

## WHITE PAPER



# Digital Paper in Smart Retail

*“Electronic shelf labels made with E Ink® are a big enabler for the digital transformation of stores.”*

Loic Oumier | VP Operational and Digital Marketing, SES-Imagotag

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Hundreds of retail bankruptcies within the past five years, including the Toys “R” Us megastore, have made the term “retail apocalypse” part of our common vernacular. The Amazon juggernaut hasn’t lost any steam, commanding 49 percent of all U.S. online sales. After all, it’s hard to resist the urge to ask Alexa to order the cat food, or the paper towels, or the whatever.

But the reality is that all the dire headlines have masked some underlying truths. First, North American brick and mortar retail is a lot more resilient than anyone gave it credit for. It turns out consumers still find the personal, tactile act of shopping — with the ability to try on pants or check the ripeness of fruit — to be irreplaceable.

- 87 percent of all consumer spending in the United States still occurs offline.<sup>1</sup>
- Today, for each company closing stores, 5.2 are opening stores.<sup>2</sup>

While retail is alive and reasonably well, the extreme pressure to compete is compelling businesses to innovate on a whole new scale. As a result we’re now at the early stages of a massive digital transformation that will become known as Smart Retail.

### **Online and physical retail are converging to create a new paradigm.**

At the heart of the retail transformation is what Forrester Research defines as the emerging digital store experience: “Technologies that link or enhance a retail physical store experience with an online experience for customers.”<sup>3</sup> Simply put, the retail store as we’ve known it is rapidly merging and blending with the online world. What’s driving the change is the reality that today’s shoppers have an unprecedented level of control; they will shop whenever and however they choose, and the retail stores that meet them where they are (often on their smartphones) stand to win. To paraphrase the Borg on Star Trek, retail will be assimilated.

The good news is that we consumers are benefiting in ways that weren't possible just a few years ago. We can compare prices while shopping in the store. We can order online and pick up the item at a local store without paying shipping fees. Or order online and have retail employees ("pickers") walk the aisles for us to pick up our stuff and have it ready at the counter. And as you'll see in this white paper, these are just a few of the innovations that are emerging at the speed of digital.

Of the top 50 online retailers, nearly all have physical stores. There are clear advantages to having both.

- 42 percent of retailers surveyed<sup>4</sup> say that faster delivery of online orders is their top customer-facing priority. Having local store branches where customers can get their orders is the ultimate in convenience.
- 88 percent of U.S. online adults use a smartphone; 37 percent who researched products on a smartphone in the past three months used their phone in a store to compare prices, 30 percent looked up product information, 20 percent redeemed a coupon.<sup>5</sup>
- When consumers go into the store to return an item that was originally purchased online, 67 percent browse or shop in that store afterwards.<sup>1</sup>

### **Electronic Shelf Labels (ESL): The unexpected technology that's enabling an omnichannel smart retail experience.**

What are ESLs? Made with E Ink digital paper technology (also called ePaper), ESLs are essentially Internet of Things (IoT) wireless devices in the form of retail shelf labels. They provide retailers the ability to quickly and easily update a range of content on the labels from new pricing to product reviews to eye-catching graphics in a range of colors. Instead of having a small army of retail employees manually change printed labels, smart retail stores can make changes instantly to ensure price accuracy, compete with competitors, and serve up promotional offers to customers at the shelf.

ESLs had their first commercial success in Europe, where relatively high wages made manually changing paper labels uneconomical. Some countries imposed stiff fines on retailers if their customers were shown the wrong price. The next wave of adoption was in Asia where large online retailers like Alibaba launched brick and mortar stores and sought out the latest technology to merge their omnichannel operations. North America, with its proliferation of "big box" stores and relatively low labor costs has until recently taken a wait and see attitude to ESLs. Cheap labor meant it was still lower cost to have employees manually change labels. Amazon's purchase of Whole Foods — following the trajectory of Chinese online retailers opening stores — served as a wake-up call to North American retailers that the blending of offline and online was a business imperative.

***“Digital appliance labels enable associates to be more productive with their time. Instead of spending multiple hours manually changing price signs, our associates can reallocate their time to engage with customers in a high-touch category.”***

— Craig Menear, CEO of Home Depot, a Displaydata customer.

North American retailers are now doing the math to find ESL return on investment (ROI) makes sense. One of the key drivers for the change is fast-rising labor costs in a tight retail labor market. Average hourly earnings for 13.4 million non-supervisory retail workers jumped 5.1 percent in 2018 for the biggest advance since 1981.<sup>6</sup> In one recent study,<sup>7</sup> 91 percent of retailer respondents globally reported that they tracked the cost of making manual labeling or signage changes related to pricing and promotions. The cost amounts to between 1 and 4.99 percent of average monthly store turnover for 67 percent of respondents, representing some \$104 billion in sales during 2017.

Progressive North American retailers are making ESLs a central part of their digital transformation strategy. What’s driving them to see ROI? Price accuracy and the ability to be agile with pricing in the face of intense competition are major factors. It can take days for a corporate mandated price change to be implemented at the store level the old way — a big problem if customers are checking out a competitor’s price on their phone while they’re shopping in the store. Global ESL provider Displaydata helped one major retailer prepare for a Black Friday sale with 800,000 price label changes across 1,700 stores during the holiday season with a 100 percent success rate. “When the consumer is hungry for information,” says Displaydata CEO Andrew Dark, “You need to be agile.”



