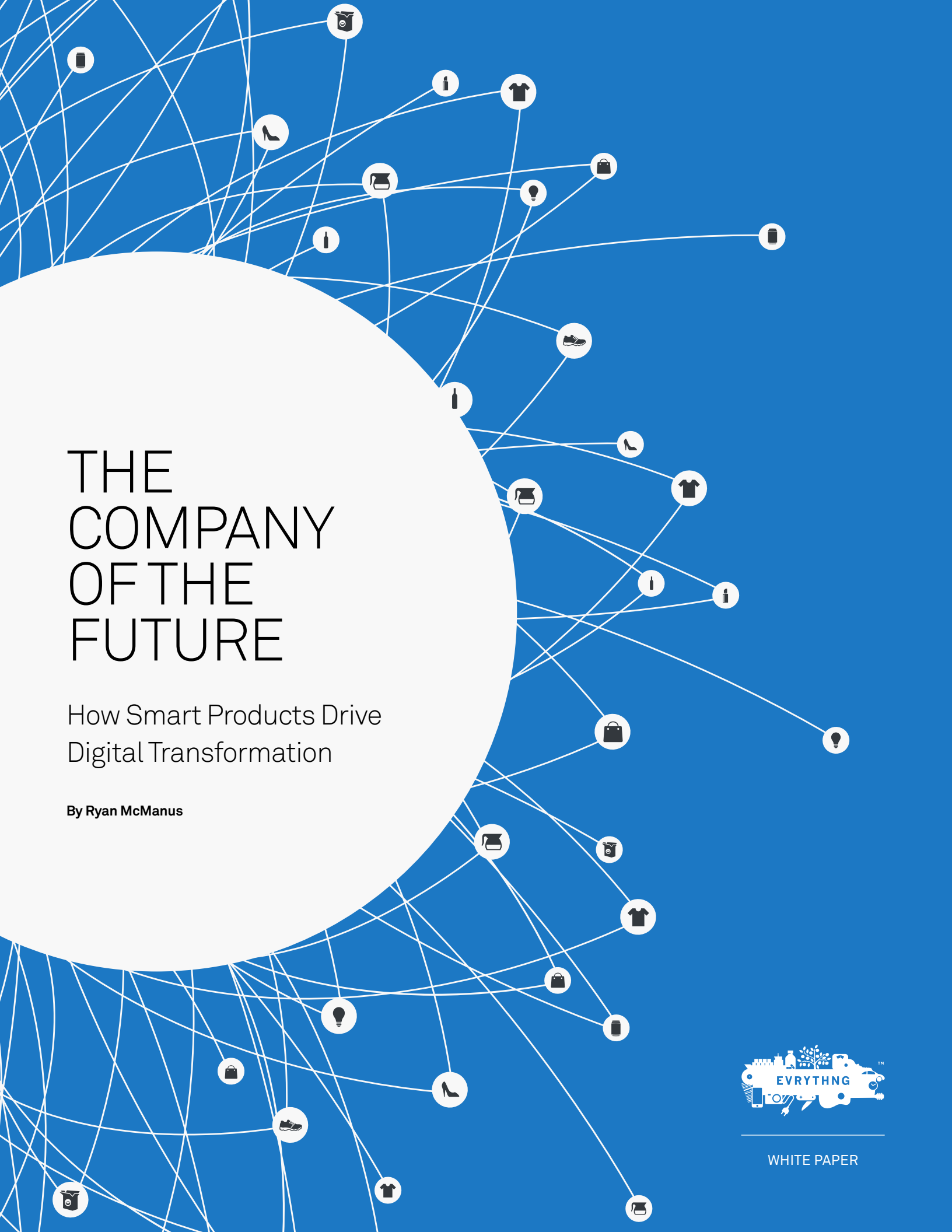

THE COMPANY OF THE FUTURE

How Smart Products Drive Digital Transformation

By Ryan McManus

EVRYTHNG™

WHITE PAPER

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EXECUTIVE SUMMARY

It's abundantly clear that digital transformation has rewritten the rules of competition and made traditional business models obsolete across industries. The consumer products sector is now also in digital's crosshairs, as digitally-connected, smart products deployed at massive scale become a major competitive force.

