The Data-Driven Value Chain

QR Code Guideline

2026

Contents

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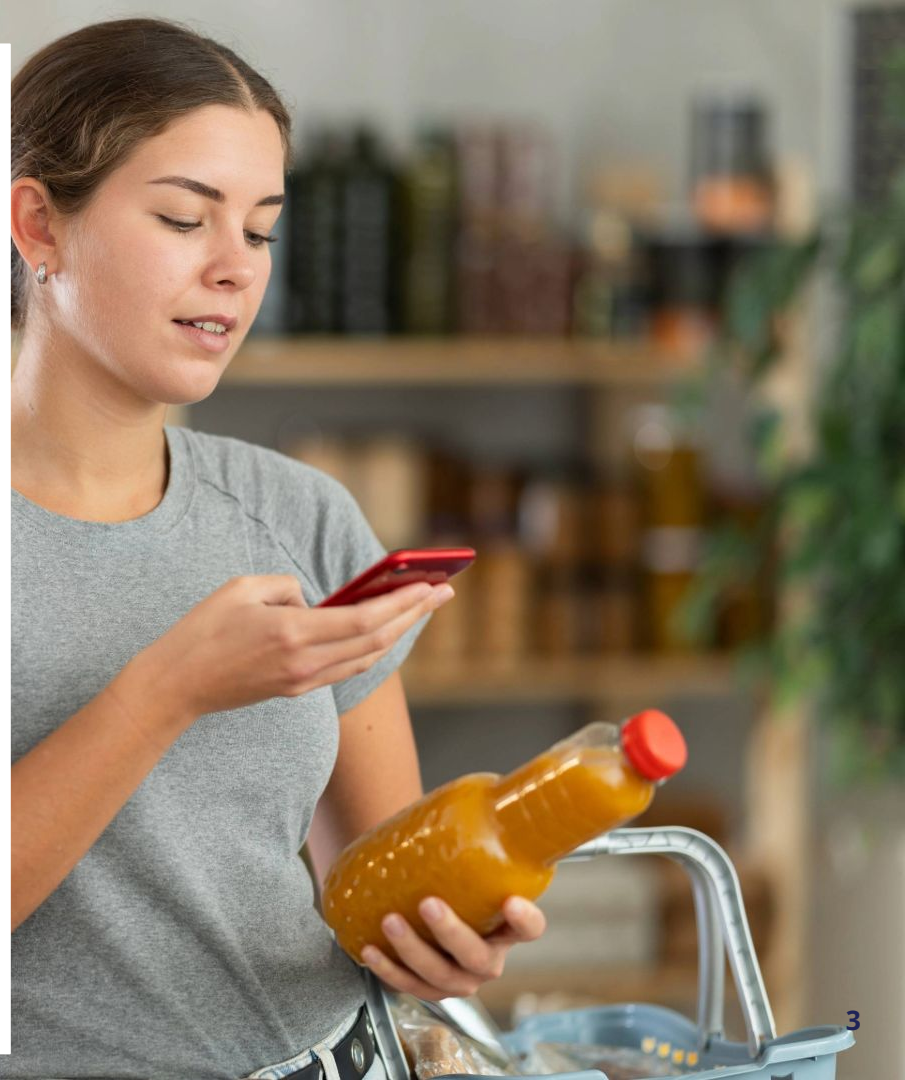


Introduction

Once a niche technology, QR codes have evolved into a standard tool for supporting engagement and operational efficiency across the value chain.

Their usage has expanded with the demand for contactless interactions, offering new mechanisms for consumers to access information and for stakeholders to connect with products.

For consumers, QR codes can provide a mechanism to access product details, nutritional information, promotions, and digital services. By scanning a code on packaging, users may experience improved convenience and access to information.

For individual businesses, QR codes offer a potential source of data. Scanning activity can provide insights to individual companies into consumer preferences, geographic patterns, and engagement levels. This information may assist individual companies in their independent analysis of inventory management and marketing efficiency.

