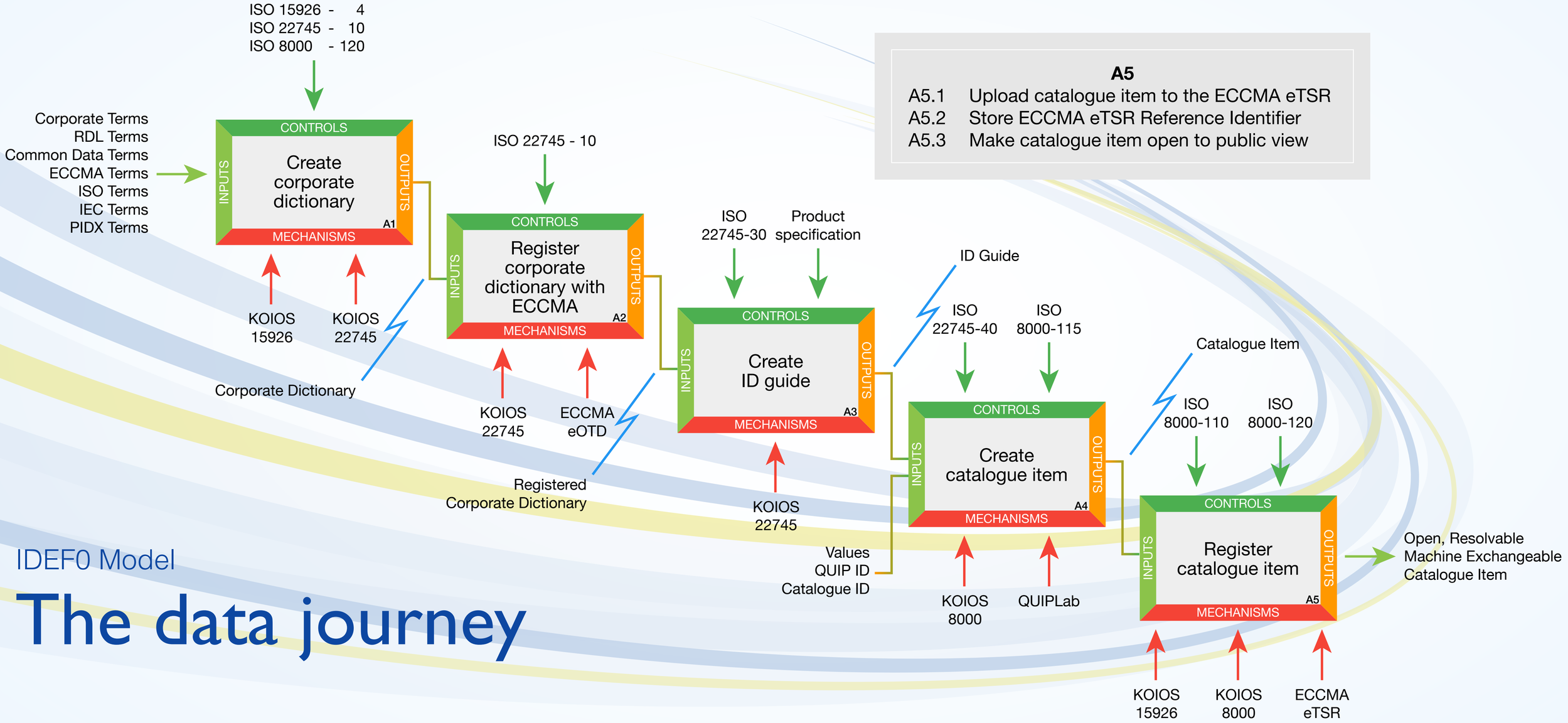
IDEF0 Model

The data journey



A5

A5.1 Upload catalogue item to the ECCMA eTSR
A5.2 Store ECCMA eTSR Reference Identifier
A5.3 Make catalogue item open to public view

