SMARTCUBE SOLUTIONS

A guide to definitions, challenges and solutions

What are

SPARE PARTS INTERCHANGEABILITY RECORDS?

Simply put:

Spare Parts Interchangeability Records (SPIRs) are basically lists of equipment and spare parts that a manufacturer or supplier recommends that a project owner or asset should purchase for an industrial project or process.

These purchase suggestions and inputs, once verified and accepted by the project owner, is then used as a basis for material master data to be transferred into the project owner's **Enterprise Resource Planning (ERP)** system (i.e. SAP, Oracle, Netsuite or others).

The material master (verified and approved data) in the ERP is then accessed by procurement managers, who order and buy said equipment and spares.

Sounds easy, right? Well, **no**.

Suggesting which parts to buy is fairly straight forward. That's based on standards, requirements, contracts, knowledge, technical specifications, availability, experience and budgets and so on. Major industrial project suppliers are usually vetted and approved through tender processes, so their expertise is trusted.

So why are SPIR processes such a pain point for industrial development and operations?

Well, for one, they are increadibly **time consuming**, as a single SPIR process might take 40-50 man hours to complete. Secondly, they are prone to suffer from **human errors** (from typos to miscommunication, eager suppliers looking to sell more and equipment databases lacking proper technical data) and too often a severe lack of quality assurance before finalization. Thirdly, the above mentioned challenges too often lead to unnecessary orders and overstock, costing the project owner **a lot of money**.

Not to mention the fact that unnecessary orders leave **enormous carbon footprints** throughout the entire value chain, making ESG targets unobtainable and hampering sustainability efforts.

SPIRs are absolutely crucial for project development, operations and maintenance.
But they are not without their challenges and caveats.

It's complicated

The technical side of SPIRs

Spare Parts Interchangeability Records (SPIR) are key aspects of supply chain management, and ensure that replacement parts are available when needed to keep equipment and machinery running smoothly. The SPIR process is a systematic method for tracking and recording information on various replacement parts used in industrial operations.

The process typically involves the following aspects:

• **Inventory Management:** An inventory of all spare parts used in the operation must be established and maintained, including key technical data entries, quantities and where parts are located.

• **Identification:** Each spare part must be assigned a unique identifier, such as a part number, to ensure that it can be easily tracked and identified.

• **Documentation:** Detailed documentation must be created for each spare part, including information on its specifications, function and compatibility with other parts and equipment.

• **Interchangeability Assessment:** A thorough assessment of the interchangeability of each spare part must be conducted, considering design, materials and other relevant factors.

• **Recording:** The results of the interchangeability assessment must be recorded in a database or other tracking systems along with any other relevant parts information, such as manufacturer, supplier and lead time for delivery.

• **Maintenance:** The interchangeability record must be regularly reviewed and updated to remain accurate and up to date.

The SPIR process is important for improving supply chain management. It helps businesses ensure that the right parts are available when needed, reduces downtime and maintenance costs and improves customer satisfaction by ensuring that equipment and machinery function as intended.

The interchangeability aspect of the process comes into play whenever components or parts from different manufacturers or models can be used as substitutes for one another. The option of interchangeability is important in all asset heavy industries such as automotive, aerospace and manufacturing, where downtime and production delays can be costly.

Carrying out a SPIR process typically involves the following steps:

• **Identify a need:** When a component fails or is no longer functional, it is important to identify the specific part that needs to be replaced.

• **Determine the specifications:** Once the part is identified, its specifications are determined, including size, shape, materials and other relevant factors.

• **Research potential substitutes:** The next step is to research potential substitute parts for the original part. This can be done by consulting technical manuals, contacting manufacturers or using online databases.

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The technical side of SPIRs, cont.

• **Evaluate compatibility:** The potential substitutes are then evaluated to determine whether they are compatible with the system or equipment in which they will be used. This may involve testing to ensure that they meet the required performance standards and can function safely and reliably.

• **Make the replacement:** Once a compatible substitute part is identified and tested, it can be installed as a replacement for the original part.

• **Update records:** Finally, it is important to update records and documentation to reflect the use of a substitute part, including any changes to maintenance or repair procedures.

Regardless of industry segment, spare parts interchangeability requires careful attention to detail and expertise to ensure that the replacement parts are safe, reliable, and compatible with the relevant equipment or system.

Spare parts interchangeability information is collected through various means, depending on industry and intended equipment- or system type.

Methods of collecting interchangeability information include:

• **Technical manuals:** Manufacturers of equipment and systems typically provide technical manuals that include detailed information about parts and components used in their products, including interchangeability options - a list of compatible parts that can be used as substitutes.

• **Industry databases:** Many industries maintain databases of spare parts interchangeability information, accessible by technicians and engineers.

• **Supplier catalogues:** Suppliers often provide catalogues that list their products and indicate which original equipment manufacturer (OEM) parts they are designed to replace. These catalogues may also include information on interchangeable parts from other manufacturers (most common in the automotive industry, not so much in other industries).

