



Why reaching consumers through intelligent packaging is crucial to your business

Digital transformation in the packaging/retail
supply chain

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intelliFLEX.org 613.505.4775
pac.ca 416.490.7860



A not-for-profit industry alliance founded in Canada, intelliFLEX is a vital partner for accelerating the growth of flexible and hybrid electronics section across North America and abroad to enable the Internet of Everything.

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Executive Summary

In October 2017, the intelliFLEX Innovation Alliance and PAC Packaging Consortium through their joint intelliPACK program convened a Get Smart Summit. This one-day event gathered decision-makers from across the supply chains for packaging and retail, as well as for the printable and flexible electronics (FHE) required to add intelligence to packaging.

This report draws on the Summit's presentations and discussions to explore how and why packaging companies, brand owners and retailers must work with each other and with FHE partners to create a new and digitally driven way of doing business.

The digital camera shattered the monopoly of film. Netflix killed Blockbuster. Uber is turning the taxi industry on its ear. We now live in a time when Tesla Motors has a larger market capitalization than Ford Motor Co.

Recent history is littered with examples of brands that enjoyed market dominance, even market monopolies, that ultimately failed because they were too slow to acknowledge and respond to the inevitability of change. In recent years, the nature of that change fell under the heading of digital transformation, even in industries that had traditionally not been characterized as digital.

Digital transformation is steam-rolling the supply chain for traditional retail all the way from converting and packaging companies, to brand owners and retailers in all segments of the marketplace.

What is your digital transformation strategy as a packager, brand owner, retailer?

Retail has gone omnichannel. Bricks-and-mortar outlets now compete with ecommerce sites and mobile. Retail chains, both instore and online, face stiff competition from online marketplaces like Amazon and Alibaba.com. Retail brands struggle to stand out in a crowded marketplace that includes an increasing number of private labels and knockoff imports, and understand how to win the hearts and minds of consumers.

Retailers want

- **Sales, sales and sales**, to maximize sales on their shelves and not from Amazon and other ecommerce sites, and to end showrooming.
- **Efficiency across their supply chains to reduce costs and enhance sales**, with technologies like RFID to better manage re-ordering, inventory, distribution, shipping and just-in-time delivery.
- **Data**, to give them line-of-sight control of their businesses real time, because what they want most is control and high efficiency, with insights into consumer preferences and buying habits.
- **Differentiation**, to stand out and be seen as different and stop fighting the same battle as an interchangeable retailer in their vertical (e.g. Lowes vs. Home Depot).

- **A Sprinkle of Magic Dust**, to have cachet and be seen as the cool kid on the block. Take Apple, for example.

Consumers want:

- **Ultimate ease and convenience and competitive prices**, a mindset driven by the millennial generation.
- **Ultimate choice that is meaningful**, but not endless.
- **Ultimate transparency**, with digital product information about where a product was made, what were the conditions for the factory workers, how was it made, what are the ethical standards, why is it worth the price being charged, etc.
- **Ultimate personalization**, because consumers want it to be about them, with recommendations based on habits, patterns and behaviour.
- **Ultimate experience**, consumers increasingly favour the experience that comes from the consumption of a good over the good itself.

Product brand owners want:

- **Sales, sales and sales** – to avoid losing market share to other CPGs or in-house brands.
- **Insight through data**, to keep current on what will keep their brand relevant and appealing to consumers.
- **Engagement**, to be part of a two-way conversation that influences the decision to purchase and re-purchase, builds loyalty, and develops, direct digital relationships with individual consumers.
- **Differentiation**, just like retailers, to stand out and be seen as different.
- **A Sprinkle of Magic Dust**, like retailers, to have cachet and be seen as the cool kid on the block.

Senior executives across the supply chain have but one choice if they want to remain relevant and viable: embrace digital transformation. They must consider new technologies that can remake what are quickly becoming outdated and unprofitable ways of doing business.

The consumer is now in the driver's seat. This has ripple effects across the entire packaging/retail ecosystem.

The package – remade as an intelligent device through additive manufacturing techniques to collect, store and transmit data – has the pivotal role to play as a platform to drive new supply chain efficiencies for the enterprise, to harness more of the big data that is increasingly vital to more informed and timely executive decision-making, and to engage in mutual dialogue with consumers to revive sales and build loyalty. It is the digitization of the

last mile, even the last few inches, of your business, possibly the most important one – the pathway to your customers.

Packaging companies must work with technology partners, retailers and product brand owners to create intelligent packaging that will drive a tangible ROI. In this paper, we explore how two packaging companies, Jones Packaging of Canada and WestRock of the U.S., embraced this change to remain competitive and relevant to maintain and grow market share. We also offer numerous examples of partnerships between FHE companies and product brand owners to create compelling business development and marketing programs using intelligent packaging.

Digitization of the last mile through intelligent packaging is not a project for the marketing department. It's fundamental to digital transformation at the enterprise level and as such, requires leadership and direction from the top, with a willingness to test new technologies.

But when it comes to new technology development, adoption and deployment, the packaging/retail ecosystem is fragmented. There is pressing need for a unifying force to provide strategy and vision.

As we conclude in this paper, this may require the creation of a new dedicated executive-level role– the Chief Data Officer. The CDO is granted authority to cross boundaries between internal departments and engage with counterparts across the supply chain to secure those partnerships that are necessary between packaging companies, design agencies, technology companies, product brand owners and retailers to drive digital transformation across the enterprise and harness the full power of big data, using packaging as the vehicle of change.

Introduction: Change or become irrelevant

Digital transformation is steam-rolling the supply chain for traditional retail all the way from converting and packaging companies, to brand owners and retailers in all segments of the marketplace.

Senior executives across the supply chain have but one choice if they want to remain relevant and viable: embrace this transformation. They must consider new technologies that can remake what are quickly becoming outdated and unprofitable ways of doing business.

