Beyond Basic Traceability

A Ground-Up Approach To Smart Digital Transformation

Bain & Company Global State of Traceability Survey *

68% of manufacturing executives view traceability as “very or extremely important”

It pays to focus on traceability if you want to avoid supply chain, quality, and safety issues. But basic paper-based traceability systems are too limited.

Old systems only track materials going into the production line and products coming out at the end, using manual recording methods.

In contrast, a good modern traceability system should tell you instantly where each item comes from, where it has been, and where it’s going – at any stage of the value chain.

You should aim to track products throughout the **entire production process** and supply chain. This means tracking items through barcodes, RFID, or QR codes linked to specific serial numbers.

The main goals of a traceability system:

Follow the journey of each item for value stream mapping

Ensure good quality control & enhanced root cause analysis

Meet regulatory compliance

Follow best practices, such as GS1 standards

Manage recalls efficiently if something goes wrong

Dealing with Data Complexity

As the number of digital tools in manufacturing has grown, the amount of data has increased exponentially, as well as becoming much more complex to gather, process, and analyze.

In terms of traceability data, regulators demand much more detailed tracking of products for safety, quality, and compliance than previously, especially in the food and beverage industry.

GS1 standards are globally recognized and serve as industry norms for effective supply chain management. They offer guidelines for identifying, capturing, and sharing crucial data across the supply chain using barcodes and other scannable identifiers. Though not mandated by governments as yet, GS1 standards are essential for accurate tracking of materials and goods.

Most manufacturers are looking to future-proof their traceability systems with real-time data capture. With real-time data at your fingertips, you can proactively address disruptions and avoid safety and quality issues that could harm brand reputation.

TRACEABILITY CHALLENGES

Integration Challenges

56% of executives consider interoperability as the main challenge when it comes to product traceability.**
Fragmentation can limit overall supply chain visibility, lead to data silos, and result in a lack of overall transparency.

Compliance with Standards

Staying compliant is an ongoing effort. You have to constantly update your processes and systems to ensure compliance and meet evolving best practices such as GS1 standards. Slipping up could mean fines, legal trouble, or reputation damage.

Scalability Issues

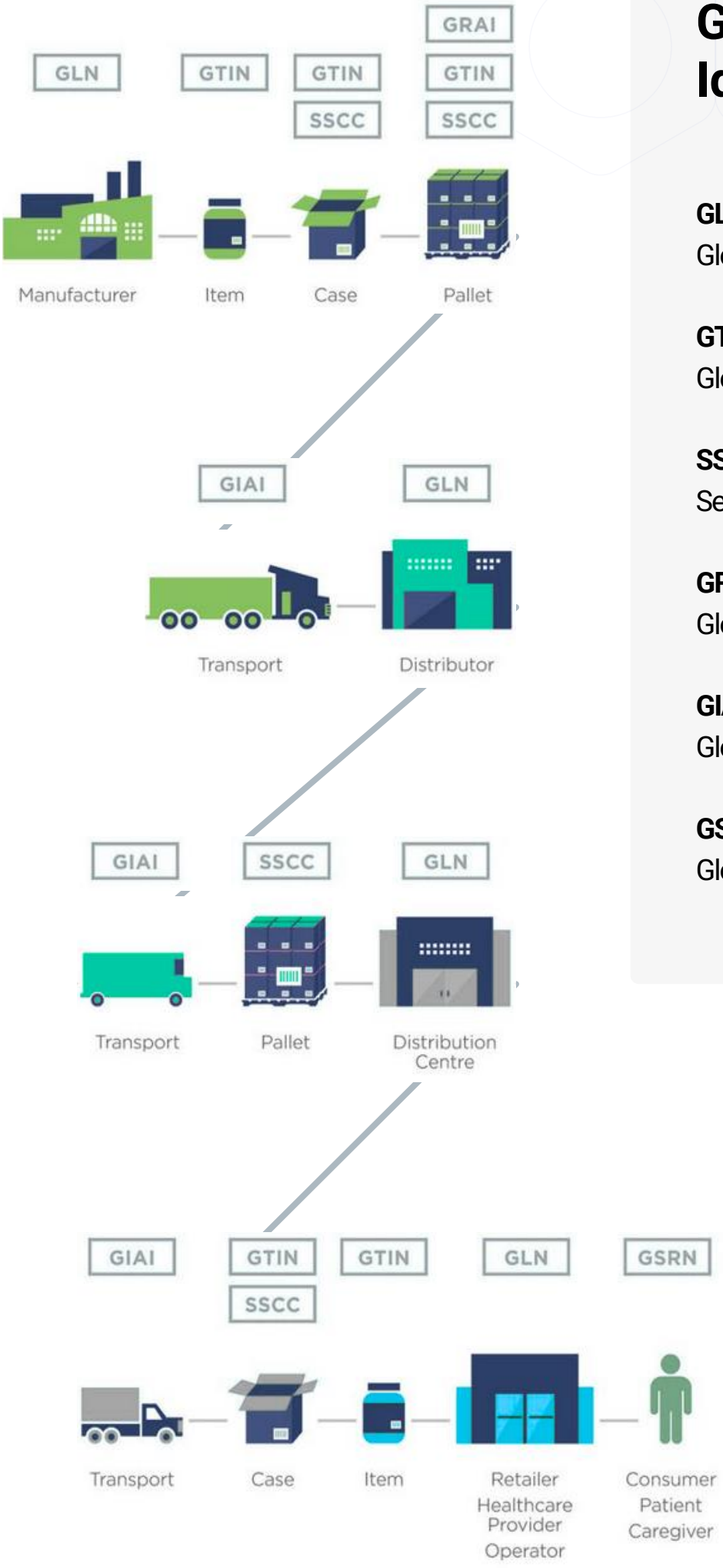
As your business grows, traceability data increases too. Traditional systems often struggle to handle the increased data load, leading to potential slowdowns and errors.

