KOIOS Master Data

SPIR use case for ISO 18101
- Asset intensive industry interoperability

DELIVERING INTERNATIONAL STANDARDS

Peter Eales, Houston, December 2019

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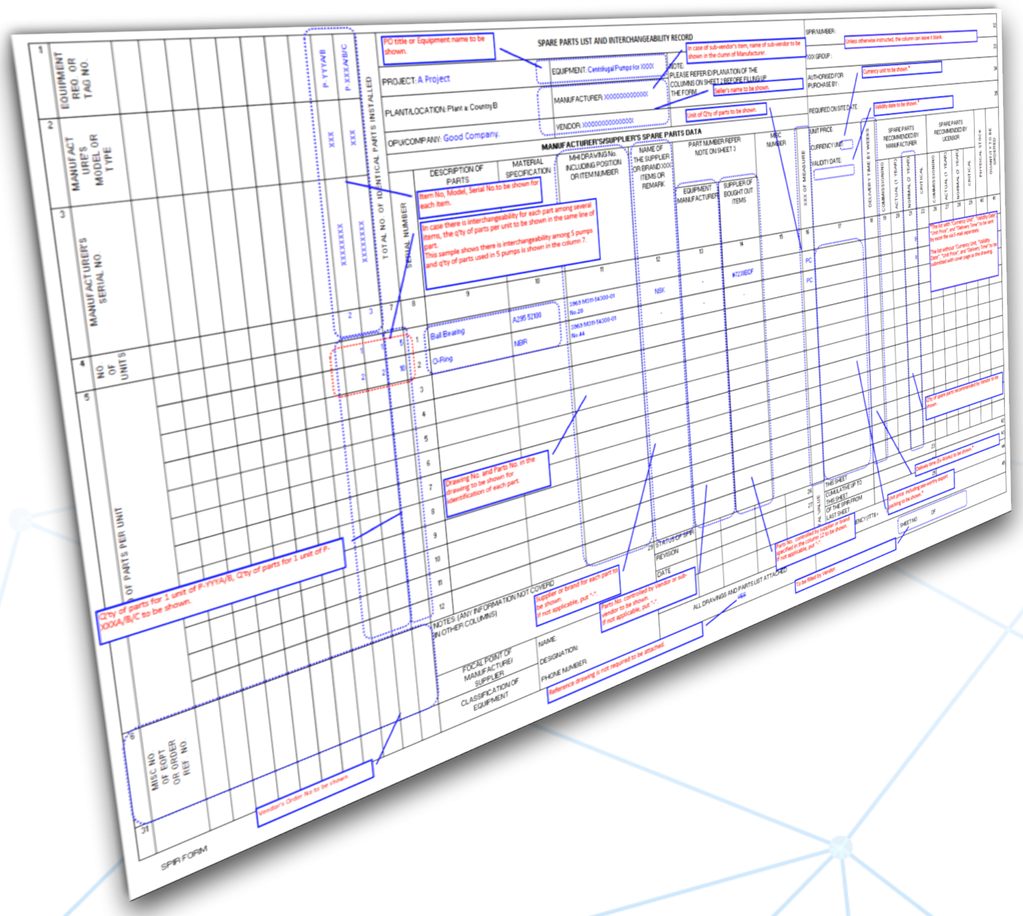
What is a SPIR document?



Spare **P**arts list and **I**nterchangeability **R**ecord

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.