Retail has gone omnichannel. Bricks-and-mortar outlets now compete with ecommerce sites and mobile. Retail chains, both instore and online, face stiff competition from online marketplaces like Amazon and Alibaba.com. Retail brands struggle to stand out in a crowded marketplace and understand how to win the hearts and minds of consumers.

All this has left consumers in the driver's seat. Their paths to purchase are anything but direct, influenced by online reviews and social media sentiment. Brand owners and retailers are further challenged to meet the demands of a socially conscious younger generation that expects full transparency around product origin, ingredients, fair business practices and environmental safety. All of this, while delivering a competitive price at the store.

Retailers are closing physical stores and investing in physical and digital transformation initiatives as they attempt to adjust. Some have moved too slowly and suffered the consequences (take the recent bankruptcy filing of Toys R Us and the demise of Sears Canada). Others hold to the short-sighted belief that introducing new services in-store and changing store formats will save them. What they all need are new digital ways to manage their supply chains, their inventory and their engagement with consumers to ensure the right products are in the right place at the right time for a ready buyer.

Product brand owners are losing market share to in-house brands, no name companies and smaller more exciting local brands that are digital savvy. They are under pressure from cost increases in the supply chain, environmental movements and higher consumer debt that has curtailed discretionary spending, as well as a growing number of counterfeit products.

To maintain their relevance, CPG brand owners need active and ongoing dialogue with consumers to make their products stand out on a crowded shelf. They need to create a conversation that extends beyond the purchase. The time has passed when a flashy advertising campaign based on focus groups sufficed to reach sales targets. Product brand owners need to actively track and influence consumer sentiment in real time to have some control over the consumer's purchase, and repurchase, decisions. At the same time, they must ensure that products are authentic and can be verified by the consumer.

And how does all this impact packaging companies? The obvious answer is brands and retailers that can't move product need to buy less product packaging. That leaves a packaging company in a passive and reactive state if they hold to the status quo. But there is a better option. They can seize the opportunity to work with retailers and brand owners to create *intelligent* packaging that will drive new efficiencies in the supply chain, provide product authentication and foster that dialogue with the consumer. Most importantly, they

can enable the data collection and analysis that everyone needs for actionable insight to make more profitable and timely business decisions.

This takes partnerships. Retailers, brand owners and packaging companies must work together, and with other solution providers outside their traditional networks, such as the technology companies and integrators that are developing intelligent packaging capabilities. It is the digitization of the last mile of your business, possibly the most important one – the pathway to your customers.

This level of strategic collaboration may require the creation of a new senior level executive within an organization, a “Chief Data Officer” with the cross-departmental authority within an organization to define and execute, and to be held accountable for the results.

In October 2017, the intelliFLEX Innovation Alliance and PAC Packaging Consortium through their joint intelliPACK program convened a Get Smart Summit. This one-day event gathered decision-makers from across the supply chains for packaging and retail, as well as for the printable and flexible electronics (PFE) required to add intelligence to packaging.

This report draws on the Summit’s presentations and discussions to explore how and why packaging companies, brand owners and retailers must work with each other and with PFE partners to create a new and digitally driven way of doing business.

We also include select results of the electronic polling of attendees that we undertook during the Summit.

Part 1: Change is coming faster than you expect

“If you don’t like change you will like something even less and that’s irrelevance.”

- Joe Jackman, Jackman Reinvents

What is your digital transformation strategy as a packager, brand owner, retailer? Digital transformation is a strategic imperative that requires leadership and direction from the top.

The digital camera shattered the monopoly of film. Netflix killed Blockbuster. Uber is turning the taxi industry on its ear. We now live in a time when Tesla Motors has a larger market capitalization than Ford Motor Co.

As retail change management consultant Joe Jackman told our Get Smart Summit audience, mobile technology is accelerating change, niche platforms are becoming more mainstream, this thing called the Internet of Things is gaining momentum and data is now *always* part of the equation.

On the product brand owner side, despite billions spent each year on mass media advertising and aggressive cost cutting, a majority of top consumer packaged goods (CPG) companies continue to suffer declines in market share and revenue, said presenter Derek Awalt, Senior Supply Chain Integration Manager at Digimarc Corp.

The rise of the ultimate consumer

Consumers use mobile technology more than ever before to make a purchase decision, at home and at the point of sale. Younger shoppers are now using mobile devices 97 per cent of the time to research a purchase. It’s not just a question of whether they should buy a product, but what should they get with that product, like pairing wine with food, or clothes with shoes. The trend is a shift away from simple price comparison to the search for inspiration and ideas. Consumers are less loyal to brands and their expectations have been shaped by new normals such as free shipping with Amazon Prime.

This makes for uncertain economics across the retail supply chain. There is far less visibility about where new stores should be built, if at all, and *how* capital should be invested into digital transformation.

Most retailers today have too many physical locations. The market is overbuilt and becoming irrelevant, with consumers now completing more than half of their transactions through a mobile device. The democratization of online retail thanks to out-the-box services like Shopify and devices like Square is putting big traditional retail at a serious disadvantage versus smaller, more nimble competitors that don’t carry the same real estate overhead as big chains.

Other new market entrants are choosing to compete in bricks and mortar with far less costly models that have a showroom-type retail outlet combined with speedy order fulfillment and delivery from a warehousing facility.

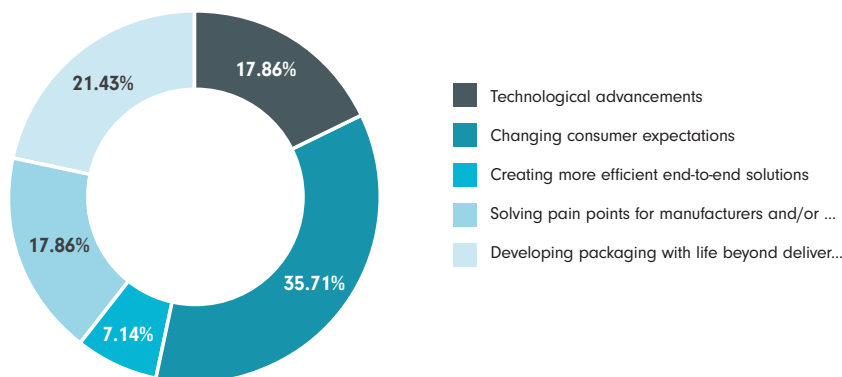
Faced with such a parade of change, industry statistics show that the average retail chief marketing officer lasts only about 18 months on the job. This leads to a big gap in leadership talent to engage in a consistent and efficient transformation strategy for big brands.