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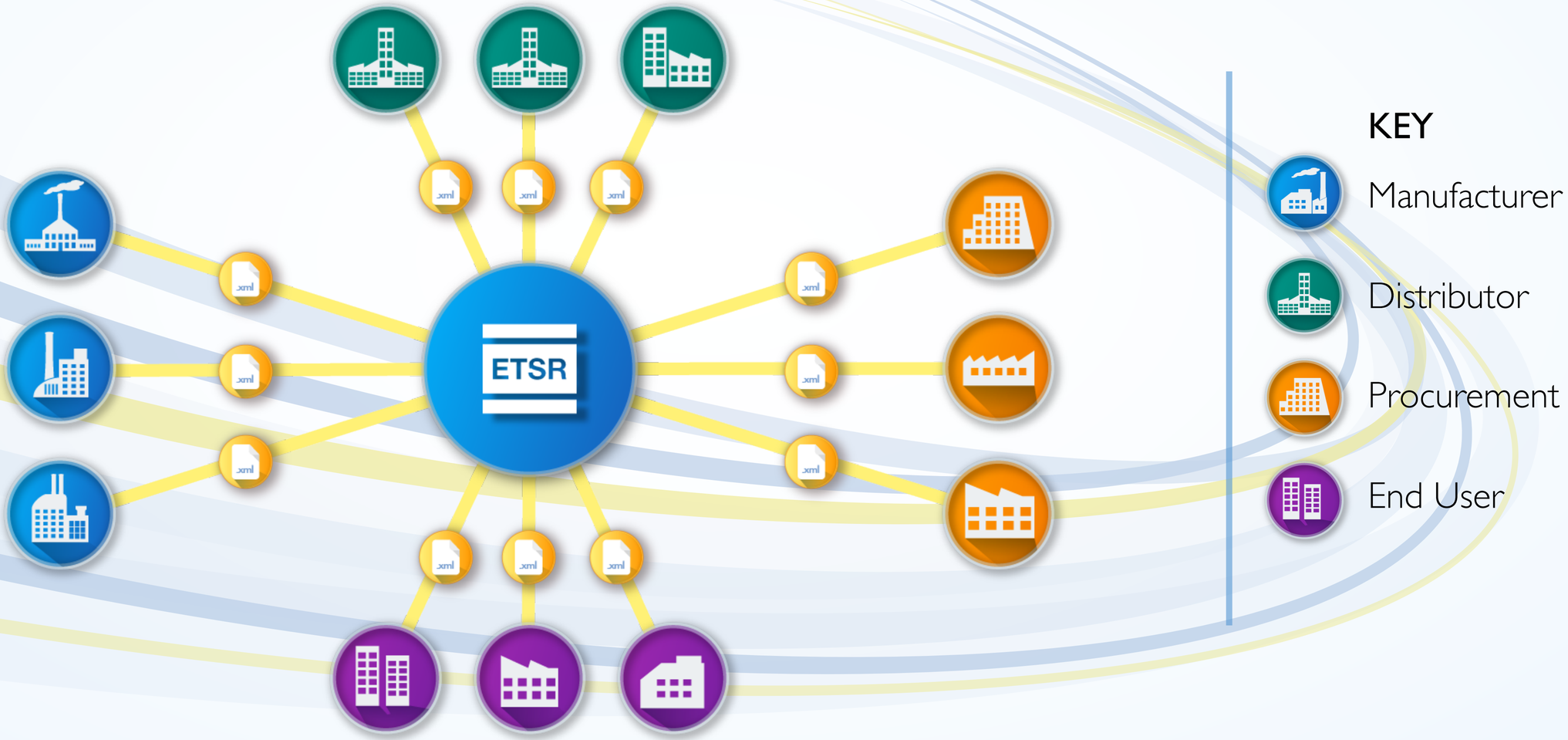
Future process