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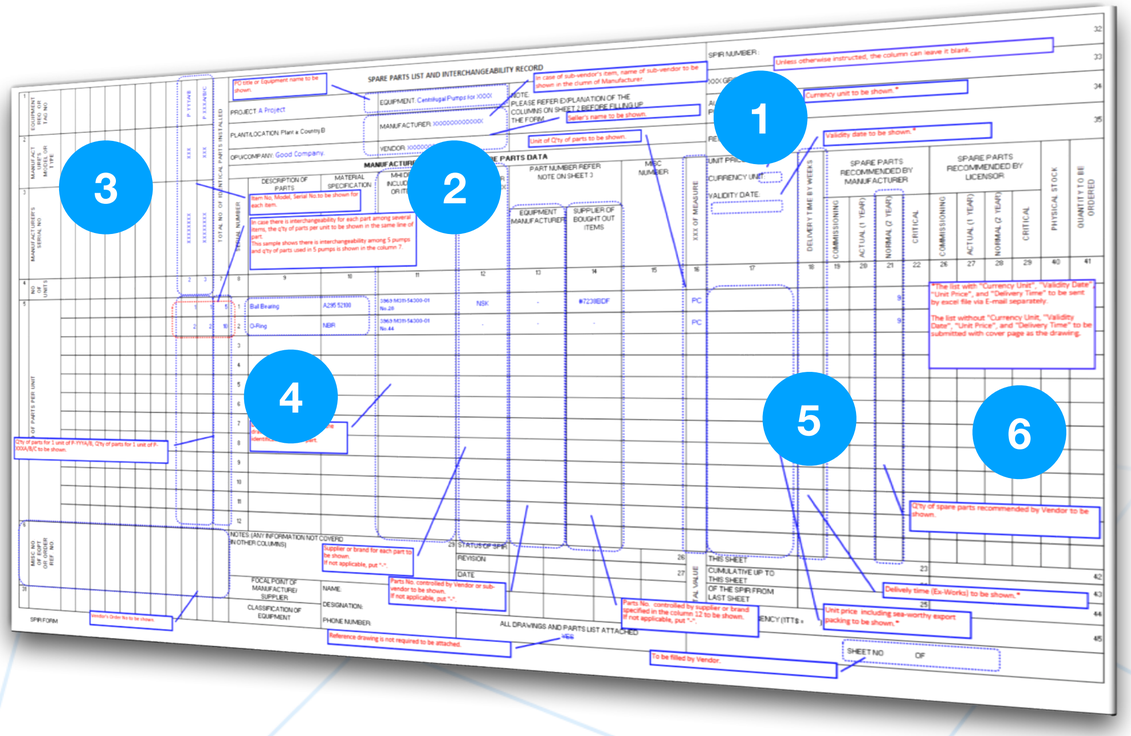
A SPIR document contains the following



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


MRO INSYTE
accurate and deep understanding

About Digital Data Insyte

Insyte and Resources

SPIR's: are they worth the paper they're written on?

ABSTRACT: *Oil and gas upstream projects typically extract material requirements from Spare Parts Interchange Lists (SPILs), sometimes referred to as Spares Parts Interchange Records (SPIRs) or Recommended Spare Parts List (RSPL). These lists are supplied to the owner / operator (O/O) at handover by the Engineering Procurement Contractor (EPC) having been supplied to the EPC by the manufacturer or the vendor of the equipment. In this article, Peter Eales provides an analysis of the strengths and weaknesses of this type of document, and questions why in the era of digital data this format is still widely used.*

There are a number of issues for plant operators that arise from the use of SPIR documents in oil and gas projects. The release of these documents by the EPC is often left until the very end of the project, or not at all, despite financial penalty clauses being inserted in the contracts. This is a real challenge to the operator who wants to reduce the operating risk by purchasing long lead items early enough, and those who want to calculate the size of warehouse they require in a greenfield project.

The format of the SPIR is frequently inconsistent; effectively being a paper form that has been recreated onto a spreadsheet and edited many times. In the end it resembles nothing much more than an optimistic vendor order form. Certainly, it is an incredibly difficult document to extract data from, and as no two forms are constructed in the same way and often have merged cells. Extracting a complete project worth of data is a costly exercise in terms of both manpower and time.

Insyte

Solving data quality pain using ISO 8000

1. What is a Data Dictionary?
2. What is a Data Specification?
3. Creating your own Data Specification
4. Creating your own Catalogue Item
5. Cataloguing at Source

ISO 8000 data quality identifiers explained

ISO 8000 data quality identifiers explained

SPIR's

SPIRS: Are they worth the paper they're written on?

ALEI

ALEI: The Authoritative Legal Entity Identifier

Industrie 4.0

Germany: Industrie 4.0

Project Iceberg

Mapping the underground assets in the UK

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/

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The current SPIR process is not ISO 8000 compliant

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 organizations 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.

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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.

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What is the current SPIR process?

Pre-project

The Owner/Operator (O/O) defines data specifications and company standards and issues the documents to the Engineering, Procurement Construction (EPC) contractor

Quality check ✗

data handover

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 purchases orders to each OEM

Quality check ✗

data handover

Detailed engineering

The OEM completes the spreadsheet and returns it to the EPC

Quality check ✗

data handover

Construction

The EPC records the document as complete and reports the status to the O/O

Quality check ✗

data handover

Production

The O/O uses the document to perform a material takeoff of long lead time and production critical items

Quality check ✗

data handover

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

data handover

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

data handover

The Data Team collates all the engineering documents and starts the QC process.