Complex Real-Time Data Management

Handling vast amounts of real-time data at high speeds from machines and IIoT sensors is complex without a robust system in place to capture it, process it, and present it. Real-time analysis is also needed to ensure data consistency, avoid production delays, record accurate inventory levels, and limit quality control failures.

Change Management

Whenever you add a new system or upgrade an old one, you're likely to encounter resistance.
The challenge is to get all stakeholders on board with the changes – front-line workers, supervisors, managers, and executives. Clear communication and training is usually needed.



GS1 Standards for Identification

GLN
Global Location Number

GTIN
Global Trade Item Number

SSCC
Serial Shipping Container Code

GRAI
Global Returnable Asset Identifier

GIAI
Global Individual Asset Identifier

GSRN
Global Service Relation Number

GS1 Standards

In order to meet GS1 standards, manufacturers need to mark all items with a barcode, QR code, or RFID tag (EPC HF Gen 2 or EPC UHF Gen2), as shown below.

GS1 Barcodes

GS1 EPC/RFID

Granularity Levels and GS1 Identification Keys

1

Class-level

- Key: GTIN
- Usage: Identifies all items of a type uniformly (e.g., all 10 count jars of jam), suitable for bulk printing and cost-effective. Distinguishes between different product configurations (e.g., 10 vs 24 count).

2

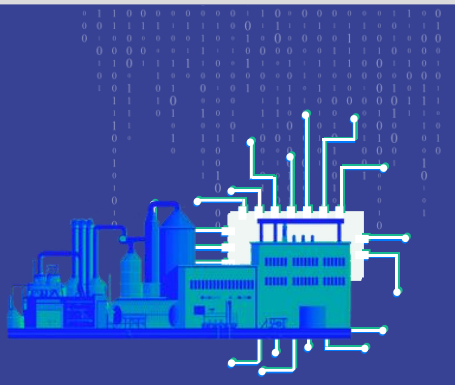
Batch/Lot-level

- Key: GTIN + batch/lot number
- Usage: Adds a batch or lot number to the GTIN for tracking products from the same type but different batches (e.g., jars of jam from different production lots).

3

Instance-level (Full Serialization)

- Key: GTIN + serial number (SGTIN)
- Usage: Assigns a unique identifier to each product instance, providing global uniqueness and detailed traceability for individual items.



Go Digital

Enabling End-to-End Full Traceability

O3OZONE offers complete batch management by integrating with your ERP. If your ERP is compatible with GS1 traceability, you can trace parts and products throughout your operations.

Using GS1 labeling and scanning, O3OZONE collects, processes, and presents data related to each batch or item. You simply scan an item and see all the associated data – where it was made, which machine was used, when it was produced, and even which supplier contributed parts.

The level of detail O3OZONE provides is ideal for quality assurance checks, optimizing production schedules, simplifying compliance processes, and logistical planning.

ERP SYSTEM ENTRY POINT

ITEM SCANNING

DATA SYNC

DATA RETRIEVAL

(machine, date, time, supplier)

Monitor Batches Throughout Your Factory with O3OZONE

O3OZONE integrates with your ERP system for real-time data capture and analysis.

Using GS1 standards as a benchmark, O3OZONE allows you to scan batches at any operational stage and get up-to-date info such as machine numbers, date and time of production, and supplier details.

The O3OZONE platform includes advanced analytics and reporting tools to extract meaningful insights from traceability data. You can carry out in-depth analyses, identify trends, and forecast potential issues before they escalate.

Meet Regulatory Compliance

Many industries have strict traceability requirements and regulation, especially food and beverages, pharmaceuticals, and automotive. O3OZONE makes audits easier by collecting, processing, and analyzing traceability data and producing reports.

Improve Quality Control

Identify and address quality issues early for improved consistency. Integrating O3OZONE with your ERP for full traceability helps reduce waste and meet customer quality expectations.

Optimize Supply Chains

Reduce costs by optimizing your supply chain. Track products and components back to their origin to identify bottlenecks and inefficiencies. This leads to better inventory management, reduced lead times, and improved resource allocation.

Contact Us Today