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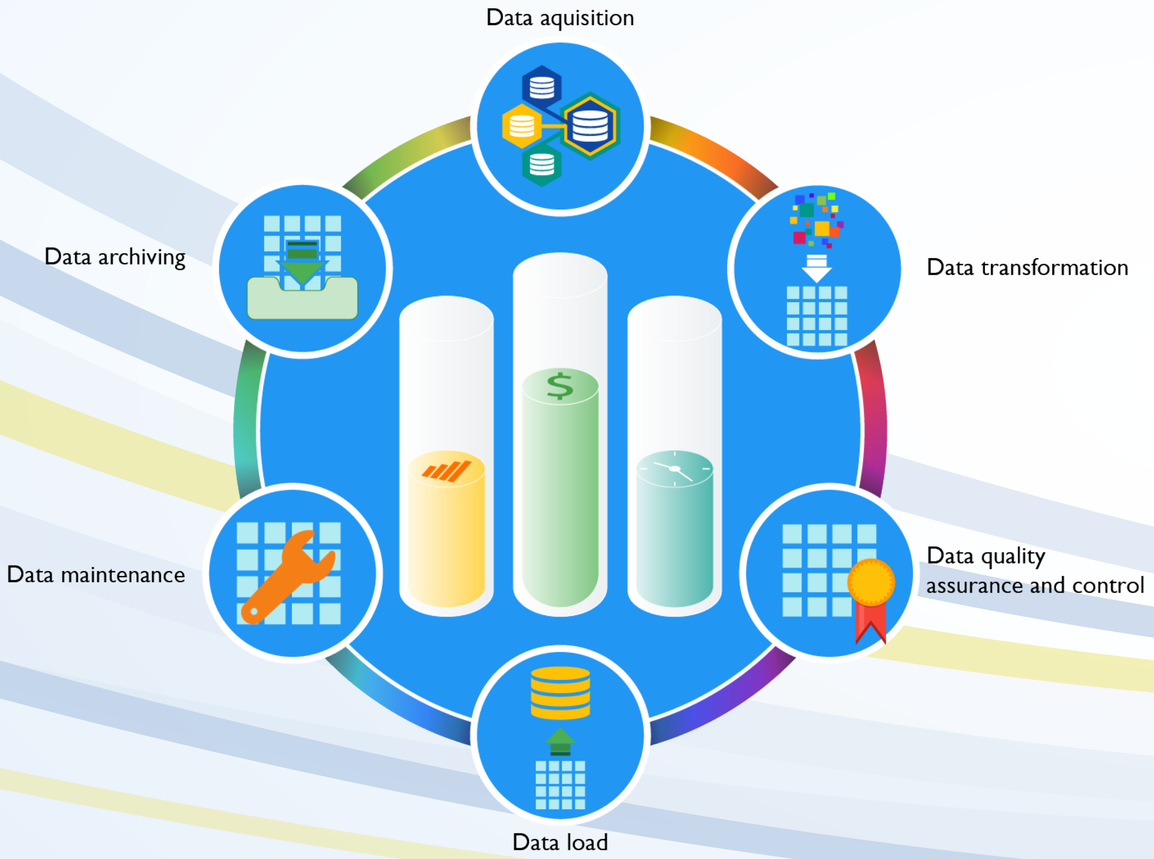
Data: an asset constructed to international standards



Owner/Operators currently purchase items and equipment by specifying the relevant international standards in contracts with their suppliers;

Data is like any other asset, it is covered by international standards, it costs money to acquire, to install, and to maintain.

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Standards are to be referenced in contracts

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

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 comply with the specified ISO 22745-30 compliant data requirements

The data shall be provided in ISO 22745-40 compliant Extensible Markup Language (XML)

The data shall be ISO 8000-110 compliant

All identifiers must be ISO 8000-115 compliant

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ISO 22745 and ISO 8000 are the international quality standards

ISO 22745 is the industrial version of the standard developed by the NATO Group of National Directors on Codification (AC/135)

ISO 8000 is developed by ISO technical committee TC 184, Automation systems and integration, sub-committee SC 4, Industrial data;

ISO 22745 and ISO 8000 are project managed by ECCMA, the electronic commerce code management association.