As noted in observations within the Data-Driven Value Chain (DDVC), the technology is constantly evolving. The GS1 Digital Link standard offers a technical specification regarding data types included in a 2D code. These capabilities present a potential technical roadmap wherein a single QR code might support both consumer interaction and point-of-sale scanning.

When considering the customer experience, organisations may wish to focus on relevance, clarity, and user confidence. QR code interactions that are simple, localised, and clearly connected to the product may reduce friction.

Consistent technical design can support user familiarity, while placement optimisation often contributes to successful interactions.

A consideration for many organisations is how to navigate the technical integration of this technology. The transition from existing QR codes to GS1-enabled QR codes involves planning and testing to ensure technical interoperability.

Introduction (Cont.)

To ensure a smooth transition, an optional timeline known as 'Sunrise 2027' has been proposed for the potential capability to scan QR codes at points of sale.

During this period, manufacturers may individually opt to incorporate QR codes and retailers may independently choose to upgrade their systems to include optical scanning capabilities.

The GS1 Digital Link technical standard is expected to coexist with linear EAN-UPC barcodes for several years and ensure technical interoperability will be a factor in this evolution.

This guideline explores voluntary approaches to this transition and addresses technical considerations to support a functional rollout.

QR codes connect the physical and digital world. They offer a scalable, technical method to support engagement and new concepts across independent businesses.

The 'QR Code Implementation Guideline' document provides technical considerations for companies' individual implementation of QR codes. This document outlines voluntary technical approaches for QR codes powered by GS1 Digital Link, designed to facilitate a predictable experience for consumers globally.

These guidelines address the technical complexities of QR code usage, aiming to support user confidence and optimise the utility of connected packaging. This document reflects the discussions and technical observations from the Consumer Goods Forum (CGF) Data-Driven Value Chain.

Our Goal: To support a technical environment where QR code scanning is a functional and reliable experience for consumers.

Why This Matters: Inconsistent or confusing QR code experiences may negatively impact user utility. By considering consistent technical practices, independent organisations can support consumer confidence and optimise the utility of connected packaging.

Core principles

These recommended principles are offered as optional reference points for creating practical digital experiences linked to products:

Relevance Considerations

Individual organisations may choose to prioritise information relevance based on user context. This might include independent decisions to utilise location data for compliance purposes and to avoid displaying content not pertinent to the user. Language accessibility is a consideration, where organisations might offer content in the user's preferred language based on device settings. Ensuring the linked experience relates directly to the specific item, referenced by the GTIN and, where applicable, further refined using a Consumer Product Variant (CPV) is a recommended technical practice to deliver accurate, variant-specific information.

Consistency and User Expectations

Predictable technical frameworks may assist users in understanding linked pages. Organisations may individually consider using consistent proposed frameworks, so users know what to expect, while maintaining their independent brand identity. Setting clear expectations about the destination of a QR code is beneficial to avoid broken links or unhelpful destinations. Ensuring encoded data serves a functional purpose for the user or supply chain is a suggested efficiency measure.

Technical Usability

Organisations may individually aim to create a positive interaction. This involves designing for seamless interaction, ensuring codes are scannable by considering factors such as placement, size, and print quality, and establishing processes to address technical issues. The experience may provide value by offering helpful product information or services. Designing for accessibility and ensuring usability for individuals with disabilities is a recommended best practice.

Data Privacy by Design

Integrating privacy considerations is a critical operational step. This involves compliance with applicable local data privacy laws. Transparency in this context is legally established practice; organisations are responsible for communicating what data is collected and its purpose. Respecting user privacy involves independent decisions to avoid unwanted tracking. A commonly seen approach includes displaying the organisation’s privacy policy on the product landing page.