The data team creates load files for the master equipment lists, material masters, and bills of material

Quality check ✓

data handover

data handover

The Owner/Operator checks the load sheets, and either rejects them on quality grounds, or loads them into their corporate Enterprise Resource Planning (ERP) system

Quality check ✓

data handover

Corporate ERP system

Legend:

Owner / Operator

Engineering Procurement Construction

Original Equipment Manufacturer

Data Team

Parts Manufacturer

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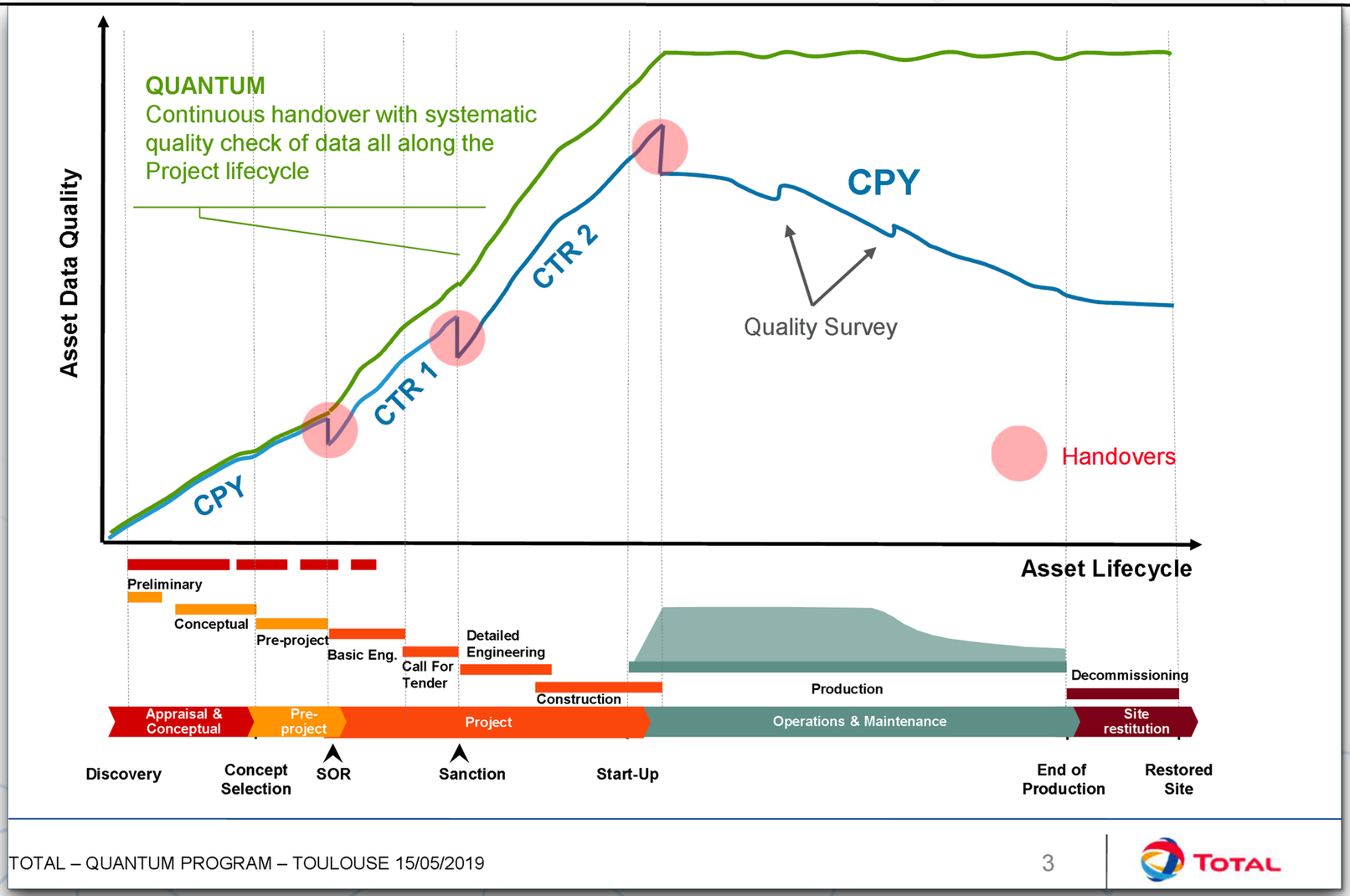
Loss of data quality is recognised in the industry