Digital transformation is the single biggest macroeconomic force in business today, representing 25 percent of global GDP[1] in 2016, already larger than any single nation's GDP. Beyond this current economic impact is the more than $19 trillion of value at stake[2] from the Internet of Things (IoT), which has progressed from its origins in large industrial machines and consumer devices to the trillions of consumer products produced annually, including new product-as-a-service capabilities with implications across industries.

Previous **phases of digital evolution** have proved that companies win or lose in their markets based on whether or not they get digital transformation right. There is now a new and critical imperative for consumer products companies and related industries to drive competitive advantage from digitizing the primary assets that sit at the very core of their business—their products. At the center of this transformation is an inevitability: every physical thing in the world that can be connected *will* be connected.

It is now possible for every physical product to be digitized, representing an unprecedented scale opportunity for digital leaders and a significant disruptive risk for laggards. This paper explores the role of smart products as the central pillar of digital transformation. Most important, it describes the urgency for companies to digitize their physical products at scale—and the existing technology and ecosystems already available to drive deployment. Indeed, smart products are a massive opportunity already being implemented today by the digital leaders of tomorrow.

E-commerce sales last year grew 15.6% YoY, representing 41.6% of all retail sales growth, with Amazon capturing 53% of that growth.

SETTING THE SCENE:

The Impact and Evolution of Digital Transformation

Over the past 20 years, digitization has progressed across content, services, communications and social interactions to now the digitization of physical products, also known as the Internet of Things (IoT). In each phase, digitization has upended industry competition to ultimately determine winners and losers.

For example, early phases of digitization have resulted in internet advertising spend surpassing television ad spend for the first time in 2016[3], with 85% (and rising) of its growth going to Google and Facebook. And while retail store closings are predicted to break a 20-year record in 2017[4], e-commerce sales last year grew 15.6% YoY[5],representing 41.6% of all retail sales growth, with Amazon capturing 53% of that growth[6]. The competitive impact of Google, Facebook and Amazon in these sectors (and others) demonstrates the risk to companies that fail to keep pace with evolving digital capabilities in their sectors.

DIGITIZATION FOCUS	CONTENT	SERVICES	HUMAN IDENTITY	PHYSICAL PRODUCTS & MACHINES	COMPLEX ANALYSIS	MANUFACTURING	BIOLOGY	WHAT'S NEXT?
PRIMARY ENABLING TECHNOLOGY	AR and VR Mobility Omnichannel Social Media Web	e-commerce Blockchain SaaS Web Services	Social Media	Internet of Things Low Power Communication Platforms Sensors/Auto IDs	Analytics Cognitive Computing Artificial Intelligence / Machine Learning Quantum Computing	Robotics 3D Printing	Genome editing	?
PRIMARY TARGET SECTORS	Advertising Media	Software Travel Retail Banking	Advertising Media	Apparel Consumer Goods Electronics Industrials Logistics	All	Automotive Industrials	Health Medicine Pharma	?
SAMPLE PHASE LEADERS	Google Aol. YAHOO!	amazon DELL Expedia salesforce	YouTube	PREDIX thingworx	Alphabet amazon NVIDIA. OpenAI	amazon robotics ASI 3D SYSTEMS stratasys TESLA UBER	23andMe CRISPR kernel	?

