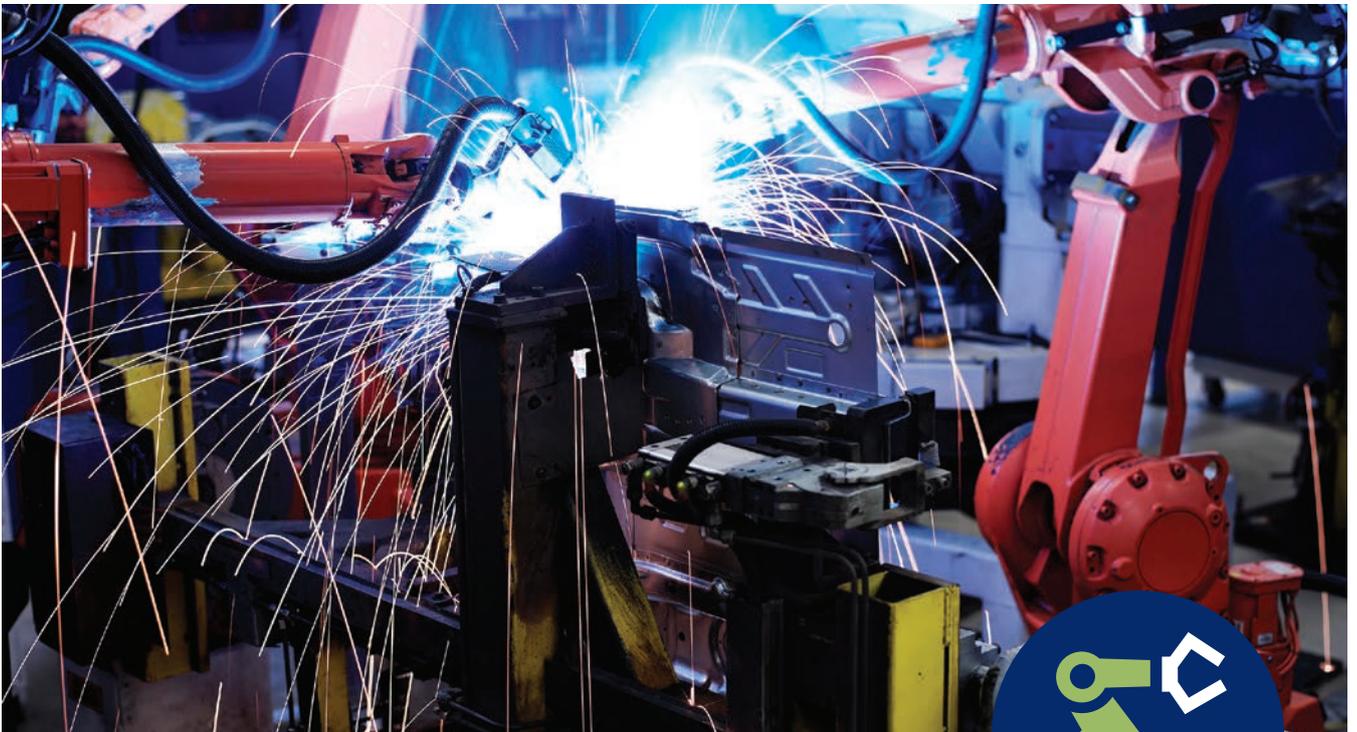




The Global Language of Business

# Entering the digital era of life cycle traceability

Technical Industries





## Visibility in life cycle management

Defence, engineering, construction, mass transit and mining—all are technical industries that face many of the same challenges such as cost pressures, counterfeiting and the race to digitise their physical worlds.

They share a mutual need for transparent processes to optimise their supply chains as parts and raw materials enter production environments; are processed, assembled and packaged; and life cycle managed, as parts exit as finished products and are in operation for many decades.

They must guard against counterfeit parts that can infiltrate their factories, maintenance and repair operations (MRO) and aftermarket sales. And as their digital factories evolve, technical industries must reduce the complexity of their intralogistics processes—connecting them in standardised ways to drive interoperability for higher efficiencies and lower costs.

It's becoming increasingly clear that achieving interoperability is mandatory for profitable operations. In its Internet of Things report, McKinsey concludes, "The ability of IoT devices and systems to work together is critical for realising the full value of IoT applications; without interoperability, at least 40 percent of potential benefits cannot be realised. Adopting open standards is one way to accomplish interoperability."<sup>1</sup>

"Without interoperability, at least 40 percent of potential [IoT] benefits cannot be realised. Adopting open standards is one way to accomplish interoperability."