• **Testing and experimentation**: In some cases, spare parts interchangeability information is collected through testing and experimentation. This can involve installing different parts in a system or equipment and evaluating their performance to determine which parts are compatible and interchangeable. Additive manufacturing is entering the spare part domain, but is yet to be be economically viable.

• **Crowdsourcing:** With the rise of online communities and forums, online platforms have emerged that allow technicians and engineers to share information about spare parts interchangeability. This can be a valuable resource for searches as well as knowledge- and experience sharing.

Collecting spare parts interchangeability information requires a combination of industry expertise, technical knowledge, and access to reliable sources.

By leveraging these resources, technicians and engineers can ensure that they can quickly and safely find and install replacement parts when needed.

SPIR processes

30 YEARS OF CHALLENGES

The wrong tools to excel

SPIR processes are not as straight forward as you might think or hope. Spreadsheets and emails have been the go-to solutions for supply chain management for decades. Even though both are great tools, they are not optimized for SPIR-related work flows or collaboration.

There are numerous challenges related to the solutions currently in use:

1. Time: SPIR processes usually involve multiple stakeholders, all of whom need to manually populate their respective data into electronic spreadsheets, save it, then forward the whole thing to the next person. It's inefficient, often requiring 40-50 hours to complete per SPIR.

2. Very costly: Aside from the fact that time is money, the often wrongful data results in massive amounts of wrongful orders, overstock and surplus, costing project owners billions.

3. Not ISO compliant: The current SPIR process norms is not ISO 8000 compliant, as it is not derived from data dictionary entries, isn't easily machine readable, does not provide properly structured data and is not portable between system (i.e. transferred between ERP systems)

4. No collaboration: The current tools used do not offer true collaboration and/or interactions between process stakeholders or participants, offering no safeguards against human errors.

5. No ERP compliance: Completed and approved SPIR data cannot easily be transferred or imported into standard ERP systems, as there is no API to facilitate and/or cleanse the data prior to import. That results in more manual plotting and a high risk of bad data entering the ERP.

6. Lacking security: Emails and local spreadsheets are notoriously exposed to cyber risks and data theft. Without authenticated logins prior to data input, the security measures surrounding the tools currently being used are easily circumvented.

7. Massive carbon footprints: Overstocking, procurement of non-essential equipment and wrongful orders leave massive carbon footprints. Every item and spare part consumes resources and requires handling, logistics and storage. Numbers indicate that NOK 80 billion worth of useless equipment is being stored in Norwegian warehouses alone. International numbers are almost incalculable.

All these challenges can be mitigated, but system-wide changes too often require massive investments in time, money and human resources, making the status quo an acknowledged, but counterproductive habitual state.

CHALLENGES ACCEPTED

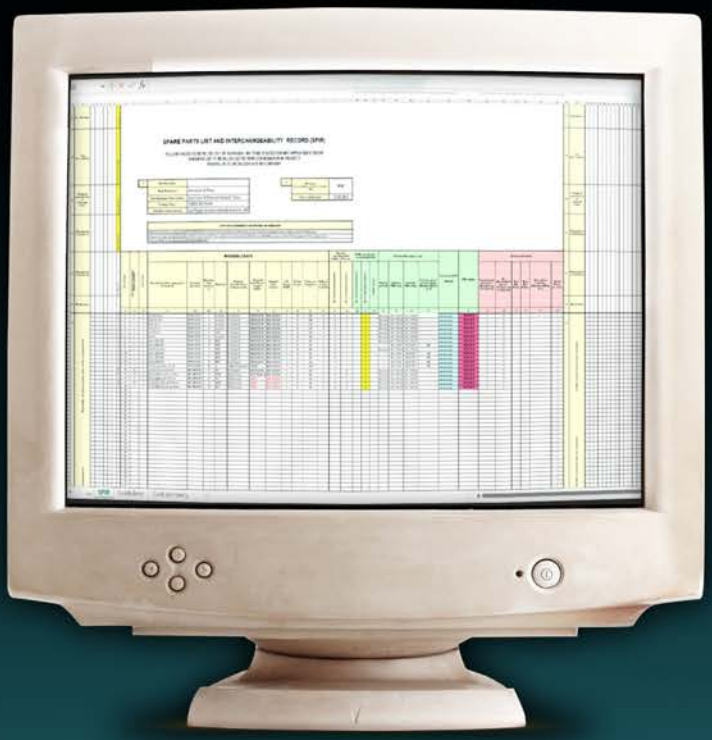
INTRODUCING

THE WORLD'S PREMIERE SPIR COLLABORATION PLATFORM

Efficiates SPIR processes through a collaboration platform accessible for all stakeholders across industries, segments, companies and regions.