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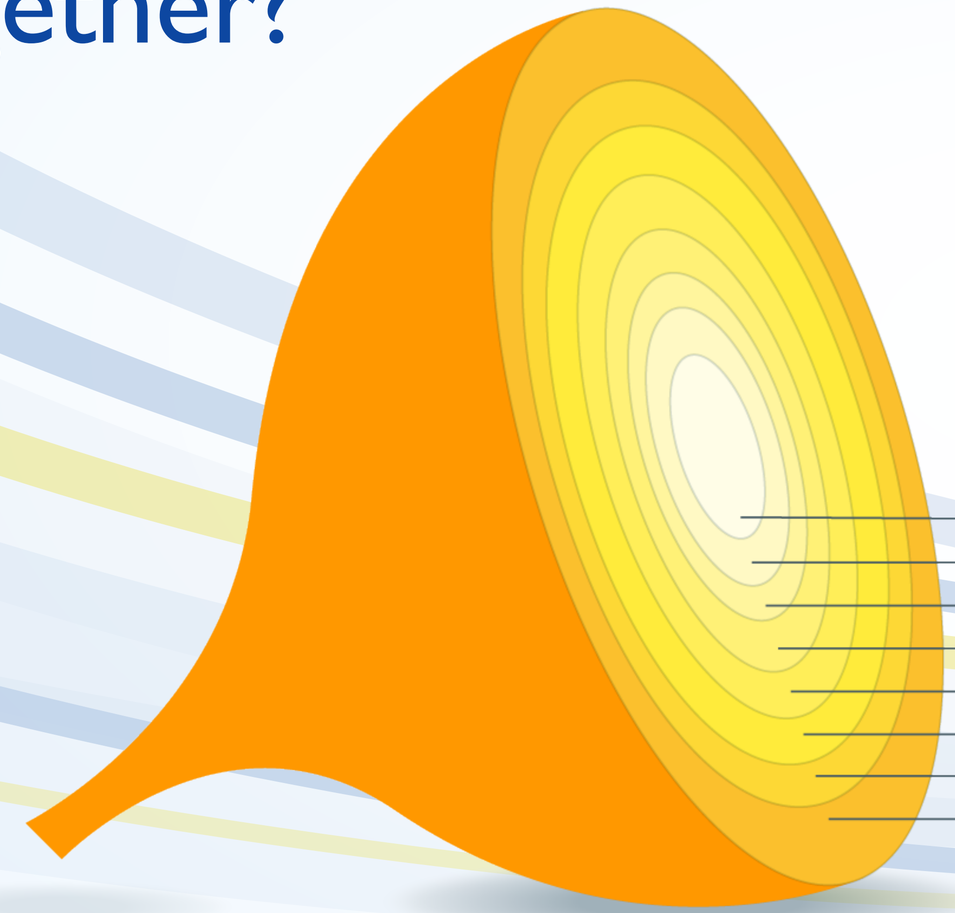
ISO 22745 and ISO 8000: how do they work together?



ISO 22745 - 10	Open Technical Dictionary
ISO 22745 - 11	Guidelines for the formation of terminology
ISO 22745 - 30	Identification guide representation
ISO 22745 - 35	Query for master data
ISO 22745 - 40	Master data representation
ISO 8000 - 110	Master data exchange of characteristics
ISO 8000 - 115	Quality identifiers
ISO 8000 - 120	Provenance

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ISO 22745 essentials

ISO 22745 does not establish a new process for standardising terminology.

Each open technical dictionary (OTD) will have a globally unambiguous identifier for each concept and provide a reference back to the original source for terminology (terms, definitions and images).

OTDs are designed to link terms and definitions with the same semantic content and to reference the original source of each term and definition. Thus, OTDs are intended not to duplicate existing standards, but to provide comprehensive collections of terminology used to describe individuals, organisations, locations, goods and services.

Source: ISO 22745 part 1 – Introduction
**Source: ISO 22745 part 1 – First principles

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ISO 8000 essentials

The ability to create, collect, store, maintain, transfer, process and present data to support business processes in a timely and cost effective manner requires both an understanding of the characteristics of the data that determine its quality, and an ability to measure, manage and report on data quality;

The approach of the master data quality series of parts of ISO 8000 is to address data quality from the "bottom up", i.e., from the smallest meaningful element, the property value.

One of the key aspects of managing master data quality is managing duplication. A consistent approach to managing and eliminating inappropriate duplication is a critical part of master data management.

The number of characteristics needed to describe something will vary by business function. Source: ISO 8000 part 100

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Summary of ISO 22745 and ISO 8000

Globally unambiguous identifiers are the key to machine readable data, and to creating a data store of item specifications.

The ultimate goal of the Web of data is to enable computers to do more useful work and to develop systems that can support trusted interactions over the network. The term "Semantic Web" refers to W3C's vision of the Web of linked data. Semantic Web technologies enable people to create data stores on the Web.*

*Source: https://www.w3.org/standards/semanticweb

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Summary of ISO 22745 and ISO 8000

ISO 22745 provides a series of specifications, data formats, and procedures to enable organisations to improve the quality of master data.