Sears, Macy's, Sony, Office Depot, JC Penny, Walmart and American Eagle Outfitters are just a few of the iconic brands that have filed for bankruptcy or closed stores over the past two years. Others have seen the writing on the wall and embarked on digital transformation strategies with an appropriate high sense of urgency.

The need for an integrated approach

Take Cara Operations in the hospitality industry, owner of such brands as Harvey's, Swiss Chalet, Kelsey's and East Side Marios with more than 100 corporate and well over 1,000 franchised restaurants cross Canada. It is refreshing its brands with new menus and updated restaurants and partnering with UberEats for delivery. Cara is also adding new apps for online ordering, a new CRM system for digital engagement with the consumer and a new satisfaction management system for local franchisees to always be responsive to how guests feel about their experience. All this has been part of an aggressive strategy to grow topline sales, consolidate restaurant brands, control overhead costs and maximize earnings. The result has been stronger sales, earnings and improving margins.

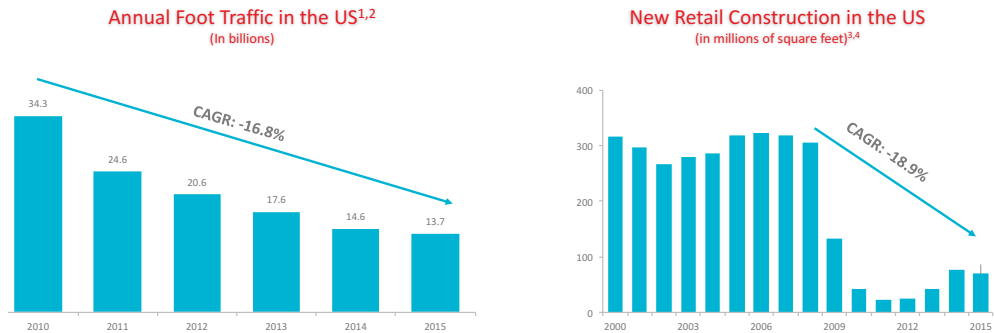
What represents the greatest single opportunity for intelligent packaging?



According to Summit presenters, retailers are finding growth and success by taking an approach comparable to Cara to integrate direct-to-consumer, ecommerce and marketplaces into their global expansion strategies. Big brands like Nike and Under Armour have even launched their own marketplace sites to compete in select markets such as China. Just look at Walmart's \$3.3-billion purchase of Jet.com to expand its omnichannel capabilities because its own ecommerce platform isn't enough.

Decline in Foot Traffic

The evolution of consumer shopping behaviours and preferences has led to a decline in mall foot traffic and retail construction



Sources: PricewaterhouseCoopers, RetailNext, Wall Street Journal.

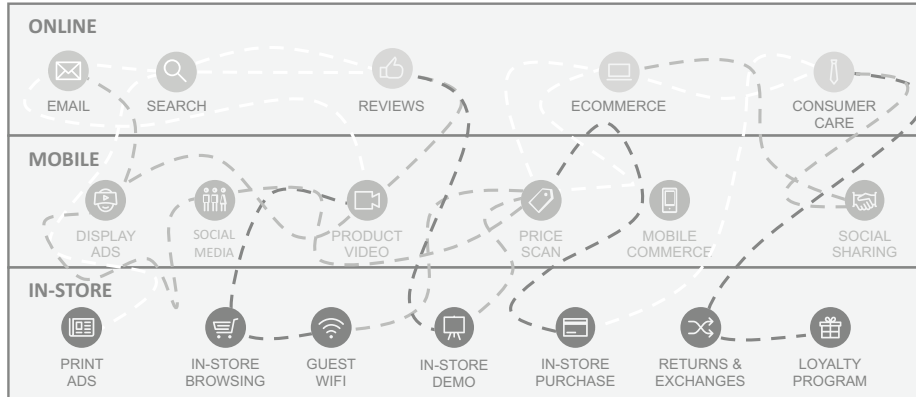
On the other hand, mall foot traffic and retail construction is on the decline in North America as consumer shopping behaviours, options and preferences evolve. This has led some malls to experiment with embedding advanced analytics-enabled retail solutions to provide curated experiences for consumers and drive traffic. Retailers have begun to offer online ordering and pickup at physical locations. Stores are being redesigned and remodeled with a fresh emphasis on customer service. Iconic malls are getting upgrades for a better shopping experience and a better selection of brands.

But this drive to remake traditional bricks-and-mortar retail isn't proof against the rise of the online marketplace. Premium brands are challenged to justify their price points by enhancing the *experience* of dealing with their brand to compete against a large market share captured by lower-cost in-house brands and/or low-priced knockoffs available through online marketplaces. Mid-market retailers across categories in particular continue to struggle, sandwiched between discount and premium retailers that are faring better.

A retailer isn't competing with a rival in the same retail vertical as much as the other verticals where the average consumer is allotting a portion of their shrinking discretionary budget.