Photo courtesy of Displaydata

But the bigger opportunity is today’s smart store imperative: Create optimum synchronization between offline and digital channels, with the customer experience at the center of the equation. “Every ESL,” says Oumier, “is an IoT connected device in front of the customer that opens a door to a wide range of services and solutions.”

The connected nature of ESLs provides new ways for retailers to be price competitive in order to win sales with tech-savvy consumers. Some retailers are sweeping competitors’ websites and featuring a competitor’s price on the ESL next to their lower price, making it easier for customers to make a decision in the moment.

Achieving “price velocity” for competitive advantage, while freeing up store associates to help customers, is very appealing to progressive retailers. Pricer, a global ESL provider, is on tap to complete an ESL rollout in all Best Buy stores across the United States. Whole Foods, also a Pricer customer, was an early adopter and is currently expanding its use of ESLs as part of its comprehensive strategy for store digitalization. “ESLs are essential for better store efficiency,” says Charles Jackson, Pricer’s head of the Americas, “but also great for motivating employees who prefer to be with customers instead of changing labels.”

### **A beacon for pickers, a boon for brands and marketers.**

Smart retail stores can integrate dedicated shopping apps with in-store geolocation and ESLs, and deliver coupon offers to customers while they’re in the store. Apps can show customers not only where they are in the store relative to the products they want, but also where the bargains are on the brands they like. Customers can scan QR codes on the ESLs to learn more.

ESLs can be designed with LED beacons that flash when the customer approaches, making it faster and easier for them to find what they’re shopping for. The same technology allows store employees to quickly pick out the products customers have ordered online so they’re ready at the register when they arrive.



Photo courtesy of Displaydata

### **The smartest retail solution is also the most sustainable.**

ESLs are not only helping retailers improve their bottom line, they’re also supporting corporate sustainability. Leading Belgian retailer Colruyt estimates that switching to ESLs means they will save approximately 90 tons of paper yearly.<sup>8</sup>

ESLs can also help dramatically reduce food waste. With dynamic pricing for fruits and vegetables approaching their sell-by date, Pricer estimates their grocery customers can reduce waste by 20 percent to 40 percent. But the biggest reason ESLs are sustainable is due to the underlying E Ink digital paper technology with its ultralow power consumption.



Photo courtesy of Displaydata

***“Perishability doesn’t just apply to fruits and vegetables. If a retailer doesn’t sell a 55-inch TV within six to seven weeks you’ll end up with a next generation TV model coming in and you’ll have to discount the prior model.”***

— Andrew Dark, CEO, Displaydata

### What is digital paper and how does it work?

Digital paper is known by most people as the screen in their eReader, matching the look of printed paper but bringing the advantages of digital media. Particles within microcapsules or microcups are coated onto a thin film layer and act as a form of ink, but instead of ink being pressed permanently onto paper made from dead trees, E Ink’s digital particles are automatically recycled to create new images. Digital paper only draws power when images are updated, and requires zero power to display a static image for long periods of time.



Photo courtesy of SES-imagotag



To put this in perspective, an E Ink display uses about 99 percent less power than the liquid crystal displays (LCD) used in television screens and many types of mobile devices. ESLs made with E Ink require so little power, they can operate for an average of five years running off a small cell battery.

E Ink is available in black and white, with red and yellow optional, for displaying both text and graphics. Eager to grab the attention of busy shoppers and grow sales, a growing number of retailers and brands are collaborating to show colorful promotional graphics at the shelf that tie in with their marketing campaigns.

***“Retailers are willing to trust this technology long-term.”***

— Charles Jackson, Head of the Americas, Pricer



Photo courtesy of Pricer

The fact that ESLs made with digital paper have been used successfully for years in Europe and Asia is another reason North American retailers are now comfortable making sometimes large investments to deploy ESL technology. E Ink's digital paper has withstood the test of time, with proven reliability in all kinds of store environments.



Photo courtesy of Displaydata

### **What's in store for ESLs.**

ESL providers see unlimited possibilities for inventing new ways to engage customers and drive results for retailers. The merging of Artificial Intelligence (AI), big data, e-commerce and the in-store retail shopping experience has just begun and will accelerate as more North American retailers adopt ESL technology to gain competitive advantage.

One thing is for sure. With store employees freed from the grunt work of manually changing price labels, they'll be better able to focus on what really matters — helping customers.



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## About the Author

Ted Page is a Co-Founder and Principal of Captains of Industry. Page has created content and marketing for a wide range of global companies including Apple, Microsoft and Starbucks.

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## About the Sponsor

E Ink is the originator, pioneer and commercial leader in digital paper technology. The company delivers its advanced display products to the world's most influential brands and manufacturers, enabling them to install extremely durable, low-power displays in previously impossible or unimaginable applications and environments.

E Ink encompasses the combined E Ink Corporation, which was spun out of the MIT Media Lab in 1997 to commercialize electronic ink and EPD technology, and Prime View International, which was established in 1992 as the first TFT LCD company in Taiwan, focusing on high quality small-to-medium sized TFT LCDs. In 2009, Prime View acquired E Ink Corporation to further integrate and expand the EPD supply chain and the new combined companies were branded as E Ink.

E Ink's corporate philosophy centers around delivering revolutionary products, excellent user experiences, and environmental benefits through advanced technology development.

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## Sources:

- 1) BigCommerce Omnichannel Buying Report
- 2) IHL Group
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- 4) National Retail Federation and Forrester Research Joint Study
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- 6) Bloomberg
- 7) Displaydata PlanetRetail Report
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