



FURNITURE



Operations Center

2D Barcodes

IBDO®

First Contact – Retail's New Data Interface

CH.1

It's fall 2027. Planning to meet a friend for lunch near the mall, you arrive early. You step into a furniture store to browse and kill some time. As you wander the sales floor, a smart sectional catches your eye — the latest in a line of advanced sofas that use [artificial intelligence \(AI\)](#) to learn and adapt to factors like your body temperature and position. You are planning to redo your living room and can't help but think the sectional would fit perfectly.

You are tempted to make a purchase but there are too many unanswered questions. How will the sofa look with the paint color you have chosen? Will it fit in the living room or are your eyeballed measurements off? Do you really need the pain of setting up yet another smart device at home?

As you are about to walk away, you notice a small tag with a QR code hanging from one arm. Curious, you scan it with your phone camera. It links out to a hub with all the information you could ask for. The setup instructions seem easy — the process is mostly automated. Swiping to a subsequent page, the sofa's dimensions auto populate. It is indeed a perfect fit.

Another feature lets you view the sofa in a digital room, complete with customizable wall color, and it's a match for the one you've already chosen. There's even a short video with the 3D avatar of a popular interior décor influencer offering suggestions for pillows, end tables, and other complementary items. You flag down an associate, who also scans the QR code before asking you to tap your phone against his mobile scanner. Just like that, you have a delivery scheduled for tomorrow afternoon.

This seamlessness is made possible thanks to 2D barcodes, a foundational element in the future of retail. UPC barcodes — which have been standard for decades — will be phased out by 2027, replaced by 2D upgrades like the QR codes that are already commonplace in other industries. These upgrades, which offer more customizability for retailers and greater convenience for customers, will fundamentally change how consumers engage with the products they buy. With this shift right around the corner, retailers looking to future proof their businesses need to know what it means for them and how they can prepare.



Retail's Data Uplink: Every Product, Every Detail

CH.2

Before UPC barcodes became the industry standard, retailers relied on manual data entry for sales and inventory management. Workers typed in product names or codes in warehouses and associates manually keyed in prices at the register, a process both time consuming and error-prone.

UPC barcodes introduced new levels of efficiency and standardization. Checkouts became faster and retailers were able to track inventory levels with greater accuracy and fewer errors. The optical scanners required to read UPC barcodes were also relatively cheap, providing a low barrier to adoption even for smaller businesses.

Fast forward to today, when retailers possess more data than ever before and they are feeling the limits of UPC barcodes, which cannot carry large amounts of information. Any data beyond the code itself must be referenced at POS system or on a scanning device. To future-proof logistics and operations and keep up with consumer demands, retailers need a better means of storing and sharing information.



This is where 2D barcodes come in. Thanks to their two-dimensional structure, 2D barcodes can hold far more information than their one-dimensional UPC predecessors — that includes product codes, but also lot numbers, expiration dates, serial numbers, product descriptions, and more. They can also link out to webpages with even more information. Because they are scannable with standard, image-based cameras (such as those found on any smartphone), 2D barcodes are accessible to both business and customers with no need for special equipment. Ready access to critical product information will make it easier for retailers to track inventory during normal operations or to identify and group products in the event of a recall or other emergency.

For consumers, 2D barcodes are poised to transform the shopping experience. In-store shoppers will scan codes to access a large and dynamic selection of product-specific content. Retailers will be able to design these content libraries to go as deep and broad as they want — including elements like style and fit guides, recipes and suggested pairings, user guides, and assembly instructions — saving paper and providing a convenient reference point for consumers to return to. No more large, itchy tags sewn into clothing items; no more fine print on packaging; no more lost instructions for that new kitchen hutch. With this information accessible through a 2D barcode, retailers can also simplify their labels and packaging, providing clearer visibility for important details and the ability to make updates without a total redesign.

The Great Migration: Navigating the Barcode Singularity

CH.3

As the industry navigates this transition, businesses may encounter forward- or backward-compatibility challenges as retailers and manufacturers adjust to 2D barcodes. Dual marking, in which products carry both traditional UPC codes and new 2D barcodes, will likely become the norm for several years.