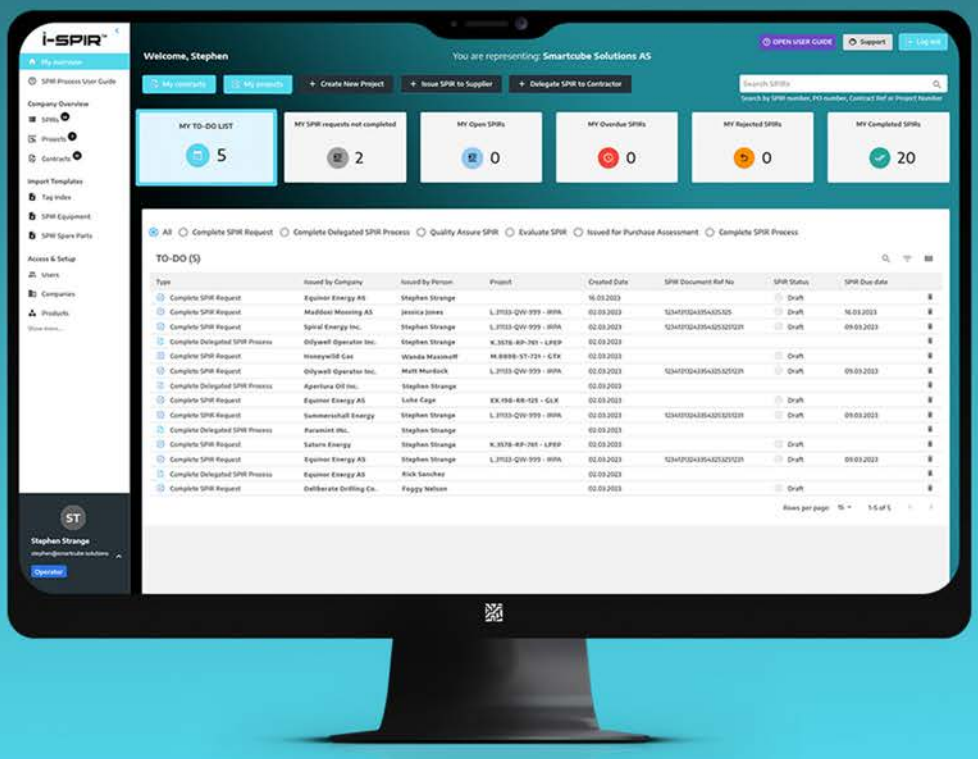
- SaaS BASED
- EXTREMLY USER FRIENDLY
- 100% ERP COMPATIBLE
- EASILY CUSTOMIZABLE
- 100% SCALABLE
- INSTANT ROI

Click here to read more



IT'S TIME TO GO FROM THIS...

...TO THIS:



A smarter tool

WHAT IS I-SPIR™?

Simply put, I-SPIR is a smart collaboration- and interaction platform for all SPIR-related processes, allowing every project stakeholder to input data simultaneously in a secure, efficient and transparent way, eliminating bad data and supply chain waste in every form.

I-SPIR is is a fully modular and scalable SaaS solution, designed and built on decades of hands on supply chain management experience, by people who know all too well the struggles supply chain stakeholders face every day. It's designed to make daily project planning, execution and follow-up as time efficient, detailed and hassle-free as possible.

It enables every project stakeholder to collaborate, quality assure and effectuate project data in real time, seamlessly integrated with any ERP system on the market. It's also designed to be very user friendly, prioritizing user experiences and great customer service.

I-SPIR is built on our proprietary coding platform, enabling us to deliver custom turnkey solutions in weeks, fully tailored to fit any requirements your company or projects might have.

Key benefits include:

- **Improved Data Quality**
  I-SPIR secures end user data quality, resulting in less time wasted, reduced CAPEX/OPEX and lower carbon footprints.
- **Industry agnostic**
  I-SPIR is designed to be implemented across any asset heavy industry segment.
- **Reduced Inventory Cost**
  Quality assured SPIR data enables you to control and collaborate on inventory issues, reducing cost and improving efficiency.
- **Real-time Collaboration**
  A secure and collaborative SaaS platform finally enables real time collaborative efforts.
- **Direct communication**
  I-SPIR enables direct client communication between and for both suppliers and vendors.
- **Clean Existing Data**
  I-SPIR offers features to both clean existing system data and prevent bad data from populating your ERP system
- **Autonomous**
  A secure and collaborative cloud based solution provides autonomous features to processes previously dominated by spread-sheets and endless email chains.

Click to visit smartcube.solutions and learn more

SMARTCUBE

Who are

Smartcube Solutions?

Smartcube Solutions was formed by a combination of experience and a desire to change the status quo of industrial supply chains.

After decades of hand-on experience with the countless challenges of industrial supply chains; the excessive spending, inefficient tools available and the massive wasted resources, Smartcube Solutions was formed in 2020 to develop new, sustainable and easily adoptable digital supply chain handing solutions on a pan-industrial, global scale.

We launched our first product, the ingenious matrial management tool I-MAT, in 2020. In 2022 we introduced I-SPIR, which quickly became the go-to solution for all SPIR processes among operators on the Norwegian Continental Shelf.

We are now expanding to multiple segments on a global scale, and even more smart and specialized solutions are coming.

Visit www.smartcube.solutions to learn more,
or feel free to contact us at mail@smartcube.solutions