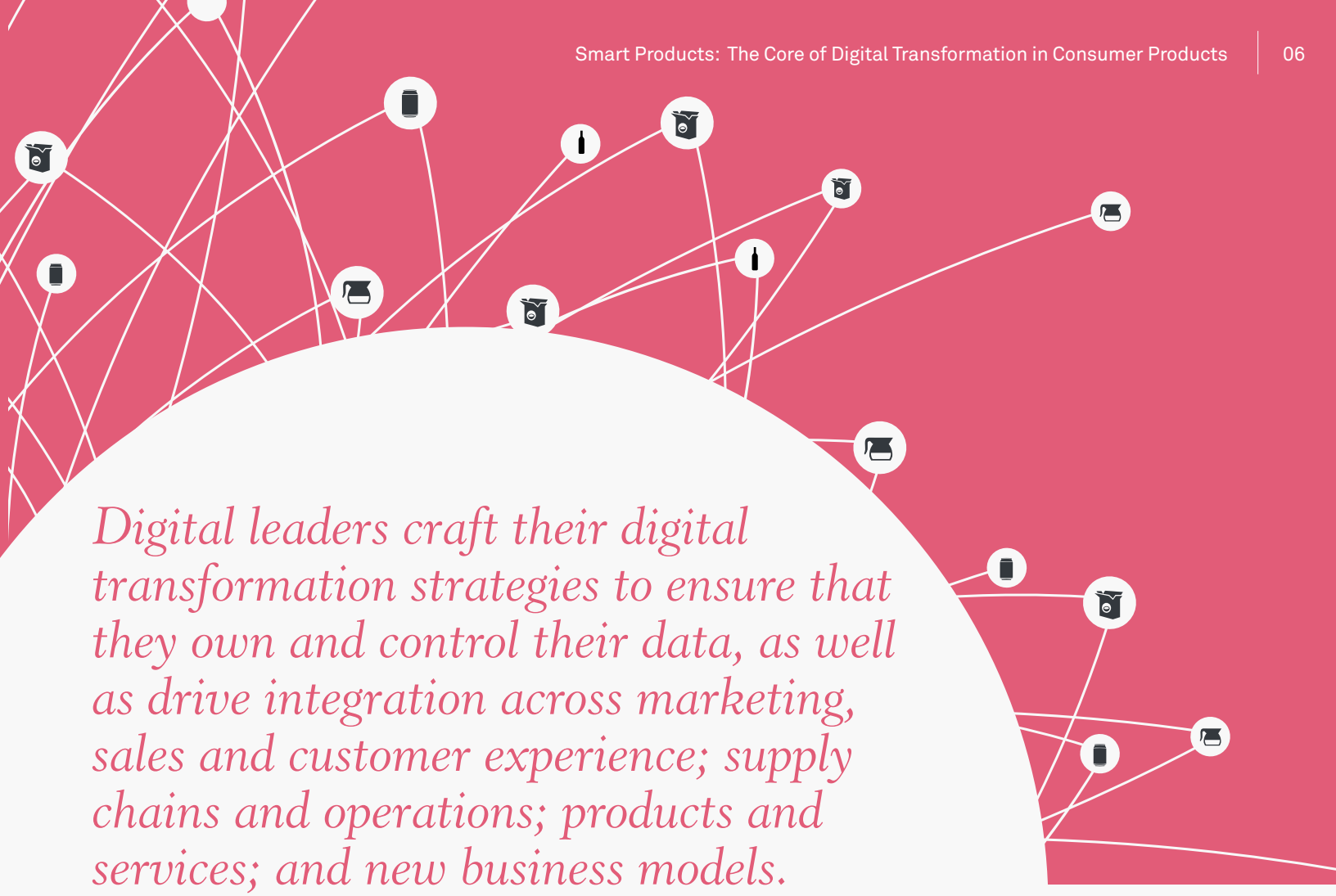
Figure 1: Phases of digitization

This competitive dynamic has now arrived in consumer products. As the price of "digitizing" products has continued to decline in line with Moore's law, it has become more economical to transform traditional physical products into smart, digital assets.

What is a smart product?