- McKinsey Global Institute, "The Internet of Things: Mapping the Value Beyond the Hype," June 2015

### Start with identification

A requirement for interoperability across all processes is GS1 standards that uniquely identify individual parts, products and shipments for near real-time monitoring along the supply chain, in aftermarket sales and services and in life cycle management.

By encoding a Serialised GS1 Global Trade Item Number® (SGTIN) into a GS1 barcode on a part's label or in an EPC/RFID tag, all trading partners can verify the authenticity of the part and exchange data in real-time on its attributes, performance and MRO activities.



In the automotive sector, **ATE Continental** is safeguarding its consumers, trading partners and brand against counterfeit spare parts by using an SGTIN, encoded in a GS1 DataMatrix barcode on each of their parts. Auto repair shops and retailers can scan parts' barcodes—using ATE's smartphone app or Internet access—to verify their authenticity.

With individualised identification, the order-to-cash process is significantly simplified. Errors are reduced or can even be eliminated since this concise level of identification removes any guesswork for the manufacturer about the products being ordered.

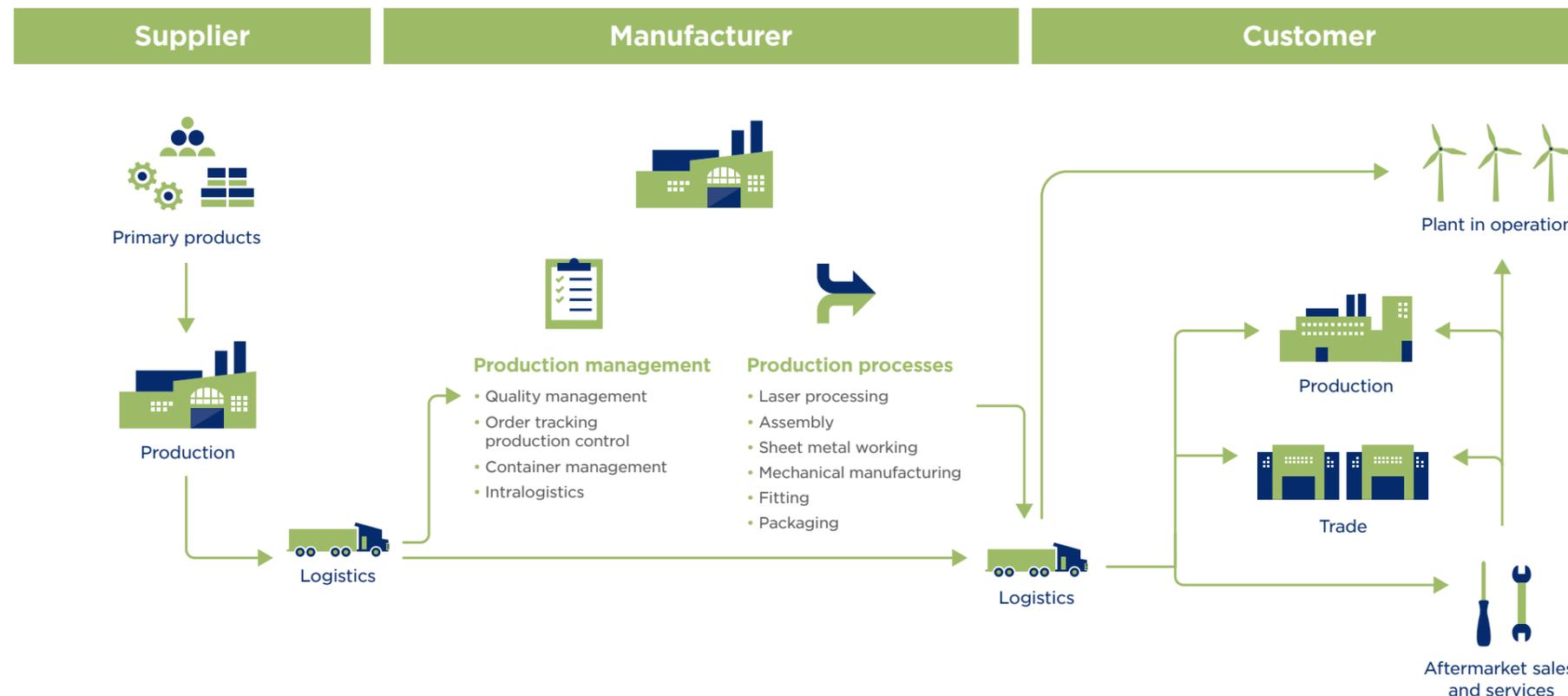
And as the supplier prepares the order for shipment, the GS1 Serial Shipping Container Code (SSCC) identifies the logistics unit along with its individual parts (SGTINs). The SSCC provides the supplier and manufacturer with the ability to track the shipment, each step of the way.

