

KEZZLER

Solution brief

Dealing with billions

The role of item-level digital ID and connected products in enterprise IT architecture

Introduction

The rise of connected products in the modern enterprise

In 2027, item-level digital ID will move from pilot to core infrastructure.

In the last few years, the question inside large apparel, consumer goods, and retail businesses has changed from “Should every item carry an identity?” to two more practical questions: ”Which of our systems will own it?” and “What happens when the regulator, the customer, the store, or the factory all read the same code?”

Three influencing forces all arrived at once:

01 **Requirements**
The EU’s Eco Design for Sustainable Products Regulation (ESPR) makes a Digital Product Passport (DPP) mandatory, product group by product group. The **EU DPP registry** opened for enrollment in July 2026. Batteries are first in February 2027. Textiles follow, with the delegated act expected in late 2027 and application from 2029.

02 **Retail**
GS1 Sunrise 2027 brings 2D barcodes to the point of sale so the code on the item is about to be read at the register, not just by the consumer.

03 **Enforcement**
U.S. Customs enforcement under the Uyghur Forced Labor Prevention Act (UFLPA) asks for evidence of the level of the shipment and the item, not the category.



Tackling the data integration challenge

Surprisingly, the problem is not the volume of data. It is that product data loses its structure on the way to the product:

- Fiber composition
- Country of origin
- Substances of concern
- Care instructions

Most brands already hold these across their Product Lifecycle Management (PLM), different supplier portals, test reports, and PDF labels, in formats that disagree with each other and none of which a regulator or resolver can get to.

A DPP asks the same questions in different words:

- What is this product made of?
- Where did it come from?
- What happened to it?

The EU expects these answers in a defined data model, using a semantic catalog, in up to 24 languages per item or per batch, for at least a decade after sale. One optical read of one label cannot produce that. The text has to become data before it can be published at all.

Most currently existing IT infrastructures have grown over time and consist of specialized systems designed and tailored to each part of the process. None of them has been built to hold a record per unit or to serve it to a phone in under half a second for the next 10 years. That is a gap, and it is an architecture gap, not a reporting gap.

- The old requirement

Make sure plants, sites, and processes are all certified.

A new business mandate

Businesses are increasingly required to deliver on promises of transparency across their entire value chain and to prove them. A marketing claim can survive being approximately right. Evidence for customs, a regulator, or a court cannot.

The practical answer is to collect the data and register it wherever it originates, harmonize it once against a common structure, and hold it at whatever granularity a regulation asks for. One harmonized dataset can then serve many different outputs:

- The passport
- The customs record
- The retailer label
- The customer page

Build the layer once, and the next regulation is just a configuration exercise. It's not a new program.

- The new requirement

Provide digital, consumer-relevant, and compliance information, all through a single product interaction.

What this means for the business

What are the implications of moving from batch and SKU-level data to a record per serialized item? The volume changes but the much harder change is ownership. In most organizations, four functions run through four different tools:

- Legal and IT by a compliance platform
- Labeling and operations by RFID care labels and serialization
- Sustainability buys a traceability tool
- Marketing buys a QR engagement vendor

Four owners, four contracts, no item identity carried across them. That is the pattern that stalls out.

Adapting to this new normal means treating item-level identity as one shared layer with four consumers:

- Manufacturing visibility
- Brand protection
- Consumer engagement
- Retail readiness

One identity minted once, read by all four.

Identifying IT infrastructure gaps

First, decide where the identity is minted and what already holds it: the PLM, the ERP, the factory, the label supplier, or nowhere yet. The ERP remains the system of record for commercial intent. The identity layer becomes the system of record for what each unit is, where it has been, and what it may claim.

RFID and QR have already changed how inventory management and consumer engagement work: the shift now is that both should express the same serialized identity, so the tag the store reads and the code the customer scans resolve to the same record.

Let the data interoperate

Interoperability is the key to a sustainable, transparent value chain, and in Kezzler's view, that means GS1 standards. GS1 Digital Link makes an identifier reachable on the web: exactly what a passport carrier needs. EPCIS 2.0 records what happened to the item: exactly what gives a passport a lifecycle, not just a page. A DPP needs the first and gains from the second. The identifier is the bridge between them.

Since July 2026, the first harmonized European standards for the DPP are cited in the official journal so conformance can be claimed against published standards rather than drafts.

The Kezzler platform is pre-integrated with the enterprise systems and label partner brands already use, putting this within reach without a rebuild. It is strengthening enterprise IT architecture.



The Kezzler Platform

The Kezzler Platform is a managed SaaS solution built over two decades, beginning in pharmaceutical serialization, where an error in a code causes a recall rather than a support ticket. It's cloud vendor-agnostic, data-carrier-agnostic, and geographically distributable. Each customer runs on a dedicated instance on Microsoft Azure or AWS in the region they choose, with dedicated in-country instances where data residency rules require it, including in China.