Changing Path to Purchase

Digital technologies have enabled consumers to interact with retailers and brands across more touch points than ever before, dramatically changing their path to purchase



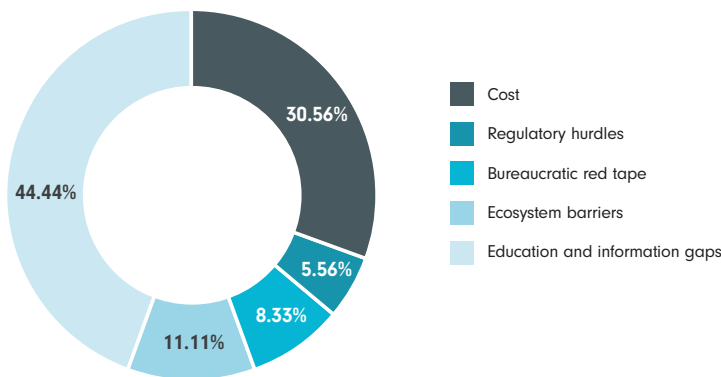
Source: The Oalliance (<http://theoalliance.com/wp-content/uploads/2016/01/2016-Customer-Centric-Commerce-Research-Report.pdf>).

And with so many paths to purchase and so many consumer touchpoints, data points number in the trillions. All this has left retailers and brand owners desperate to lever new big data analytics and artificial intelligence tools to gain the insight they need to compete. In fact, data scientists are in such high demand salaries have shot into the hundreds of thousands and few stay in the same job for more than 18 months.

What cannot be overlooked in all this is the vital role that packaging has to play.

Part 2: The need to digitize your 'last mile'

What is the primary barrier to smart packaging Adoption?



What do retailers want?

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- **Efficiency across their supply chains to reduce costs and enhance sales**, with technologies like RFID to better manage re-ordering, inventory, distribution, shipping and just-in-time delivery.
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Packaging is the vital component of digital transformation

Traditional packaging has always played a critical role to educate, entertain and woo the consumer as the narrator of a brand. This extends beyond the actual product container to include retail aisle and shelf displays. It is a primary tool in the marketer's tool box and that hasn't changed in this time of transformation.

But how packaging and displays can be used to play these roles has undergone a dramatic shift.

There is only so much real estate on a box, bottle, wrapper or blisterpack. Many goods today are over-packaged in a bid to include more information for the consumer and stand out on the shelf. This has negative repercussions across the entire supply chain – more materials are needed for manufacturing, product takes up more space and costs more to store and ship, and there is more waste to deal with at end of life.

Additive technologies that add intelligence

Today's flexible and hybrid electronics technologies, as well as the next-generation of the humble barcode, enable packaging to say more, and do more, with a much smaller physical footprint.

They can turn packaging of all kinds into connected devices that can interact with mobile technology to collect and transmit data for new supply chain efficiencies, drive consumer engagement during and after the point of sale to enrich the user experience and build brand loyalty, and to inform critical decision making at the executive level.

In a Digimarc survey with Harris Insights & Analytics, 78% of US adults – across all age groups – have wanted MORE information than appears on a product package.

If they don't get that information, they are 75% more likely to research and purchase online.

The risk? If a sale is terminated in the store and the shopper goes online, they may find another source from which to make their purchase.

For example, packaging can be printed with invisible touch-sensitive coding using conventional printers. This coding, which will activate the touchscreen of any mobile device, is far more versatile and less costly to produce than traditional RFID tags, more secure and dynamic than QR codes, and eco-friendly.

Another example is Summit presenter Talkin' Things and its NFC-based smart packaging system for iOS and Android that promotes consumer engagement and protects against threats related to brand, such as counterfeit knockoffs.

Benefits across the enterprise

Such additive intelligence has benefits throughout the packaging journey, said Digimarc's Derek Awalt. It may be parts matching on the manufacturing line, faster discovery and selection of case lots in the distribution centre, and more efficient and automated inventory management at the store.

Intelligent packaging also provides product brand owners with stronger tools for authentication and security against counterfeiting, tampering, loss and theft.

For retailers, connected shelves and packaging tracks what sells and makes inventory management much more efficient.

Benefits for consumer engagement

Intelligent packaging serves as an interactive platform for gamification, media and content publishing and branding, to personalize the consumer experience and convey additional contextual information digitally instead of with a larger package or printed insert.

This information could include:

- Product recommendations
- Instructions on how to use and assemble
- The brand story
- Edutainment
- Easy reordering/replenishment
- Links to related networks or communities of interest to the consumer
- The transparency and disclosure demanded by today's socially conscious consumer.

For retailers, low-cost, low-power and even flexible touch displays give brands a whole new way to stand out in a crowded marketplace. Reward cards can become smart cards that store data and interact wirelessly when consumers walk into a store, for promotions and other features to personalize the shopping experience.

Savvy brands are already acting

ExxonMobil

The multinational oil and gas company teamed with Summit presenter Talkin' Things to provide consumers with more information on its Mobil 1 Annual Protection synthetic motor oil. Talkin' Things NFC-based smart packaging system for iOS and Android provided tap and learn capability on product containers, so consumers could learn more about Mobil 1, how it works, select the right grade of oil for their vehicle and receive digital coupons and promotions.

Digimarc

Summit presenter Digimarc has developed watermarks that can be incorporated onto packaging with conventional high-volume production techniques. These watermarks, imperceptible to consumer, are embedded over the entire package surface and engrained with the visible graphics. The watermarks are detectable with optical scanners and replace conventional barcodes. They can be scanned for checkout, but also for inventory and supply chain management. The watermarks can also be printed onto retail aisle and shelf displays.

Retailers and grocers have already signed up. Digimarc's technology is also being integrated with an inventory scanning robot that can complete in 90 seconds, with 99.9 per cent accuracy, a scan that would take a person with a handheld device 90 minutes.

Thinfilm

At Thin Film Electronics, intelligence is added to packaging with printable electronic memory and smart label sensors that employ NFC technology. Presenter Bill Van Orsdel, Director of Business Development, North America for Thinfilm, cited several examples of how brands are digitally transforming their supply chains using additive intelligence.

For, example, the Korean Red Cross substantially reduced some US\$70 million in expired food waste by requiring its supply chain of food producers and farmers to adopt NFC tags that dramatically improved the efficiency of a system for on-demand shipping.