It is a physical consumer good equipped with a digital identity on the Web, enabling applications, experiences and solutions throughout its lifecycle—from product provenance, manufacturing, brand protection and supply chains to e-commerce, retail, consumer experience, sustainability and everything in between. These applications in turn generate data that brands can use to create new value across the enterprise and enable new business models.

Figure 2: A physical product with a digital identity powers applications throughout the lifecycle.



Digital leaders craft their digital transformation strategies to ensure that they own and control their data, as well as drive integration across marketing, sales and customer experience; supply chains and operations; products and services; and new business models.

SMART PRODUCTS:

The Core of Digital Transformation in Consumer Products

The companies leading in today's digital economy share two important characteristics: they deliver 100% customer knowledge and 100% supply chain instrumentation. For example, Apple requires all customers to register its products with their ID, while Amazon is able to achieve same-day and one-hour delivery thanks to its supply chain excellence.

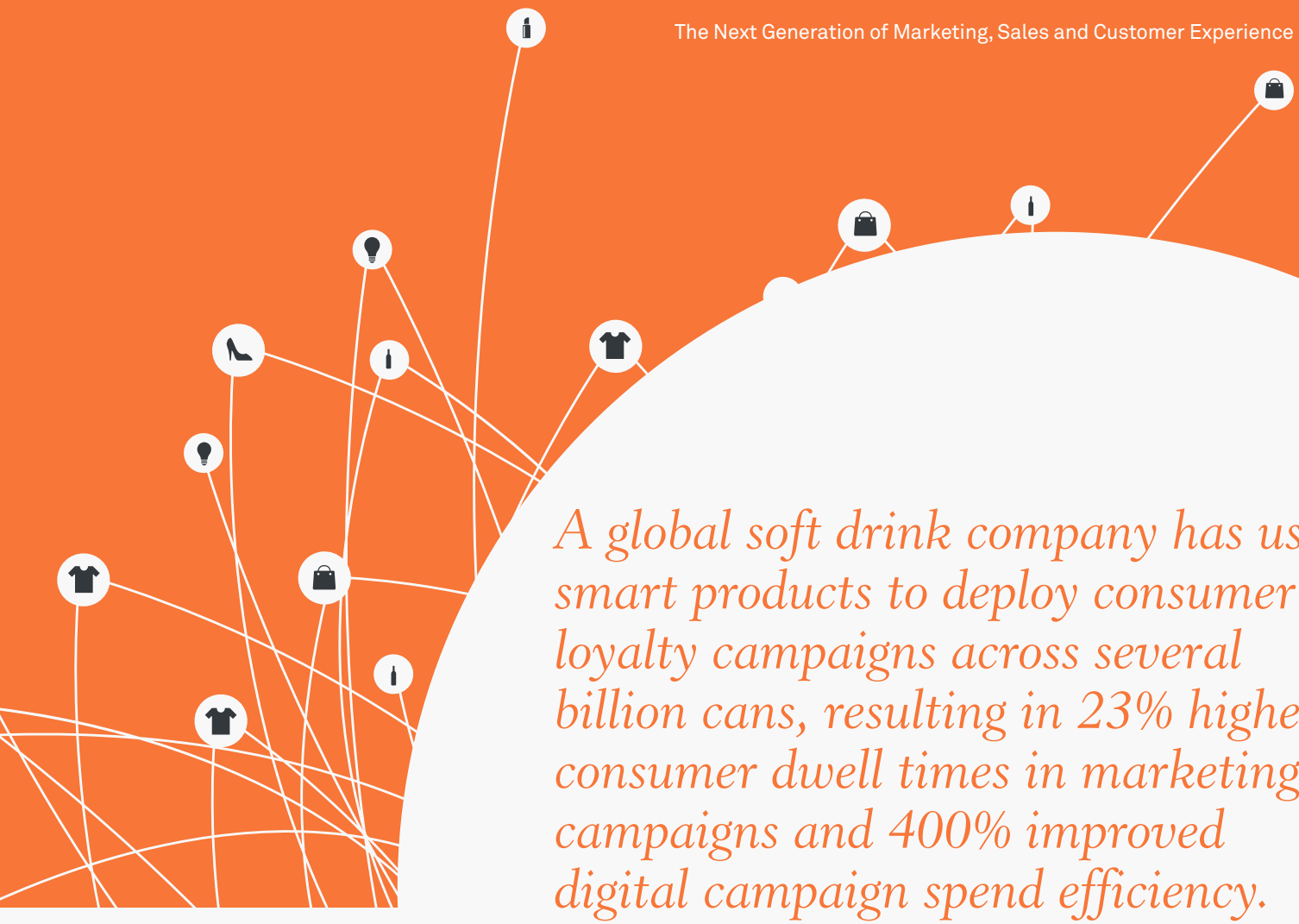
Many companies, however, have failed to think beyond traditional digital marketing or supply chain automation. Instead, digital efforts remain siloed in various parts of the business, leaving companies at risk of disjointed and duplicate efforts, wasted investment and ultimately the loss of market share and margin as well as existential competitive threats.