Security is certified, not asserted. It holds ISO/IEC 27001:2022 and ISO 9001:2015 certification, with single sign-on through OIDC and SAML 2.0 (Microsoft Entra ID, Okta, Google Workspace), role-based access control, and a full audit log. The platform runs no part of a customer's point of sale, e-commerce, or core operations, and is deliberately architected so it cannot become a dependency of any of those.

By keeping all data 'hot' and available, it supports mission-critical programs handling well over 5 million transactions a day, with billions of identities already issued and sub-second query response. Kezzler works with partner such as GS1, Microsoft, Trimco, Accenture, Amcor, and Rockwell Automation to issue an identity once and carry it through the label, the factory, and the enterprise systems that already exist.

Connected product
Brands can harness the full potential of digitized products with the Kezzler Platform.

Product journey
Kezzler creates a digital thread from creation to consumption by managing digital IDs, tracking product lifecycle events, and delivering the right information to end users.

Kezzler Platform
Built to meet the scalability, flexibility, and speed requirements of enterprises.

Kezzler's integration layer
Flexible and scalable solution that integrates seamlessly with existing IT infrastructure.



Digital ID management

Digital ID management generates and manages cryptographically secure unique identities for products at any volume, so each individual item carries a distinct, non-repeated identifier that accompanies it throughout its life.

Codes are perpetual and always belong to the customer brand. There is no charge per scan and no charge per event at any volume, so the commercial model never argues with the architecture or business value.

A code is inert until it is commissioned. An overprinted or spoiled label is a cost, never a counterfeit kit, and printers receive artwork and serialization data only, never live identities.

With flexible metadata enrichment, the platform captures the right data at the right moment, which is what turns an identifier into granular visibility, dependable compliance, and a product that is genuinely innately circular.

- The old requirement

Use separate data carriers for production, shipping, and consumer engagement.

Cryptographically secure unique identities

Kezzler's identities are cryptographic and unguessable, and they integrate with the GS1 primary identification keys. A serialized GTIN can be carried as a GS1 Digital Link in a QR code and as an EPC in an RFID tag.

One identity with two ways of reading it, not one serial copied into two places. The RFID tag is what makes serialized QR practical in a factory environment, because a bulk reader packout commissions every unit in the carton at once.

- The new requirement

Use a single digital ID to consolidate information and processes.

Event repository

Tracking the product life cycle

The Catalyst event repository tree has been built to synchronize events and interactions across the entire life of a product, all linked to a unique digital ID:

- Commissioning at the factory
- Aggregation into cartons
- Dispatch
- Receipt
- Sale
- Every interaction after it

Adhering to EPCIS 2, with REST and JSON support for capture and query, the repository ensures interoperability and data integrity across value chain systems. It is what lets a passport answer what happened to this item rather than just what this product is.

Data arrives three ways:

- System to system, from PLM, ERP, and traceability platforms
- As files from suppliers and contract manufacturers
- From a person with a phone

Customers can export their complete record in EPCIS, JSON, or CSV at any time.

Visibility and informed decision-making

The event repository is the central hub, bringing together data from every stage of the product journey. For manufacturing, it is visibility of every unit from commissioning to sale.

For brand protection, it is the difference between a code that exists and a code that was made, shipped, and sold. On one global apparel program, brand protection scanning rose more than 100-fold once there was a record to check against.

For retail, it is the source the register and the returns desk can trust. Purpose-built compression and query technology keeps operational data continuously accessible without separate archiving, even at billions of events a year.

Dynamic interactions

Enhancing the consumer journey and meeting the regulator

One identity, many readers.

When an item is scanned, the Kezzler Platform resolves the GS1 Digital Link on the brand's own domain and returns the right view and dataset for whoever is asking — a consumer, a customs officer, a regulator, a repair shop, or a recycling house. Product data never goes to a central EU database.

The EU registry is a directory that points to where a passport is hosted. The brand or its service provider has to serve a resolvable record per item for at least a decade at its own volumes, providing value with each interaction.

Consumer engagement with the code on a garment happens in a single scan. What matters is what that one scan can do:

- Register ownership
- Return the product
- Authenticate it
- Start a repair
- Resale
- Find the care instructions

The Kezzler Platform is rapid, flexible, and configurable, with sub-second query response times and a globally distributed deployment strategy. It supports product- and location-based redirection and role-based views as standard. Regulatory changes are a configuration issue, not a price change request, and Kezzler will contract to act as the backing DPP service provider that ESPR Article 10 requires.

Item-level identity is becoming the layer that manufacturing, brand protection, retail, and the customer all read from, and increasingly the layer that AI assistants will read from when they answer a question about a product. The brand that holds the trusted structured record per item shapes that answer. The Kezzler Platform is how that record gets built, once, on open standards, inside the architecture you already run.

The new requirement

Every QR scan returns the right record for whoever is asking.

The old requirement

Every QR scan produces the same result.

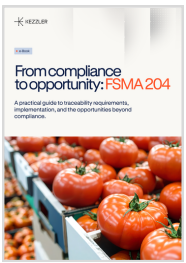


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