DATA QUALITY CHALLENGES

Progressive of loss of data quality over time

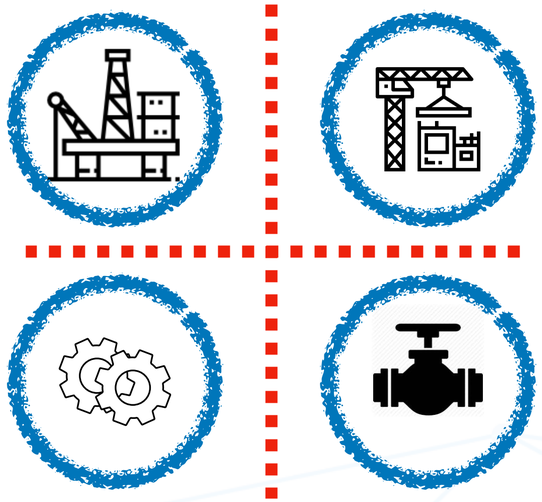
Jean-Charles LeClerc – TOTAL
ISO TC184/SC4 Plenary

May 2019

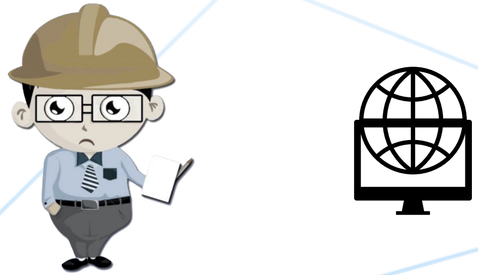


Why is the current process so wasteful?

Project design and construction



Operations and maintenance



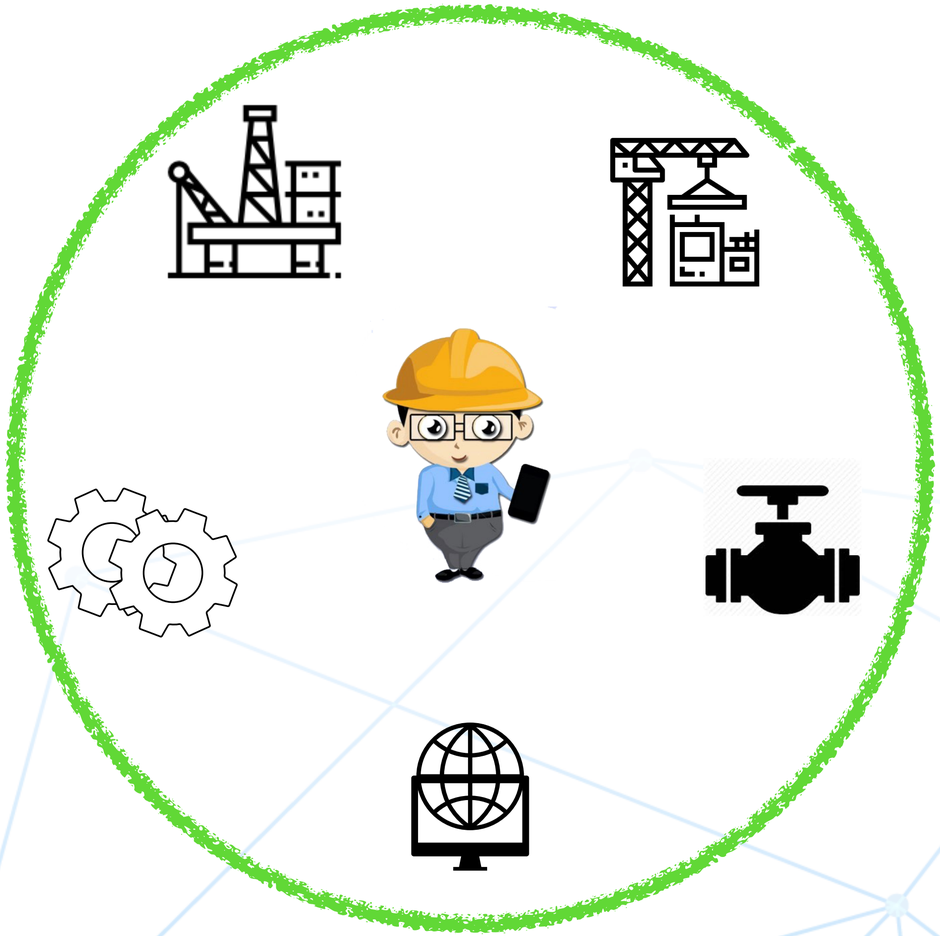
Waste is an activity that absorbs resources but creates no value. The current SPIR process is disjointed, lacks flow and is an inefficient method of exchanging data;

