Anti-counterfeiting and anti-piracy technology guide

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Two-Dimensional Barcodes

Two-dimensional barcodes, also known as matrix barcodes or matrix codes, consist of a series of dots, spaces and squares. They can store a variety of data and have a larger capacity than one-dimensional barcodes. Data are stored in both the horizontal and vertical axes of the graphic image, which can be printed, embedded on a digital screen or otherwise presented for scanning and analysis.



Used for

- Authentication
- Tracking/Tracing

Suitable for

- Very small products
- Small products
- Medium-sized products
- Large products

Goes on

- Product
- Packaging

Can be used for

- Physical products

Visibility

- Visible

Reading device needed

- Yes

Connection to server

- Yes

Description

While the product data contained in one-dimensional barcodes is only retrievable when the relevant database is available, due to their large capacity, two-dimensional barcodes can encode internally all the information required to identify a product. Therefore, when scanned, they can immediately deliver a data file with the encoded information. Two-dimensional barcodes can also encode a unique URL, allowing relevant product-level or item-level (if the barcode is serialised) data to be retrieved from the cloud.

There are various types of two-dimensional barcodes, but the most widely used are QR codes and 2D Datamatrix.

QR codes by themselves do not offer protection against copies. They can, however, be combined with other authentication technologies (such as holograms, copy detection patterns or unique identifiers), to provide automated authentication via a smartphone scan.

Uses

Due to their higher capacity, the use of two-dimensional barcodes is rapidly spreading in all sectors where one-dimensional barcodes are already being used. They can be applied to almost all kinds of goods.

Implementation

Two-dimensional barcodes can easily be attached to products either via adhesive labels or by printing them directly onto the products or packaging. If you want to print two-dimensional barcodes directly onto your product(s), you will need to ensure that you have the appropriate processes in place to do this during packaging/printing or at any other relevant stage of the production chain.

When permitted users scan a code that contains a unique URL, they will typically retrieve dynamic information about the product. Therefore, you will also need a content/client management platform to manage the codes, the data associated with each code and the specific interaction levels for each different category of user. The platform may collect data about the scans performed; an analysis of that data can be used to detect counterfeiting and illicit activity.

Cost

Costs are limited to the price of printing the barcodes and the price associated with any supporting/backing labels used.

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