Furthermore, CPG companies under growth and profitability pressures often look to partner with leading e-commerce and social media companies, in an attempt to deliver immediate marketing performance gains. The major risk with these partnerships, however, is that they generally do not allow brands to own their own data, reducing brands' monetization opportunity and their ability to cultivate their own digital capabilities and business models.

DIGITAL TRANSFORMATION STRATEGY	SMART PRODUCTS USE CASES	ROI
MARKETING, SALES AND CUSTOMER EXPERIENCE	Direct-to-consumer commerce Product experiences Transparency & sustainability	Higher sales and conversions Improved cross-selling Deeper brand loyalty and advocacy Delivery of new personalized and contextual experiences
SUPPLY CHAINS AND OPERATIONS	Supply traceability Quality control and recall Product authenticity Stock optimization	Reduced cost of inventory Elimination of stock-outs and overstocking Lower product recall impacts and costs Reduced counterfeit and gray market losses
BUSINESS MODEL	Products-as-a-Service Just-in-Time Replenishment	Increased market share and market cap Digital native operating model Competitor lockout Brand enhancement Talent recruiting and development

Table 1: Digital transformation strategy, smart products and ROI

In contrast, digital leaders craft their digital transformation strategies to ensure that they own and control their data, as well as drive integration across marketing, sales and customer experience; supply chains and operations; products and services; and new business models—thereby enabling transparency, visibility and data management across the enterprise. Below, we outline the characteristics of digital leaders, exploring how smart products can contribute to each level of digital transformation strategy to drive business value.



A global soft drink company has used smart products to deploy consumer loyalty campaigns across several billion cans, resulting in 23% higher consumer dwell times in marketing campaigns and 400% improved digital campaign spend efficiency.

THE NEXT GENERATION OF MARKETING, SALES AND CUSTOMER EXPERIENCE

Continuously evolving consumer expectations are a primary driver of digital transformation; leaders succeed by forming direct consumer relationships and acquiring data about customers in real time.

In a market where technology companies regularly outcompete established industry leaders, smart products provide consumer goods companies with a significant advantage: the scale deployment of the trillions of products they produce, all of which interface directly with consumers. Brands now have the ability to gather real-time customer data, significantly evolve the product experience and form a direct connection with consumers at scale.

Real-Time Customer Insights

Leading companies leverage real-time data from smart product applications to drive valuable consumer and market insights. Smart products have an Active Digital Identity™, providing access to a wealth of information about every customer interaction with a product, including geo-location, demographics and consumer behavior, enabling brands with data from point-of-sale to who is buying their products, when and where, along with how they are using them.