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;

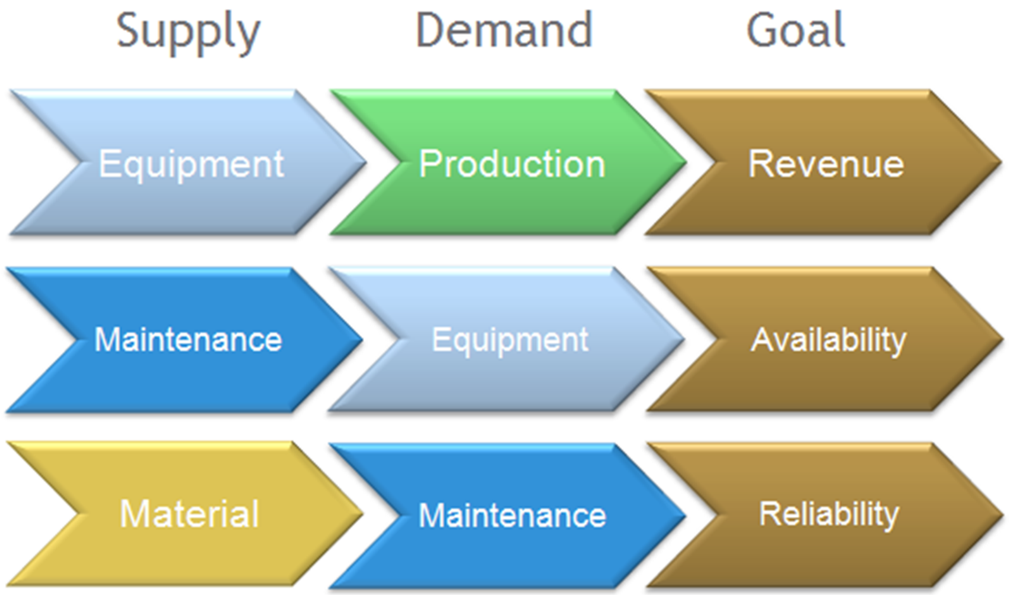
3. there is no transparency in the process.

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?