To cut down on potential friction ahead of the change, retailers can take several proactive measures. Existing POS systems and scan guns may not be compatible with 2D barcodes, making hardware upgrades top-of-mind for many businesses. Retailers should take time now to scope out the cost of any equipment upgrades before they become a table-stakes necessity. Businesses still working with on-premises data systems will need to migrate their data to the cloud to make use of 2D barcodes' ability to link out to additional information. Doing so requires a solid data foundation, with information from across the organization stored in a standardized, readable, and secure manner.

Looking beyond basic product data, retail leaders should engage teams from across their businesses — including IT, quality assurance, sales, marketing, frontline workers, and more — to determine what content to connect to a given product code. What information will customers expect? What will they find most helpful? What will keep them coming back? Once these questions are decided, retailers should establish an ongoing review cadence to govern how content will be updated and maintained.

Retailers must also coordinate with their suppliers to ensure all parties can access relevant product data and are prepared to make the switch to 2D barcodes in a timely manner. Manufacturers responsible for attaching barcode labels to individual items may need additional time or resources to upgrade their hardware or data inventories to align with retailers' upgrades. Some products have longer shelf lives than others, creating differing levels of urgency: Electronics, which can remain on the shelves for months or years, may need to arrive marked with 2D barcodes earlier than food, which turns over at a higher rate.

The shift to 2D barcodes will not happen in a vacuum. The barcodes will work in conjunction with other advancements, enabling technologies like the [digital product passports](#) required by law in some jurisdictions.

Many companies will also adopt [radio frequency identification \(RFID\) tags](#) alongside 2D barcodes for more granular inventory tracking and speedier checkout experiences. Because RFID tags are not readable by consumers and require more specialized equipment, 2D barcodes provide a more accessible access point for information.

A retailer's exact mix of technologies will ultimately depend on their resource levels, specific industry, customer base, and regulatory obligations.



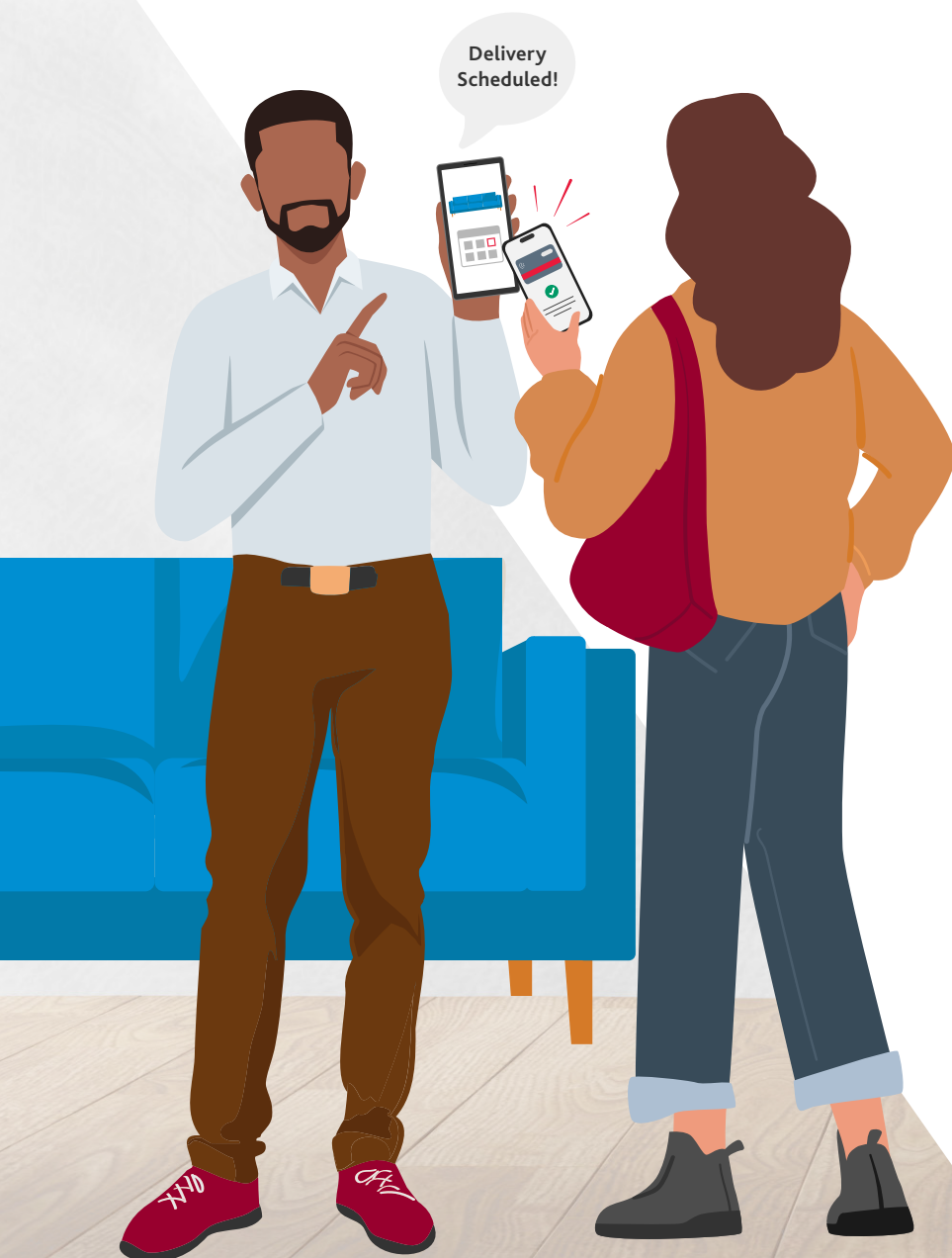
The Integration Initiative: How BDO Helps Unify Data, Devices, and Decisions