California-based Coronado Brewing Co. used Thinfilm's NFC SpeedTap tags to promote its CoastWise beer as part of a promotion in conjunction with Earth Day and the Surfrider Foundation. SpeedTap tags provided item-level tracking and advanced analytics to target marketing campaigns, drive consumer engagement and trigger repeat purchases.

Coca-Cola

Coca-Cola Canada distributed 30 million specially marked "Play a Coke" bottles synced to one of 150 playlists supplied by Spotify. After downloading the app, consumers could point their phone's camera at a specially marked bottle and play the selected playlist in either English or French. Users can play, pause and control song selection through Coca-Cola's app augmented reality feature by twisting the bottle back and forth.

Pepsi

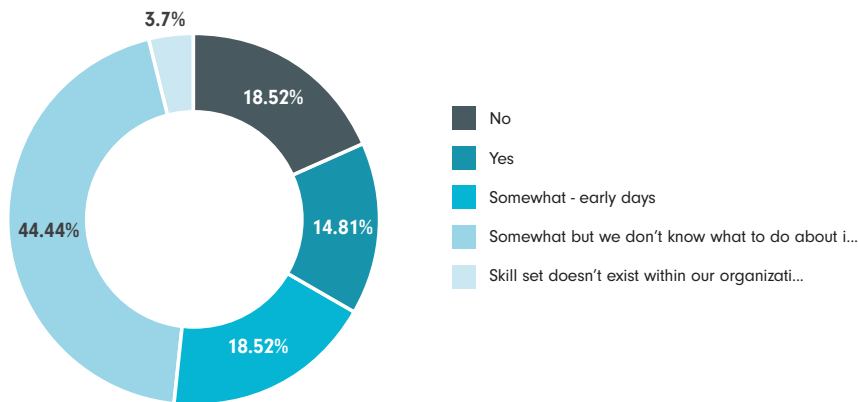
Pepsi partnered with Snapchat to market its limited-edition cinnamon-flavored drink, Pepsi Fire. Pepsi Fire containers were labeled with snapcodes for customers to scan and add exclusive filters to their snapchat photos. The filters included floating 3D objects, branded

geofilters and an exclusive game called “Pepsi Summer Quest,” similar to the app-store hit, Temple Run.

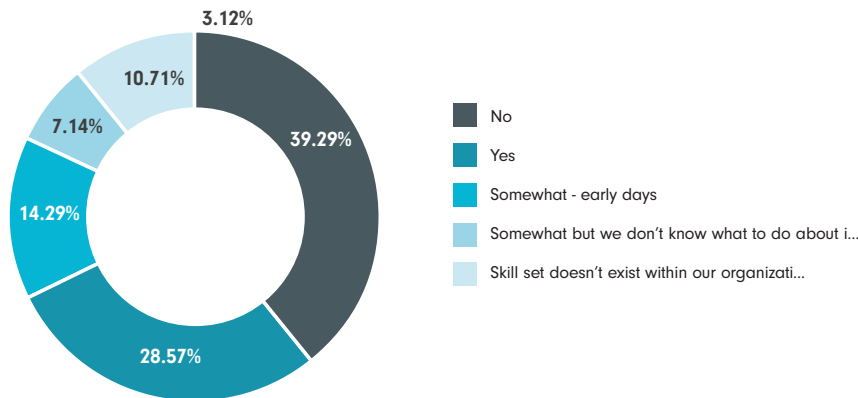
Heineken

Heineken turned some of its bottles into navigation tools and placed them around Amsterdam to lure unsuspecting tourists to the Heineken Experience. The navigation bottles have a built-in compass mechanism. Once you grab the bottle, it vibrates, the cap lights up red, and swivels to point out the route to follow which ended up at the Heineken Experience Center.

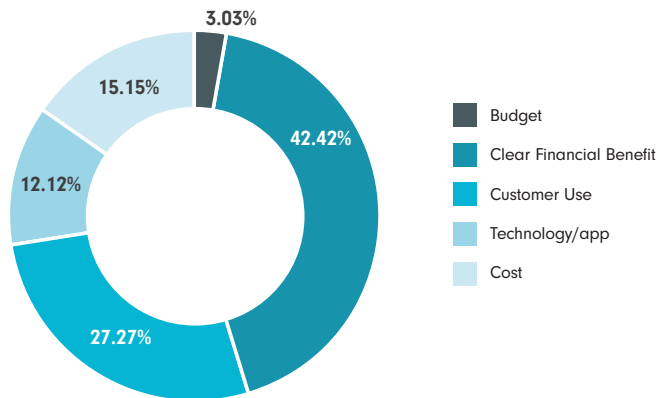
Do you feel your executive team understands the importance of digital experience?



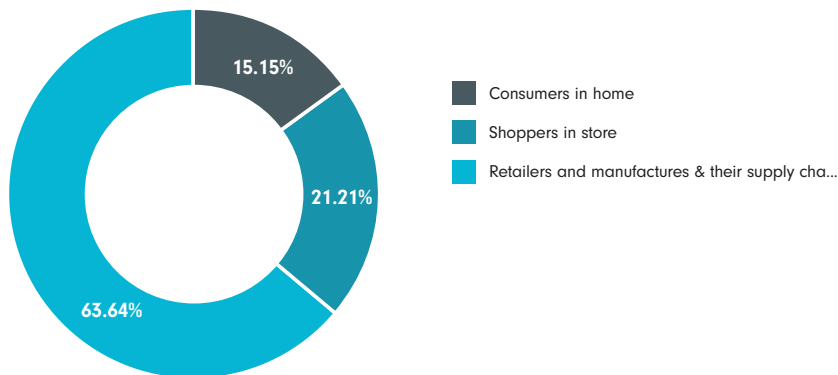
Do you feel that your organization is ready to become insight driven leveraging advanced analytics?



What's the biggest internal road block to testing connected packaging in the next 12 months?