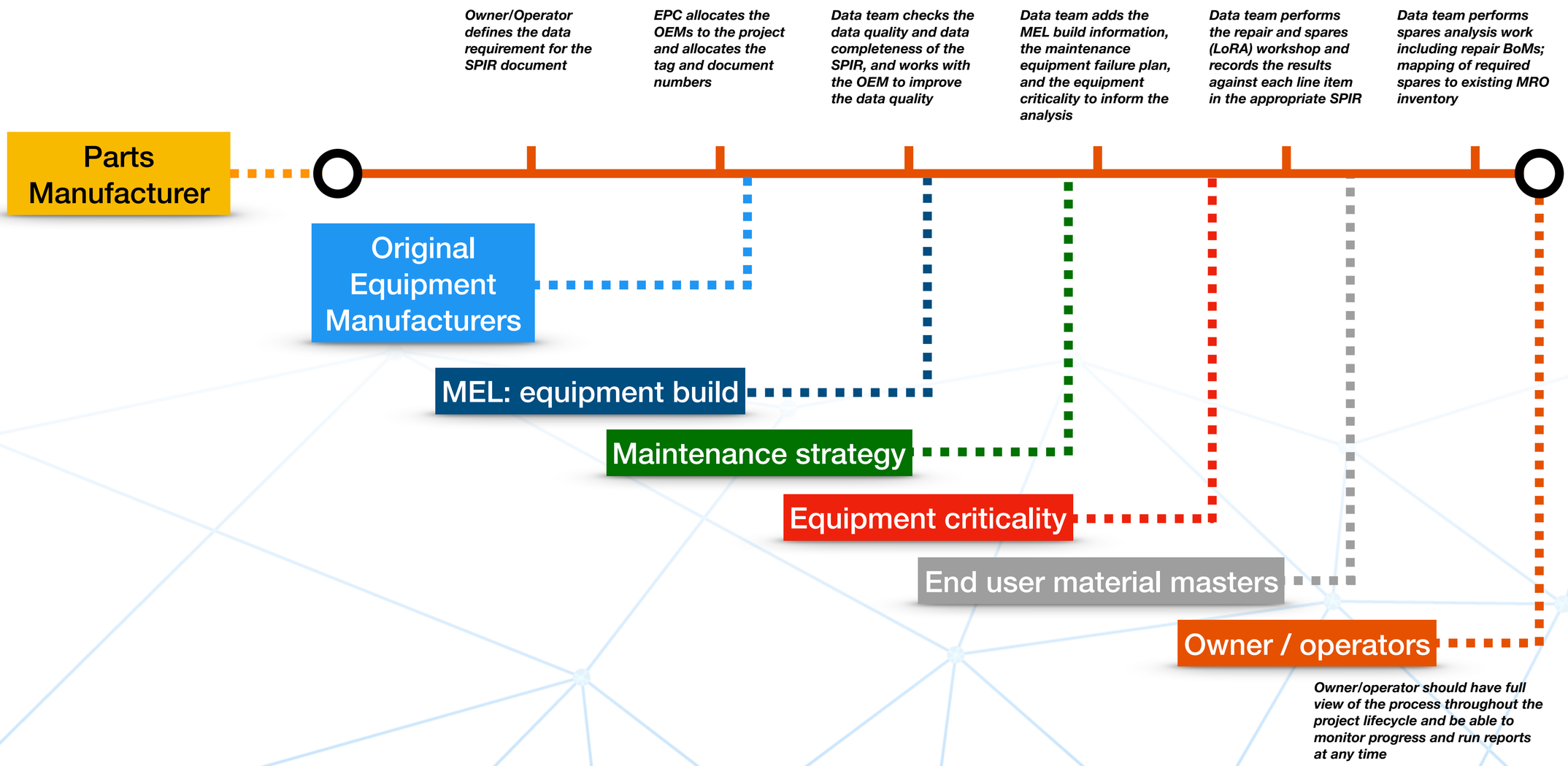


1. identifying the value stream will eliminate waste in the system allowing more efficient use of resources;

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

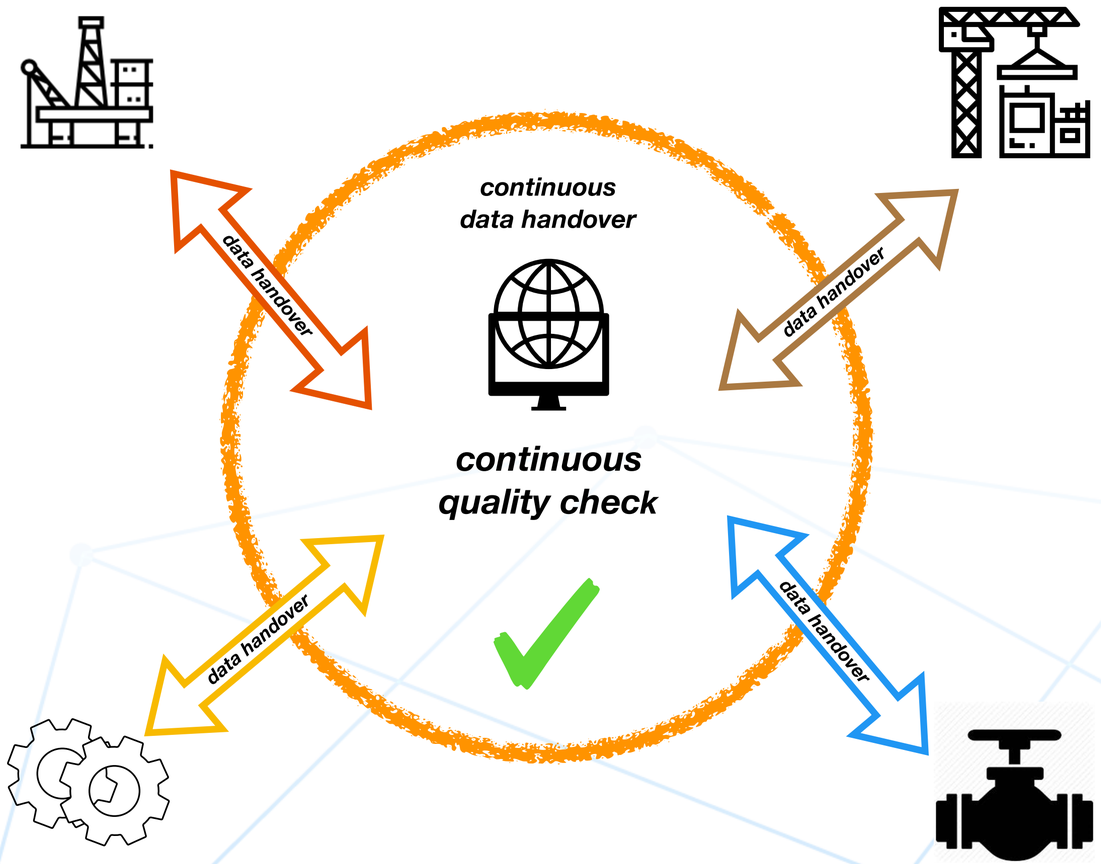
3. analysing the inventory from the “pull” perspective of maintenance rather than the “push” from supply chain will result in less, but more relevant, inventory.