Key implementation considerations

Designing For Accessibility

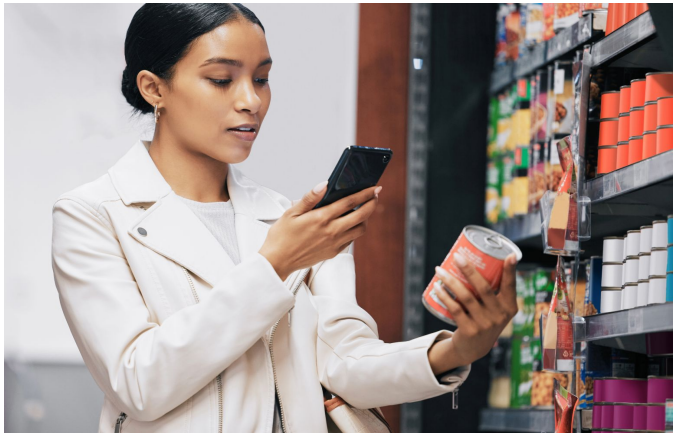
When creating digital experiences, organisations are encouraged to individually consider accessibility for all users, including individuals with disabilities. This involves the technical design of the destination content and the physical accessibility of the QR code where feasible.

The focus is typically on maximising the usability of the experience, ensuring diverse user needs are met regardless of location or the assistive technologies used. Compliance with regional accessibility regulations for digital information is the responsibility of each entity in the markets where the product is available.

Ensuring Data Privacy and Ethics

Adherence to robust data privacy and ethical practices is an independent obligation of each organisation. Entities are responsible for maintaining transparency with consumers regarding data collection. This involves clearly communicating what data is collected, why, and how it is used. Respecting consumer privacy involves independent decisions to avoid non-essential tracking.

Compliance with applicable data privacy laws (such as GDPR or CCPA) is determined by the legal jurisdiction of the operation. Organisations are encouraged to implement independent technical measures to secure data. Consumers should be empowered with rights regarding their data, including the ability to request deletion in accordance with legal requirements.



Establishing internal governance- landing page lifecycle

Effective management of the landing page lifecycle is an internal operational matter. Assigning clear roles and defining processes are steps that may ensure the accuracy and longevity of content accessed through QR codes. This proposed framework encompasses creation, updates, and the eventual retirement of experiences.

Assigning Ownership and Roles (Illustrative Examples)

Adherence to robust data privacy and ethical practices is an independent obligation of each organisation. Entities are responsible for maintaining transparency with consumers regarding data collection.

This involves clearly communicating what data is collected, why, and how it is used. Respecting consumer privacy involves independent decisions to avoid non-essential tracking. Establishing clear internal ownership ensures accountability.

Key roles within an organisation typically include:

- Strategy/Brand Lead: May define strategic objectives and content scope. They ensure alignment with independent marketing strategies and provide approval for updates.
- Digital Content Specialist: May handle the creation and maintenance of digital content, including text and multimedia, ensuring adherence to internal guidelines.
- IT/Technical Support: May provide the technical foundation and security. They manage technical aspects of data collection and architecture. This role might also oversee measures against "quishing" (QR code phishing).
- Packaging Designer: Responsible for the technical generation of the QR code (e.g., GS1 Digital Link) and its physical placement. A placement within 2 inches (50 mm) of the linear barcode is a technical suggestion to aid optical scanning.
- Consumer Relations: May provide feedback from user interactions to identify areas needing updates or correction.

Considerations for data encoding

GTIN, GS1 Digital Link, and Resolver Protocols

To facilitate consistent scanning, the inclusion of the Global Trade Item Number (GTIN) within the QR code data is a standard technical specification. This identifier is used to link the code to the specific product.

Adhering to standards such as the GS1 Digital Link is a technical option that standardises the inclusion of the GTIN and a URL. Software developers require clear specifications on handling different code types to ensure correct resolution. A standard recommendation is that the QR code links to a web address using the secure HTTPS protocol to support a safe user experience.