Where do you see the most value for connected packaging?



It's time for you to act, but how?

Rethinking how to use that traditional front-line consumer engagement tool, packaging, is a key component of any digital transformation strategy. This demands a measured and collaborative approach across the supply chain, from converters and packaging companies, to product manufacturers and product brand owners, to retailers, marketers and merchandizers.

If you haven't already committed to a digital transformation strategy, you have already fallen behind. But taking action without a clear and focused game plan can be worse than taking none.

What did our presenters say?

- **Executive management must set digital transformation as a main priority.** This includes

"With e-commerce sales forecast to reach more than \$574 billion in the US and \$4 trillion globally by 2020, representing nearly 15% of total retail sales, brands must consider when, not if, they will enter the online retail and e-commerce packaging fray."

-- From Get Smart Summit presenter David Luttenberger, Mintel

including direct access to the consumer, providing vision and direction, and allocating a budget. Establish clear goals and objectives. Engage all your senior people. Educate your supply chain.

- **Do you have the right talent?** Paperboard materials and electronics have not, historically, been natural bedfellows. Cross-vertical and cross-industry partnerships are key.
- **Do it because you should, not because you can.** Adopt specific digital transformation initiatives because a) they will deliver real and measurable ROIs for your business and/or b) they will add *meaningful* and contextual relevance to the consumer experience that will ultimately provide a tangible ROI. This should include digital connectivity to your consumer and to your digital brand, during and after purchase.
- **Take it one modest step at a time.** Successful transformation isn't one large all-or-nothing bet. It is a series of small bets and learning from the missteps along the way. Maybe it's adding NFC tags for better inventory management to drive efficiencies there before engaging on a consumer level. Or applying artificial intelligence to one area of your business at a time, like marketing, customer service or merchandizing.
- **Don't tell, listen.** When it comes to consumer engagement, it's not about the conversation you want to push out to them, but understanding and supporting the conversation the consumer wants to have with you. Consumers don't care about what a package does for the brand owner or retailer in terms of how it stacks, displays or functions. Focus on building an emotional connection and avoid gimmicks.
- **Find the right partners to make momentum together.** Humans by nature support what they helped create. Engage key stakeholders early in the process to help overcome their fear of change.

The role of the Chief Data Officer

We mentioned in the Introduction the need to create a Chief Data Officer.

But why?

Intelligent packaging is too often viewed as a marketing tactic for the marketing department to worry about, something new to try to boost flagging sales of a particular product or brand for a limited time. It's a short-term effort focused on immediate results rather than a longer-term investment. It seldom has much buy-in and support from across the organization as a whole. The opportunity to engage on a broader level to employ intelligent packaging as the heart of an enterprise-wide digital transformation strategy is missed.

This reality persists across the packaging/retail supply chain. When it comes to taking a lead on new digital initiatives that would require or could benefit from intelligent packaging, fragmentation and silos abound.

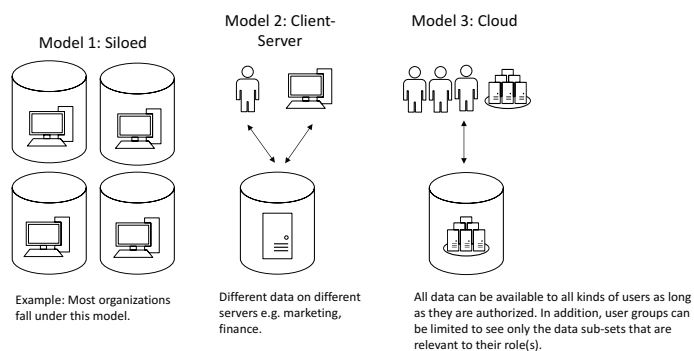
We have said that end-to-end collaboration across the supply chain is essential for successful digital transformation and it requires vision and leadership from the top.

But who at the top?

Organizations must consider creating a new dedicated executive-level role – the Chief Data Officer.

The CDO is granted authority to cross boundaries between internal departments and engage with counterparts across the supply chain to secure those partnerships that are necessary between packaging companies, design agencies, technology companies, product brand owners, retailers and so forth.

Data and Information Exchange Models



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Cloud-based System, Big Data and Analytics

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The buck starts, and stops, with the CDO. They have the authority and the budget to drive the program, and they are the individual ultimately held accountable for its success. They are the bridge between the digital and the physical worlds.

The CDO is also the chief data architect who will invest in big data collection and analysis, to break down data silos, integrate and unlock insights from the disparate datasets that are scattered across the supply chain, and to invest in the technologies to gather more. Making all data discoverable across the enterprise is fundamental to a successful digital transformation, to remain relevant and competitive in your marketplace.

In Part 1 of this paper, we referenced the digital transformation strategy of Canada's Cara Operations. Cara's effort has a lot of moving parts and the key to its success has been the foresight its management team had to create a CDO-type position to take the lead.

Part 3: Digital Transformation at WestRock and Jones Packaging

The brand and retail challenge for the packaging industry

What is bad for one end of a supply chain is usually bad for the other. Players in the packaging industry must be sensitive and responsive to the competitive pressures posed to product brand owners and retailers by the rise of the ultimate consumer and an increasingly volatile and complex multi-channel retail landscape.

On the other hand, retailers and brand owners must recognize the importance that intelligent packaging can play in their evolution and seek out the partnerships to turn this technology to their advantage.

Below, we will profile the digital transformation journeys of two packaging companies that took part in the Summit. Packaging companies that don't follow this lead will soon find themselves going hungry as more progressive competitors eat their lunch.

Jones Packaging Inc.

Jones Packaging, a founding member of intelliFLEX and intelliPACK, took a proactive approach to position itself for the future by creating its own in-house technology team. This team has pursued partnerships with technology developers that can help it create, integrate and commercialize intelligent packaging solutions using conductive inks, printable electronics and NFC tags that can be produced on its high-speed production lines.