When the shipment arrives, the manufacturer scans the SSCC to confirm receipt of the logistics unit and the authentic parts inside. SGTINs can also be included in a Despatch Advice, enabling the manufacturer to save time for receipt, stocking and ultimately, delivery of finished products to customers.

"Our customers can be confident, that they are using an original ATE spare part. This is made possible through globally unambiguous identification based on GS1 standards—our protective shield against counterfeiting."

- Jens Haala, Head of Product Management Braking Systems, Continental Aftermarket

### Technical Industries Supply Chain



Correct orders and fulfilment upfront also translate into accuracy improvements in back-end invoicing and payment processes for increased cash flow.



**ContiTech** manufactures and delivers customised suspension systems based on each customer's specific requirements. To ensure each system is built and delivered to the right customer, the company applies an SGTIN encoded in a durable GS1 DataMatrix barcode on every unique product, which also contains the SGTINs of the components that comprise the system. ContiTech has significantly simplified its manufacturing process and increased operator productivity with fewer errors, all while reducing costs.

### Make intelligent connections

Companies with different requirements, markets and processes can use GS1 standards to better interoperate and share information for a wealth of process improvements.

As parts and raw materials are transformed into finished goods, GS1 standards can support machine-to-machine communications for automating cross-company and intralogistics processes to gain tremendous efficiencies and cost savings.

Consider the GS1 standards—the Lot GTIN, GTIN and SGTIN—that uniquely identify the lot/batch of raw materials, products and individual parts, respectively. Assigned and managed by the supplier at points of origin, these standards enable the correct and efficient use of primary products as they are transported and transformed in the supply chain.

This is especially critical as factories transform from manual to digital-driven processes with the Industrial Internet of Things (IIoT).



**Siemens** and **Bosch** are creating intelligent digital factories where individual products, parts, raw materials and machines all communicate within an IIoT and cooperatively drive production. For example, in the Siemens factory finished goods, in particular customised ones, are created as they find their way independently through the production process, aided by RFID technology.<sup>2</sup> Likewise, Bosch is implementing the concept of Industry 4.0, using RFID in its network of plants to create transparency in its entire value stream.<sup>3</sup> To ensure interoperability between its different entities, Bosch has already started adopting GS1 standards in its internal processes.

GS1 standards can provide the needed identification of "things" for the digital factory, which promises considerable economic gains. The unique identification of objects in the construction sector, as part of Building Information Modeling (BIM), gains importance for efficiency both in the built phase as well as in facilities management.

Inventory management is also significantly enhanced since suppliers and manufacturers can now easily identify products and parts on hand, especially for MRO and aftermarket sales.

As maintenance and other aftermarket activities are performed, the serialisation of each item by means of the SGTIN can provide valuable and detailed information for improved maintenance planning and downtime prevention, helping to save time and costs. Other GS1 standards like the Global Individual Asset Identifier (GIAI) that uniquely identifies assets and the Global Document Type Identifier (GDTI) for document identification help to streamline all aftermarket sales and services processes.

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"All serialised GTINs can now be easily captured with a single scan anywhere in our supply chain processes—manufacturing, maintenance and repair and overhaul cycles."