2D barcodes may seem like a modest change, but they represent the beginning of a larger retail transformation over the coming decades. These barcodes are a near-term, concrete example of how businesses can leverage their growing data inventories to provide deeper, more personalized experiences for customers. Retail relationships are no longer defined by single sales, but by ongoing engagement. Centralizing critical product information and supplementary content is an important step toward a future-proofed business.

In order for retailers to unlock the full potential of 2D barcodes, they will need to support their technological upgrades with smart approaches to data management, hardware improvements, and content implementation. BDO Digital's [Data Analytics Consulting Services](#) can help you navigate the range of considerations and upgrades necessary for success.

We take a holistic approach to data enrichment, evaluating UPC-related information to determine what additional fields, formats, and data you want to make available to customers.

Meanwhile, our [Management Consulting Supply Chain](#) professionals can help retailers forecast what upgrades their vendors and partners will need, develop plans for rolling them out, and establish frameworks for ongoing communication and information sharing.



Are you ready to unlock the next dimension of retail intelligence?



ABOUT BDO'S RETAIL & CONSUMER PRODUCTS PRACTICE

BDO has been a valued business advisor to retail and consumer products companies for more than 100 years. The firm works with a wide variety of clients across the traditional retail, consumer product and ecommerce sectors, ranging from multinational Fortune 500 corporations to emerging businesses, on myriad accounting, tax and advisory issues.

BDO USA, P.C.

Our purpose is helping people thrive, every day. Together, we are focused on delivering exceptional and sustainable outcomes and value for our people, our clients and our communities. BDO is proud to be an ESOP company, reflecting a culture that puts people first. BDO professionals provide assurance, tax and advisory services for a diverse range of clients across the U.S. and in over 160 countries through our global organization.

BDO is the brand name for the BDO network and for each of the BDO Member Firms. BDO USA, P.C., a Virginia professional corporation, is the U.S. member of BDO International Limited, a UK company limited by guarantee, and forms part of the international BDO network of independent member firms. For more information, please visit: www.bdo.com.

© 2025 BDO USA, P.C. All rights reserved.