To enhance flexibility, organisations may consider implementing a QR resolver. This allows for dynamic URL management, enabling changes to content without altering the physical package. Displaying the company name via the resolver is a technical measure that may assist in verification and security against QR phishing.

Physical Placement

Readability at the point of sale (POS) is a primary technical success factor. This is relevant for supply chain operations and consumer interactions. Achieving this requires attention to design factors such as size, placement, and print quality. Retailers may independently choose to conduct internal scannability tests prior to implementation.

To assist with usability, organisations might consider differentiation techniques for QR codes intended for consumer use versus internal supply chain codes. Suggestions include using a minimum size or a distinct background colour for consumer-facing codes.

Designing For Clarity

To reduce scanning errors at the POS, organisations may independently evaluate the utility of minimising multiple 2D codes on a single package. If multiple codes are utilised for production reasons, employing distinct symbologies (e.g., Data Matrix vs. QR) or size differentials may improve scanner efficiency. Maximising the size of the consumer-facing code is a technical suggestion to facilitate scanning.

Product and content lifespan

Aligning content availability with the product's physical existence is an operational challenge. Products may remain in use by consumers beyond their initial shelf life. The extended lifespan is a consideration for various product categories.

For some products, information might need to remain available for extended periods, particularly regarding compliance with potential regulations like the Digital Product Passport (DPP). The technical lifespan of products varies, making long-term information validity a planning factor.

Data Lifecycle Management

Determining how long linked experiences must be maintained is an individual business decision. The duration varies depending on the product type (e.g., durable appliances vs. fresh goods).

Technical Option: The Fallback Page

To address the challenge of retirement, organisations might individually consider implementing a "fallback page." This technical solution can redirect traffic from expired links to general information or alternative product pages, preventing "404 Not Found" errors and maintaining engagement.

Product vs. Data Lifespan

Information associated with a product may need to remain accessible within individual organisations longer than the product is sold. Independent planning for discontinued products ensures that consumers retaining the item can access necessary safety or usage data. For some products, legislation may require information validity throughout the usage lifetime.

Practical guidance to begin building QR Code capabilities

Many organisations utilise QR codes on packaging. A potential starting point for individual companies is the addition of basic dynamic QR codes that include a redirectable URL, using the GTIN as the primary product identifier and, where relevant, a Consumer Product Variant (CPV) to distinguish further between product variants. Placement near the linear barcode may facilitate optical scanning.

Subsequent steps might involve developing an independent content management strategy. As retailers independently confirm their readiness to read GS1 Digital Link data, manufacturers may opt to update the data payload in their codes. This phased approach allows individual entities to build capabilities at their own pace while reducing potential friction. The transition to new technical standards is a long-term evolution involving independent planning.

FAQ

Are there universal technical rules for software providers regarding QR code interpretation?

Technical specifications are available through GS1 (see GS1 Digital Link Guideline). Software providers independently determine their adherence to these specifications.

How can organisations manage governance?

Successful implementation by individual companies typically involves defining an independent business objective. Internal alignment on resources and goals facilitates the maintenance of digital information.

How should data validity over the product lifespan be managed?

This requires independent long-term planning by each organization to account for the specific lifecycle needs of their product categories.

Is there documentation on required data lifecycle management?

We are not aware of existing documentation explicitly detailing these requirements. Specific regulatory requirements vary by jurisdiction. For instance, in Europe, discussions regarding the Digital Product Passport are ongoing. Organisations are advised to monitor legislative developments.

About us

The Data-Driven Value Chain consists of 43 CGF member companies.

Today, its key priorities are:

- To drive industry implementation of QR Codes that work consistently for consumers everywhere.
- Accelerate responsible AI Adoption in FMCG: The DDVC is developing foundational guidelines for ethical AI adoption to ensure businesses adopting AI do it responsibly and efficiently.
- Simplify ESG data reporting and exchange by cutting down on manual reporting and improve transparency for companies.

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