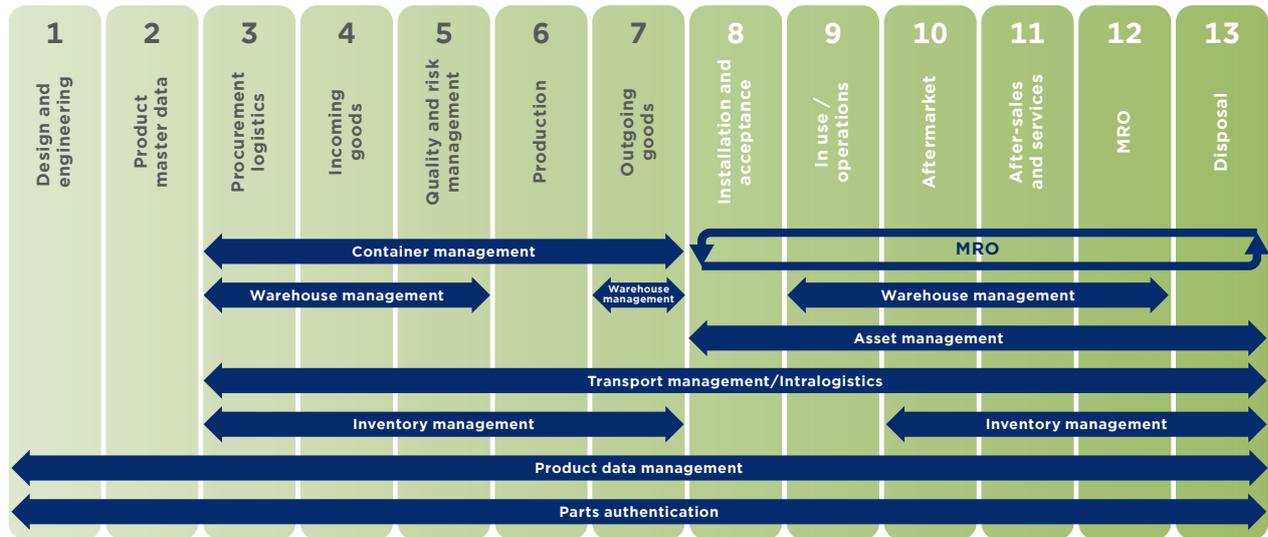
- Hendrik Neumann, Logistics Manager  
PMS CRE, ContiTech

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"The serialisation and marking of revised and refurbished items is a significant challenge, but also offers massive potential benefits. The use of GS1 standards enables us to realise that potential. Our customers and we are completely satisfied with the results."

- Frank Wachendorf, Sales Director,  
HFG Transport Technik GmbH

Technical Industries: from a product life cycle point of view



**HFG Transport Technik GmbH (HFG)**, a provider of MRO services in rail, needed to track each bearing system’s usage and capture information about its maintenance history. The company now uses an SGTIN encoded in a GS1 DataMatrix barcode, laser-etched on each of its bearing systems. The barcode on each bearing is used to link all usage and maintenance data for proactive servicing and improved safety. HFG can also more easily comply with regulatory requirements with a complete history of maintenance for each bearing.



**Trafikverket**, the Swedish government agency responsible for transport, is effectively tracking rail vehicles and sharing rail traffic data for safe and efficient operations. It uses the GS1 GIAI encoded in EPC/RFID tags to uniquely identify individual vehicles, and the Global Location Number (GLN), to identify vehicle location. The GS1 standard EPCIS enables Trafikverket to share information with other rail operators, infrastructure companies and even cargo owners about the physical location and movement of individual rail vehicles and entire trains as they travel from country to country. Trafikverket plans to investigate how to use serialised GS1 identifiers on rolling and fixed railway materials for efficient MRO and increased safety.



**Swiss Federal Railways (SBB)**, Switzerland’s largest railway system, advises that critical to manufacturing and MRO processes is the ability to track assets and components and ensure interoperability between players and systems. SBB notes that the GS1 Application Standards for Rail will enable this and more.

SBB is convinced that the rail industry has a unique opportunity to increase its competitiveness in a global market filled with multiple options for transport and travel, and that by leveraging these GS1 Application Standards, together with other rail stakeholders, the industry can achieve a higher level of safe, reliable and uninterrupted services for customers and passengers.

“With GS1 standards, as an industry we can create more intelligent solutions to achieve greater efficiencies, especially in the areas of safety and maintenance. Yet, this can only be done with industry players adopting a common set of standards to share information.”

– Karl Åkerlund, Rail Infrastructure Manager, Trafikverket

## Learn how GS1 standards can help you gain efficiencies, combat counterfeits and more.

Adopting GS1 standards provides many ways for technical industries to achieve their priorities while laying the foundation for digital processes in the not-so-distant future.

Visit [www.gs1.org](http://www.gs1.org) to learn more about GS1 standards.

Contact your GS1 Member Organisation; see [www.gs1.org/contact](http://www.gs1.org/contact).

### About GS1

GS1 is a neutral, not-for-profit, global organisation that develops and maintains the most widely used supply chain standards system in the world. GS1 standards improve the efficiency, safety, and visibility of supply chains across multiple sectors. With local Member Organisations in over 110 countries, GS1 engages with communities of trading partners, industry organisations, governments, and technology providers to understand and respond to their business needs through the adoption and implementation of global standards. GS1 is driven by over a million user companies, which execute more than six billion transactions daily in 150 countries using GS1 standards. More information at [www.gs1.org](http://www.gs1.org).

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