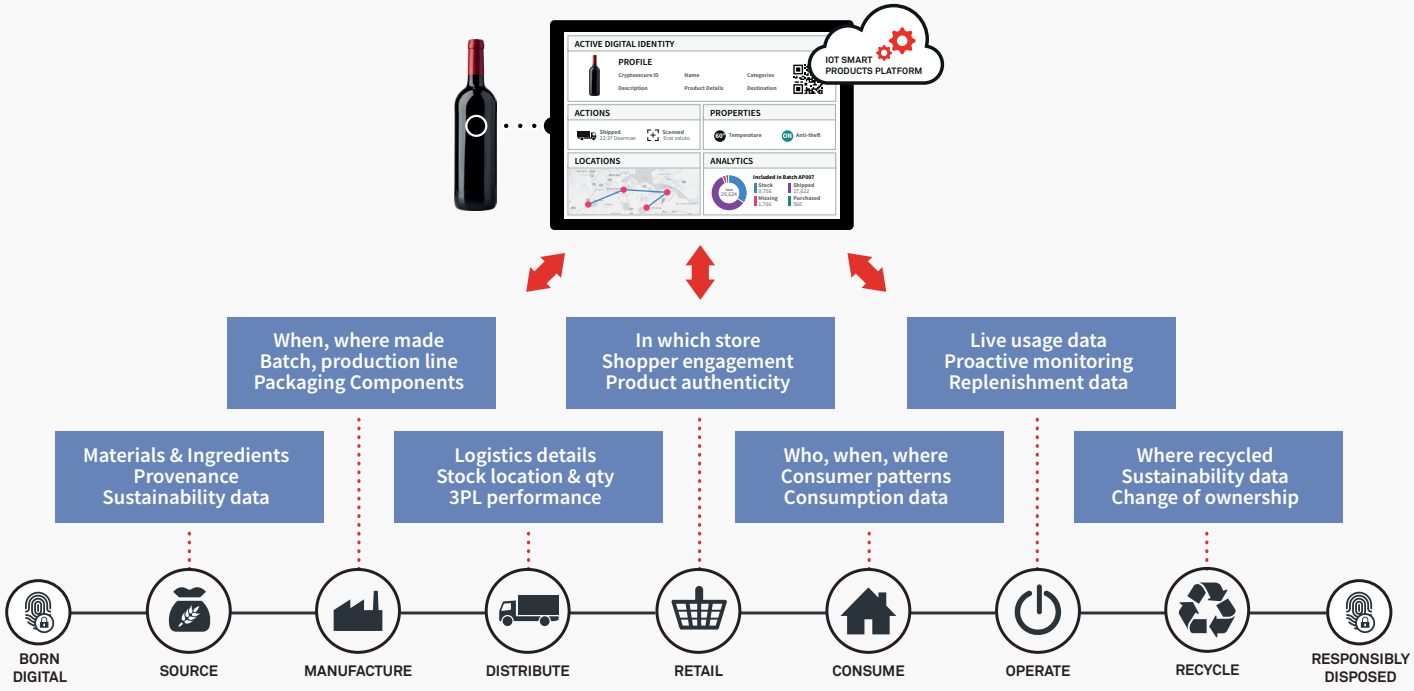


Figure 3: An Active Digital Identity™ enables products to collect and manage data throughout the product lifecycle, driving applications and creating visibility.

Direct-to-Consumer Commerce

The traditional advertising and retail channels upon which consumer brands have long relied are undergoing tremendous disruption, as consumers quit advertising-driven television programming and leading brick-and-mortar retailers struggle to compete with online retailers like Amazon. Brands must find new ways to own both the customer relationship and the associated data. Through smart products, brands can now create entirely new, completely owned channels for direct engagement with their customers, including e-commerce, product reordering, loyalty, marketing and tailored experience applications.

Diageo, for example, successfully used smart products in a marketing campaign that allowed consumers to record and send personal video messages off of spirits bottles, driving a 72% increase in seasonal sales. Similarly, a global soft drink company has used smart products to deploy consumer loyalty campaigns across several billion cans, resulting in 23% higher consumer dwell times in marketing campaigns and 400% improved digital campaign spend efficiency[7].