What needs adding to the current process?



What would this process look like if it was interoperable?

Pre-project | Basic engineering | Detailed engineering | Construction | Production



- 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

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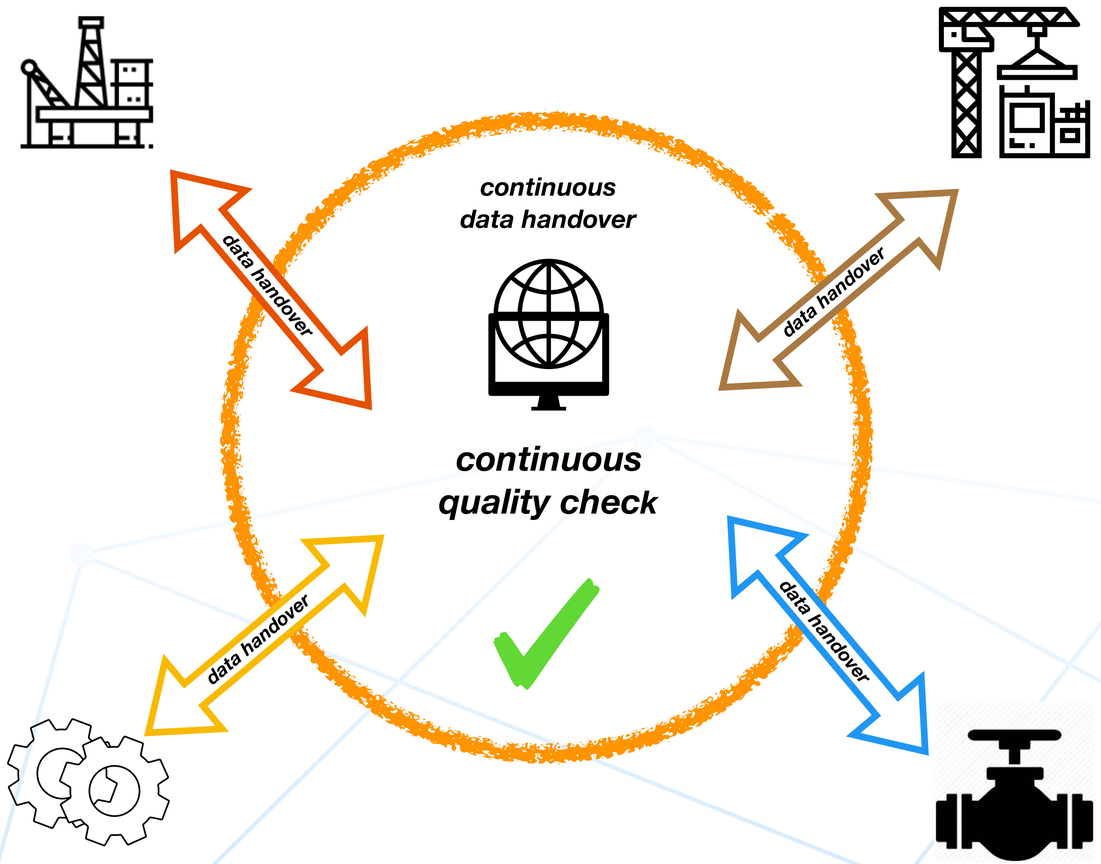

