

Technology

The Interesting History of QR Codes

How a 1994 parts-tracking tool waited twenty-six years for phones, Apple, and a pandemic to make it ubiquitous.



Emmanuel Awosika ■ 11 June 2026 ■ 4 min read

The QR code (<https://www.qrcode.com/en/history/>) was invented in 1994 by an engineer at a Toyota subsidiary¹ who wanted a faster way to track automotive parts moving through a factory. For most of the next three decades it was a solution in search of a reader, familiar to logistics workers and almost no one else. Then, in the space of a couple of years, it became one of the most common symbols in daily life.

Its history is a lesson in how a good piece of engineering can sit unused for a long time, waiting for the rest of the world to build the conditions that make it useful.

A tool built for the factory

The barcodes in use in the early 1990s held very little information² and had to be scanned one at a time in a single orientation. On a busy production line that was slow, and workers often had to scan several codes to track a single component through its stages.

The engineer Masahiro Hara wanted a code that could hold much more data and be read quickly from any angle. Inspiration, by his account, came partly from the black and white patterns of the board game Go. The result was a square matrix that a scanner could lock onto instantly using the three distinctive squares in its corners.³

How the code works

A QR code stores data in two dimensions rather than one⁴, which is why it holds so much more than a barcode of the same size. The three large squares in its corners let a reader find the code and correct for the angle it is viewed from, so a phone can decode it whether the code is straight, tilted, or partly turned away.

Built into the pattern is error correction⁵, redundant information that lets a reader recover the full message even when part of the code is dirty, torn, or covered. That resilience is why a code printed on a crumpled receipt still scans, and why designers can drop a logo into the middle of one without breaking it.

Waiting for a reader

For most of its life the format was held back by a simple problem. Dedicated scanners existed in warehouses, but ordinary people carried no device that could decode a QR code quickly. The squares appeared on posters and packaging, but scanning one meant downloading a special app and fussing with it, and most people never bothered.

The technology was ready long before its audience was. The code did its job perfectly well in industry, and outside industry it sat mostly idle, a clever pattern that most people had learned to ignore.

The phone changed everything

What finally unlocked the format was the smartphone, and specifically the moment when phone cameras, processing power, and native operating system support all arrived together. Once a phone could recognize a code straight from its camera with no separate app, the friction that had held the format back disappeared.

A pandemic then supplied the reason to use it.⁶ Contactless menus, payments, and check-ins made the QR code suddenly useful to everyone at once, and a format that had waited twenty-six years became ordinary almost overnight.

Why it stuck

Once the habit formed, it held. The code is cheap to produce, works on paper and screens alike, and points a phone at any web address without a word being typed. That combination is hard to beat, and it is now printed on posters, receipts, restaurant tables, and product packaging everywhere.

The QR code did not win because it was new. It won because the world finally built the device that could read it, and then found a hundred reasons to. ■

■ Footnotes

1. The subsidiary was Denso Wave, part of the Toyota group. It patented the design but chose never to charge for its use, which let the format spread freely and is a large reason it became universal. ↩
2. A standard retail barcode holds about twenty characters. A single QR code can store up to roughly 7,000 digits or 4,000 letters, enough for a full web address with room to spare. ↩
3. Hara's team picked the three corner squares after studying piles of printed material for the arrangement of black and white areas that turned up least often, so a scanner would almost never mistake ordinary print for a code. ↩
4. Reading in two directions is why it is called a matrix code, or 2D barcode, as against the single row of stripes on the barcodes at a supermarket till. ↩
5. QR codes come in four correction levels. The highest can rebuild the full message even when about 30 percent of the code is missing or covered, which is what lets designers drop a logo into the middle of one. ↩
6. Before 2020 many people in the West had never scanned a code. Contactless menus and check ins during the COVID pandemic made it a daily habit within months, though QR based payment had already been routine in China for years. ↩