While smart products enable these new direct to consumer capabilities, they also enhance existing retail and omnichannel infrastructures. Connected shopper marketing displays, real-time omnichannel inventory management, loss prevention, mobile payments and new point of sale capabilities are all facilitated by smart product integrations—which furthermore contribute to an advanced analytics capability across sales and marketing channels. This consumer data and real-time analytics drive monetization through a deeper understanding of a brand's most popular products, regional variances and the effectiveness of its advertising campaigns.

Product Experiences

Approximately 2.5 billion people engage with Unilever products every day[8]. By turning their physical products into digital assets, consumer goods companies like Unilever can deliver brand content, experiences and messaging via each one of those interactions, representing more daily media interactions than any media company in the world. With its digital identity, every physical product is transformed into a new, owned media channel, offering content ranging from product information (e.g. how and where it was made) to videos and brand promotions.

In fashion, New York label Rochambeau launched the **BRIGHT BMBR** smart jacket that offers the owner exclusive access to dining, retail, art and entertainment experiences; while Rebecca Minkoff's **#ALWAYSON Midnighter handbag** provides direct access to loyalty programs, product registration, private styling sessions and other services.

Transparency & Sustainability

Consumers and regulators are increasingly demanding deeper visibility into ingredients, supply chains and product provenance. In food and beverage, the **SmartLabel™** program already allows consumers to access detailed product information about more than 30,000 food, beverage, household, pet care and personal care products simply by scanning a QR code on the product's packaging[9]. In apparel, the **Sustainable Apparel Coalition**, Avery Dennison RBIS and EVRYTHNG are working on a pilot with some of the world's leading apparel companies to bring Higg Index performance information directly to consumers and other stakeholders via unique digital identities and smart labels on products. Companies employing smart products to provide transparency build consumer confidence and differentiate their products while simultaneously meeting industry and regulatory requirements.

Item-level accuracy allows retail stores to remove individual products from shelves, driving up to 40x end-to-end traceability[8] and supply chain traceability and associated savings.

THE NEXT GENERATION OF SUPPLY CHAINS AND OPERATIONS

Digital leaders use smart products to create supply chains that are intelligent, instrumented and interconnected—creating new opportunities for end-to-end supply chain traceability applications, optimized inventory management and cost reduction.

Supply Traceability

Smart products allow brands to collect data about their products wherever they are in the supply chain, whether sourcing, manufacturing, distribution, chain of custody or brand protection. Through improved data management and visibility—including emerging **blockchain solutions**— brands can reduce transit losses and fraud, increase forecast accuracy and inventory planning and better manage operational challenges around the movement of products across global networks.