Jones first partnered with T+Sun (a joint initiative of Sun Chemical and T+ink) on Touchcode™ touchscreen sensitive coding. This invisible printed code can activate any touchscreen with web apps or dedicated applications for product authentication. This gives brand owners in markets such as pharmaceuticals a powerful tool in the war against counterfeit goods.

Jones continues to tackle the evolving needs of the pharmaceutical industry, as new regulations put greater emphasis on authenticating and tracking medications as they move through the supply chain to consumers. In early 2016, Jones partnered with Thin Film Electronics to integrate Thinfilm's NFC OpenSense™ technology into paperboard pharma packaging and establish the key manufacturing processes required for output on a high-speed production line.

Since then, Jones and Thinfilm have been engaging with leading global pharmaceutical and consumer companies to integrate this smart technology into Rx, over-the-counter medication and consumer product packaging and bring this solution to market.

Separately, Jones has also entered into a commercial collaboration with TUKU Inc., a fellow Member of intelliFLEX and intelliPACK, and a leading innovator in location-based mobile marketing. TUKU's dynamic content management technology is being integrated with Jones' printed intelligent packaging solutions to provide web-enabled packaging to pharmaceutical and CPG companies. This integrated platform will deliver product information and promotions, direct from the package to consumers' mobile devices.

Jones also recently concluded participation in Canada's National Research Council Printable Electronics Consortium, which allowed the company to engage in the development of intelligent packaging that helps patients manage complex medication regimes. Through the use of printed electronics technology, this intelligent compliance packaging logs when medications are taken and provides reminder notifications to a patient or caregiver for the next scheduled dosage.

We asked James Lee, Director of Technology and Innovation at Jones, for his thoughts on Jones' transformation:

Why did Jones make the move into intelligent packaging?

Lee: The folding carton market has become increasingly competitive, so looking for differentiators became a key strategic priority. After assessing various mega trends and with understanding of our customer base, the idea of intelligent packaging was an obvious capability to add to our arsenal.

Who were the internal champions who got the ball rolling?

Lee: Considering the long cycle required for research, planning and testing, championing had to come from the senior levels of management. In our case, it was driven by company ownership and our board.

What challenges did you face to go from “OK, let's do this” to having products ready for the marketplace?

Lee: The key challenge was managing expectations of what was possible. We originally had very lofty goals but realized that the technologies available to us on our existing equipment weren't going to achieve our goals. When people say, “printed electronics,” they have to understand that “printing” is really deposition-based manufacturing on equipment that most printers don't have. I would also say that other challenges included our lack of knowledge in electrical engineering and design – we had quite a gap we had to shore up.

How did you overcome these challenges?

Lee: Being part of the National Research Council's industry consortium for its flagship research program in printed electronics definitely helped in our understanding, but lots of testing and determination was necessary to overcome challenges. We also had to look at partnership since electronics design and engineering are not in our core competencies – engaging with partners was critical.

How is the strategy paying off for Jones?

Lee: Our customer markets are very slow to adopt change, but after years of R&D and now being able to produce products, we are converging with market demand. We are finding new customers and market verticals that have nothing to do with packaging per sé. We are just in initial stages on several products and I would have to say, “Ask me again next year at this time!”

How might Jones look today if you had not moved into intelligent packaging?

Lee: As mentioned before, our market is very competitive and our smart and intelligent packaging opened doors along with retaining existing customers. Customers always ask, “What innovative and new ideas do you have to execute my brand messaging?” We now have a few different ways to drive engagement. This is giving us exposure within our existing customers to divisions we’ve never spoken with before. Also, new customers are calling us rather than us running out to do sales calls.

What are your top lessons learned?

Lee: I think the key lesson is patience and becoming more knowledgeable to manage expectations. Also, learning to be humble and aware that dependencies on partners will be key in being successful.

WestRock

WestRock partners with its customers to provide differentiated paper and packaging solutions that help them win in the marketplace. This has grown to include solutions enabled with added functionality for intelligent packaging.

In January 2017, WestRock unveiled its Connected Packaging Solutions for smart products. This was the result of a collaborative effort that combined Digimarc’s enabled barcode technology with an Internet of Things (IoT) Smart Products Platform from EVERYTHNG. (EVERYTHNG manages digital identity data in an intelligent IoT “smart products” cloud to connect consumer products to the Web and drive real-time applications.)

More recently, WestRock partnered with Smartglyph from the U.K. for its SmarterBarcodes technology. SmarterBarcodes allows brand owners to collect more consumer information to monitor the performance of their marketing campaigns in real-time and adjust as required.

The result? Embedded, real time, connected digital intelligence can now be added to the billions of WestRock packages, in-store signs and displays produced annually. Digimarc Barcodes and Smartglyph SmarterBarcodes are integrated with the EVERYTHNG IoT Platform, giving each physical package a unique Active Digital Identity (ADI) and data profile in the cloud. WestRock continues to look for partnerships with other providers of such triggering technologies as it considers its products to be “trigger agnostic.”

What benefits does this ADI provide? More relevant information for consumers, as well as new ways to engage and build consumer loyalty with loyalty and reward systems. Brands can now follow their products through the entire supply chain, from design, manufacture, distribution, store, home and recycle, with full analytics. Individual packages can be serialized to track details such as authenticity, expiration and recalls. The connected packaging platform also delivers new levels of retailer, shopper and consumer insights through the data that can be collected.

Sarah Trickey, WestRock’s Senior Manager of Brand Engagement, shared her thoughts on WestRock’s digital transformation:

Why did WestRock make the move into intelligent packaging?

Trickey: The number one driver was our customers. A majority of our customers are suffering due to external factors such as health and wellness, retail changes, omni-channel complexity, SKU proliferation and decreases in brand loyalty. We want to help our customers succeed in the marketplace. It's about creating additional value and opportunities for our customers by connecting the digital to the physical and creating a strong media channel.

Who were the internal champions who got the ball rolling?

