SPIR use case for ISO 18101
- Asset intensive industry interoperability

DELIVERING INTERNATIONAL STANDARDS

Peter Eales, Houston, December 2019
Spare Parts list and Interchangeability Record

Also commonly known as a:

SPIL or an RSPL

A SPIR is the original equipment manufacturers recommendation to the owner operator of the spares that the original equipment manufacturer thinks the owner operator should purchase.

The SPIR form is then used as the basis for the material master data that populates the ERP system.
A SPIR document contains the following information regarding:

1. the project and the owner operator;
2. the original equipment manufacturer;
3. the equipment;
4. the spare parts descriptions;
5. the recommended quantity and price;
6. a column for the owner operator to complete the quantity required.
A SPIR document does NOT contain

Information regarding:

1. the criticality of the equipment;
2. the maintenance strategy at the facility;
3. the maintenance capability at the facility;
4. the logistics capability and capacity at the facility;
5. the spares already held at the facility;
6. and more, see: https://koiosmasterdata.com/spirs-are-they-worth-the-paper-theyre-written-on/
International standards are a consensus of best practices and are designed to improve quality and efficiency.

Poor quality data costs time and money and increases an organization's exposure to risk.

ISO 8000 is the international standard that provides the framework for improving data quality.

Compliance with ISO 8000 will improve data quality, reduce data handling costs, and protect organizations.
ISO 8000 compliant, quality, master data is:

1. derived from entries in a data dictionary;
2. structured data;
3. machine readable;
4. exchangeable without loss of meaning;
5. portable between systems.
What is the current SPIR process?

**Legend:**
- **Owner / Operator**
- **Engineering Procurement Construction**
- **Original Equipment Manufacturer**
- **Data Team**
- **Parts Manufacturer**

**Pre-project**
- The Owner/Operator (O/O) defines data specifications and company standards and issues the documents to the Engineering, Procurement Construction (EPC) contractor
- The Owner/Operator (O/O) checks the documents or load sheets, and either rejects them on quality grounds, or loads them into their corporate Enterprise Resource Planning (ERP) system

**Basic engineering**
- The EPC adds a document reference and records the documents in the project document management system.
- The EPC then assigns TAG numbers to each Original Equipment Manufacturer (OEM) nominated to the project and issues a series of purchase orders to each OEM
- The EPC records the document as complete and reports the status to the O/O
- The Data Team is given access to the project document management system, and uses the engineering documents to create master equipment lists, material masters, and bills of material. This is the start of the QA process

**Detailed engineering**
- The OEM completes the spreadsheet and returns it to the EPC
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- The EPC checks the load sheets, and either rejects them on quality grounds, or loads them into their corporate Enterprise Resource Planning (ERP) system
- The Data Team collates all the engineering documents and starts the QC process.

**Construction**
- The EPC records the document as complete and reports the status to the O/O
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- The O/O uses the document to perform a material takeoff of long lead time and production critical items

**Production**
- The Data Team checks the load sheets, and either rejects them on quality grounds, or loads them into their corporate Enterprise Resource Planning (ERP) system
- Data from the OEM is normally not sufficient to correctly identify the items in multiple forms, so verification from OEM and parts manufacturers is required

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What is the current SPIR process?
Loss of data quality is recognised in the industry

DATA QUALITY CHALLENGES
Progressive of loss of data quality over time

Jean-Charles LeClerc – TOTAL
ISO TC184/SC4 Plenary

May 2019
Why is the current process so wasteful?

Waste is an activity that absorbs resources but creates no value. The current SPIR process is disjointed, lacks flow and is an inefficient method of exchanging data;

1. silo thinking; each party only looks inward to their own operational requirement and they never explain their exact requirements to the other parties;

2. extensive rework is required every time because data quality is not checked from the user perspective until handover to maintenance;

3. there is no transparency in the process.
What is the solution?

1. a radical realignment of the process;
2. the introduction of a continuous process;
3. data quality must be built into the start of the process;
4. silos must be broken down between the project and operations teams;
5. the other process elements that operations and maintenance require to identify the requirements must be incorporated.
What are the benefits of a radical realignment?

1. identifying the value stream will eliminate waste in the system allowing more efficient use of resources;

2. moving from “batch” to “continuous flow” will dramatically increase labor productivity;

3. analysing the inventory from the “pull” perspective of maintenance rather than the “push” from supply chain will result in less, but more relevant, inventory.
What needs adding to the current process?

- Owner/Operator defines the data requirement for the SPIR document
- EPC allocates the OEMs to the project and allocates the tag and document numbers
- Data team checks the data quality and data completeness of the SPIR, and works with the OEM to improve the data quality
- Data team adds the MEL build information, the maintenance equipment failure plan, and the equipment criticality to inform the analysis
- Data team performs the repair and spares (LoRA) workshop and records the results against each line item in the appropriate SPIR
- Data team performs spares analysis work including repair BoMs; mapping of required spares to existing MRO inventory

Owner/operator should have full view of the process throughout the project lifecycle and be able to monitor progress and run reports at any time.
What would this process look like if it was interoperable?

- cloud based platform allowing continuous handover and transparency for all parties;

- data quality built-in from the start of the process;

- data quality and data completeness reporting in a transparent manner at every stage of the project life-cycle;

Legend:

- Owner / Operator
- Engineering Procurement Construction
- Original Equipment Manufacturer
- Data Team
- Parts Manufacturer
- repair and spares demand analysis used to create maintenance bills of material;
- equipment and materials data structured to any taxonomy;
- output multilingual machine-readable equipment and spares master data to multiple systems.

Legend:

- Owner / Operator
- Engineering Procurement Construction
- Original Equipment Manufacturer
- Data Team
- Parts Manufacturer
What can you do next to help achieve a better solution?

If you are an owner/operator and want to eliminate waste from the SPIR process you can:

1. sponsor the MIMOSA OIIE OGI SPIR pilot;

2. use this pilot on one of your current projects to test and improve the process;

3. work with the other members of MIMOSA to ensure that all actors in the process are applying their expertise.
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To view a preview of our SPIR software
https://koiosmasterdata.com/kspir-preview
password: houston2019
For more information please contact:
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