- repair and spares demand analysis used to create maintenance bills of material;
- equipment and materials data structured to any taxonomy;
- output multilingual machine-readable equipment and spares master data to multiple systems.

Legend:

Owner / Operator | Engineering Procurement Construction | Original Equipment Manufacturer | Data Team | Parts Manufacturer

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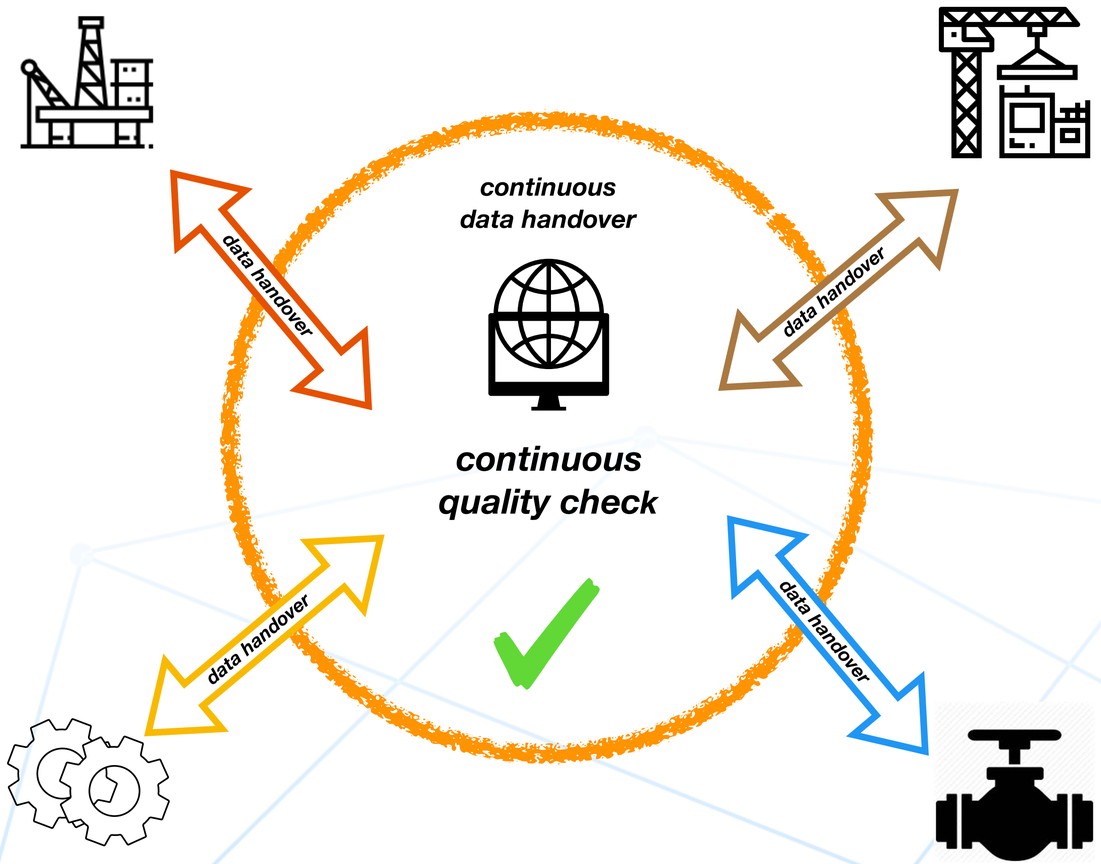
What can you do next to help achieve a better solution?

Pre-project | Basic engineering | Detailed engineering | Construction | Production



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.

Legend:

Owner / Operator | Engineering Procurement Construction | Original Equipment Manufacturer | Data Team | Parts Manufacturer

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To view a preview of our SPIR software

https://koiosmasterdata.com/kspir-preview

password: houston2019

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For more information please contact:

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Houston, December 2019

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