

## Standardised 2D data carriers support regulatory implementation and infinite data opportunities

GS1 in Europe recommendations on regulated product data requirements in view of the EU 2024-2029 political term<sup>1</sup>



The European Union priorities of 2019-2024 showed commitment to deliver the European Green Deal and to achieve a "Europe Fit for the Digital Age". The convergence of sustainability and digitalisation prompted a very dynamic policy environment, with subsequent adoption of **749 EU laws and case law** including both sustainability and digitalisation requirements and a total of more than **200 regulations**<sup>2</sup> immediately becoming laws in the EU Member States.

To achieve the EU net zero goal in 2050, digitalisation and sustainability requirements have been embedded in cross-sectoral and vertical legislation, becoming in some cases very specific on how green product data requirements should be collected, built, accessed, stocked and exchanged at a point that **data carriers' specifications have been included in 110 legislative acts<sup>3</sup> and case-law** in the last 5 years. Concrete examples related to the GS1 sphere of activity include the EU general product safety regulation, the ecodesign for sustainable product regulation developing the digital product passport, the packaging and packaging waste regulation and the textile and wine labelling initiatives. All these legislative measures still demand other acts to be developed to support implementation and industry guidance.

That is why in the political term to come, it is expected that the quantity of acts including data requirements and data carriers' specifications will grow. Based on its expertise, GS1 in Europe<sup>4</sup> developed the following technical messages (see next page).

### 1D or linear

- Barcodes that are made up of parallel lines and spaces
- Most carry only a GTIN
- Can be scanned by traditional laser scanners or image-based scanners



### 2D or two-dimensional

- Despite being smaller than most 1D barcodes, they can carry **significantly more data**
- More reliable due to error-correction
- Require an image-based scanner to read (e.g. smartphone camera for QR codes) and traditional laser scanners are not compatible



<sup>1</sup> The scope of this paper doesn't cover the Healthcare sector

<sup>2</sup> [Search results - EUR-Lex \(europa.eu\)](#)

<sup>3</sup> [Search results - EUR-Lex \(europa.eu\)](#)

<sup>4</sup> <https://gs1.eu/activities/2d-barcodes/>

## GS1 in Europe's recommendations

# 1

Based on ISO/IEC 15459 standard, GS1 is the issuing agency responsible for unique identification of consumers goods and the GS1 global trade item number (GTIN) is today the most used identifier globally and cross-sectoral. In practical terms, that's the visible number under a barcode and what is behind the "beep" at physical and digital points of sale. If regulators need to include data carriers' specifications in legislation, **GS1 in Europe recommends that references are made to 2D data carriers and not to linear barcodes anymore** because:

- a. Traditional 1D (linear) barcodes can have limited data capacity;
- b. 2D barcodes typically offer error correction capabilities, ensuring data integrity even if the code is partially obscured or damaged;
- c. 2D barcodes contain detailed information in a smaller space, including batch numbers, expiration dates, and serial numbers, enabling better traceability throughout the supply chain and making recalls easier.

# 2

Moreover, in case regulators need to include data carriers' specifications, **GS1 in Europe recommends that they reference standardised 2D data carriers** because:

- a. ISO and GS1 standards promote interoperability among trading partners by ensuring consistent encoding and decoding of data. Using non-standard or outdated barcode formats may create compatibility issues, introduce errors due to the need for data interpretation, hinder communication and collaboration across the supply chain network;
- b. Standardised 2D barcodes, such as ISO/GS1 compliant Data Matrix, QR Codes, and RFID, can be encoded with more data than the EAN/UPC linear barcode. Within these 2D barcodes, both additional data and links to web-enabled information can be included through the use of GS1 Digital Link URI. Data might include the product's expiry date, batch/lot number or serial number but also provide access to the digital product passport.

# 3

Already in the last political term, EU policy makers have demanded consumers' accessibility to data requirements by including references to data carriers in legislation, without specifying that if another 2D carrier was already present on the product it could still be used. This has resulted in the proliferation of data carriers on the same product leading to error due to scanning the wrong carrier, inefficiency, extra costs and disruption. **GS1 in Europe recommends that, if regulators need to include a reference to standardised 2D barcodes in legislation, they take into account the fact that one standardised 2D carrier is enough** and fits all purposes because data access rights can be set to provide access to the right stakeholders that demanded data.

In conclusion, the 3 above-mentioned GS1 in Europe recommendations can be summarised in one sentence: **one standardised 2D carrier fits all regulatory needs.**

**About GS1 in Europe** - GS1 is a neutral, not-for-profit organisation dedicated to the implementation of global standards to improve the efficiency, visibility, and sustainability of products all around the world. GS1 in Europe is the European collaboration platform of GS1 regrouping 49 countries in Europe and beyond, representing more than 500.000 companies in Europe (more than 2 million companies in the world). GS1 in Europe role is to bring these companies around the table and foster collaboration to establish common rules and common standards. We strive to empower businesses to improve their efficiency, safety, security, and sustainability.

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