Trickey: Stephen Brown, our VP Marketing & Innovation for Merchandising Displays, and Dan Buckman, our VP Enterprise Solutions Marketing, Innovation & Design.

What challenges did you face to go from “OK, let's do this” to having products ready for the marketplace?

Trickey: It's been a work in progress, we officially launched at the National Retail Federation show in January 2017. We have our partners – EVERYTHNG, Digimarc and Smartglyph – and just needed to get out there and start talking about our solution. We started small and worked with a select group of commercial leads who understood the solution and got out there and talked to our customers. It's a complex sale and not an easy one to transition from selling boxes to selling a Connected Packaging Solution. Over time, we've gotten more internal teams involved and we have learned a lot about selling, pricing, execution, trigger technologies, the shopper experience, applications and the back-end analytics.

How did you overcome these challenges?

Trickey: Really by trial and error, to see what is working and what isn't. Optimize as we go and develop a go-to-market strategy, gain senior leadership buy-in and just keep at it. Also, technology is changing rapidly so we must keep up with the latest advances.

How is the strategy paying off for WestRock?

Trickey: It's still early, however, we know this is the right space and the right time. We can always get a meeting – our customers are interested and know the world is heading in this direction. We've been able to play in the serialization space with a few customers and have a good idea of when a serialized solution is necessary and when it's not. We are also segmenting our customers based on the two core benefits (brand engagement and supply chain).

How might WestRock look today if you had not moved into intelligent packaging?

Trickey: Our desire is to be the premier partner and unrivaled provider of winning solutions for our customers and this is a solution that allows us to do that. We are in the beginning of the smart packaging journey but it is the right time.

What are your top few lessons learned?

Trickey: This is a complex sale, you need to have multiple stakeholders involved from the customer. And really need to be communicating to the key decision makers. It's constantly evolving as the technology, consumer and retail environments change. You need to have robust business use cases and high-value use cases. You need to encourage customers to be agile, to test and learn ... let's get out there today and test it.

In Summary

The insights delivered by market researchers, change consultants, technology developers, brand owners and packaging companies at the Get Smart Summit leave little doubt that digital transformation is a real and present threat that is already remaking the entire retail supply chain.

Stakeholders at all levels have but one choice – take advantage of the opportunities this presents and seek out the partnerships that are necessary to adopt new technologies and new business processes or face the very real risk of losing relevance and market share.

Recent history is littered with examples of brands that enjoyed market dominance, even market monopolies, that ultimately failed because they were too slow to acknowledge and respond to the inevitability of change. Often, the nature of that change fell under the heading of digital transformation, even in industries that had traditionally not been characterized as digital.

Like any effort to identify, quantify and validate a disruptive new market opportunity, making the change requires clear vision and strategic direction from the most senior level within an organization, be it a packaging company, a product brand owner or a retailer.

Now is the time for your management team to get off the fence and look at new technologies that can remake what are quickly becoming outdated and unprofitable ways of doing business.

Intelligent packaging with which consumers can interact at the point of decision, the point of sale, or during the time of use has a strong role to play in digitizing the last mile and making the interaction with your product more meaningful.

It may even require the creation of a new executive-level role in your organization, a Chief Data Officer. This individual will ensure the opportunity to engage on a broader level to employ intelligent packaging as the heart of an enterprise-wide digital transformation strategy is not missed to connect you, your product and your brand interactively with your customers.

The consumer is now in the driver's seat. This has ripple effects across the entire packaging/retail ecosystem. The package, remade as an intelligent device through additive manufacturing techniques, has the pivotal role to play as a platform to drive new supply chain efficiencies for the enterprise, to collect more of the data that is increasingly vital to more informed and timely executive decision-making, and to engage in mutual dialogue with consumers to revive sales and build loyalty.

The case studies we presented from Jones Packaging and WestRock provide insight into how digital transformation can be successfully undertaken even in low-tech industries and where it must always begin – with partnerships that cross the boundaries of traditional industry verticals.

Contributors

intelliFLEX

intelliFLEX, a not-for-profit industry alliance, is a vital partner for accelerating the growth of the printable, flexible, hybrid and related electronics sector in Canada. Our technologies add intelligence and connect ordinary objects to enable the Internet of Everything. We unite our 100 members+ to build an effective ecosystem of supply chains for flexible, 3D printable electronics, 2D large area printable electronics, wearable electronics, smart textiles and hybrid electronics including related semiconductors, integrated circuits and software. Our programs accelerate the adoption of these innovations for Smart Packaging, Intelligent Buildings and Connected Homes, Aerospace and Defence, Automotive and Industrial Applications, Health and Wellness, Intelligent Documents, and Consumer Electronics.

intelliPACK

intelliPACK is a smart packaging innovation accelerator co-founded by intelliFLEX Innovation Alliance, PAC Packaging Consortium and their Members. intelliPACK collaborates with supply chain stakeholders to create awareness, educate and facilitate the broad adoption of solutions for smart packaging – an active or intelligent interactive packaging system that delivers benefits and added functionality to the value chain. intelliPACK unites leading organizations across the packaging value chain, to collaboratively explore, evaluate and mobilize innovative smart packaging solutions. intelliPACK serves North America while sharing solutions globally.

PAC

PAC Packaging Consortium is a not-for-profit corporation, founded in 1950. PAC is North American centric with global access. We advocate for all materials and for package neutrality through an all-inclusive, transparent and collaborative process. Our 2,200 members come from all sectors of the packaging value chain, from start of life to next life. Our networking process includes PAC webinars, seminars, conferences, competitions, facility tours, education programs, trade shows, technical work groups and social activities. From PAC NEXT, our initiative to eliminate packaging waste, to PAC FOOD WASTE and now with this interest in Blue Events Inc., our industry is on a deliberate path to sustainability.



intelli**PACK**

BUSINESS NETWORK

intelli**FLEX**
intelliFLEX.org 613.505.4775
pac.ca 416.490.7860