In particular, ISO 22745 is intended to enable an organisation to satisfy the requirements of ISO 8000-110 for exchange of quality characteristic data that is master data.**

**Source: ISO 22745 part 1 – First principles

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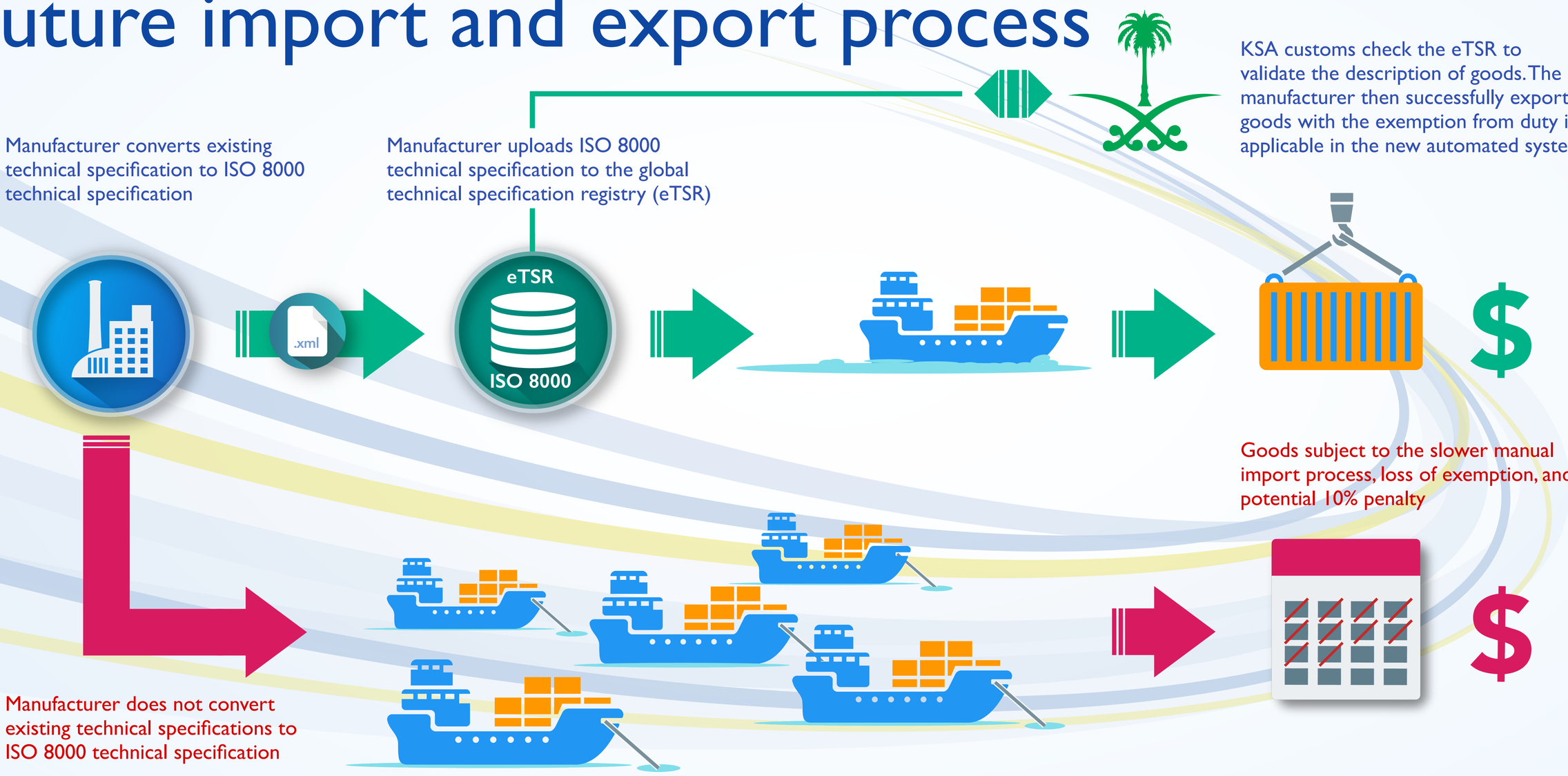
Future import and export process



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Why you should adopt ISO 22745 and ISO 8000

Data is like any other asset, it should be constructed to a recognised standard;

ISO 8000, and ISO 22745 are proven international data standards;

ISO 8000 enables identification of items and also mapping to multiple classifications and tariff codes;

Adoption of ISO 8000 has been proven to save millions of dollars on capital projects;

ISO 8000 data is machine readable, portable, and is exchangeable in multiple languages without loss of meaning;

A large proportion of your supply base will be adopting ISO 8000 as a result of their dealings with companies in the Kingdom of Saudi Arabia such as Sabic and Saudi Aramco.

سابك
sabic

ارامكو السعودية
Saudi Aramco

ISO
International Organization for Standardization

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