Quality Control and Recall

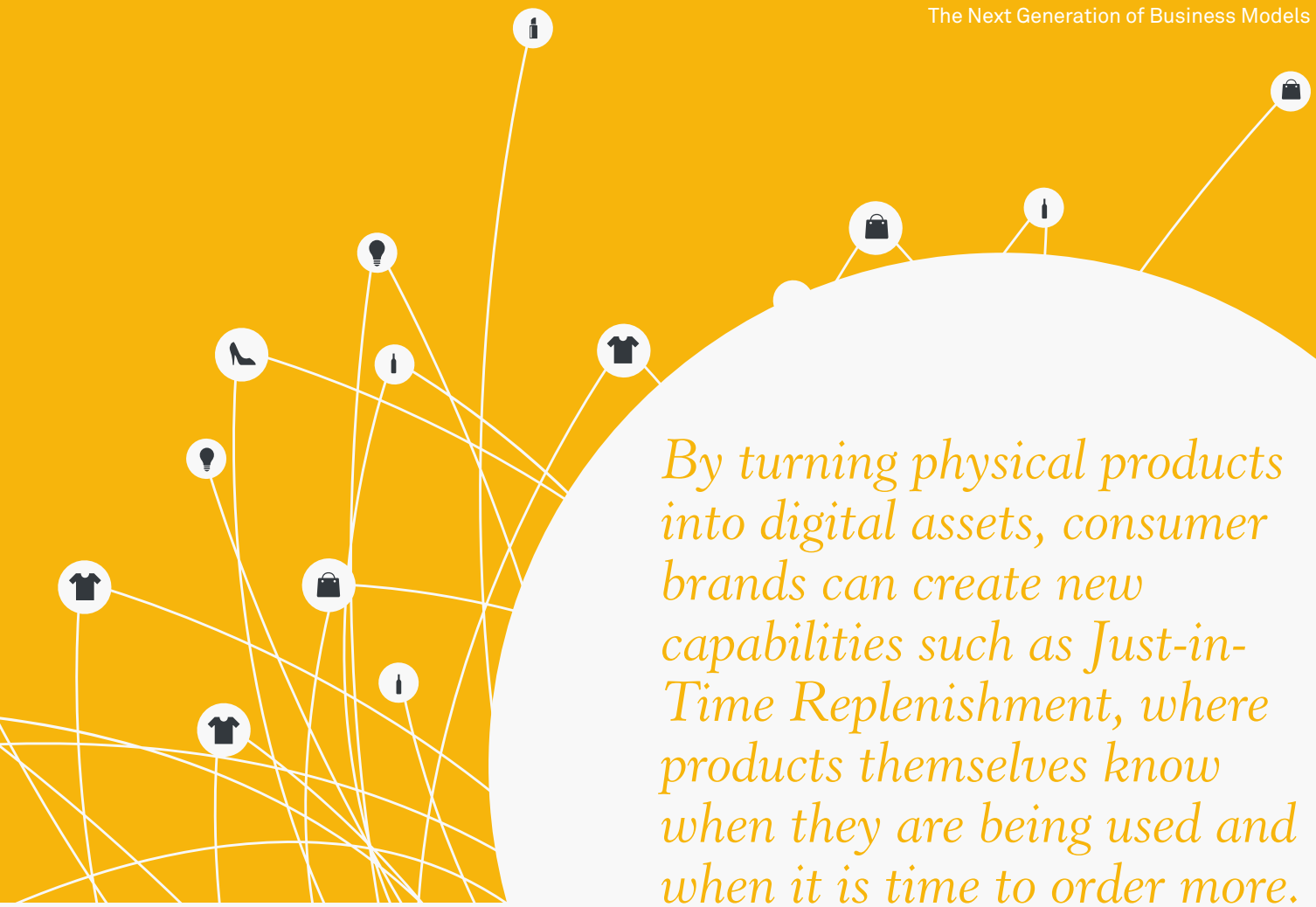
Smart products also drive operational efficiency, addressing such challenges as quality control and product recall. In addition to damaging brand reputation, product recalls cost companies an average of $30 million every 2.3 years[10]. With the pinpoint accuracy made possible by smart products, product manufacturers can accelerate recalls, minimize the scale and reduce both the out-of-pocket costs and the damage to brand reputation. Item-level accuracy allows retail stores to remove individual products from shelves, driving up to 40x end-to-end traceability and supply chain traceability[11] and associated savings.

Product Authenticity

Fakes and counterfeit good cost companies more than $460 billion in 2016[12]. Smart products allow companies to combat counterfeit and gray market activity by allowing brand protection staff and consumers to instantly validate a product's authenticity, globally. A product's digital identity makes it easier to detect copied or fake codes on fraudulent products, or if a product has been tampered with and where.

Stock Optimization

Overstocks are responsible for 3.2% in lost revenue for the average retailer, while out-of-stocks are responsible for 4.1%, costing retailers $1.1 trillion annually[13]. Real-time visibility of stock levels at distribution centers and retail stores enable cost reduction and control through optimized inventory management, as well as better demand and supply planning and transportation scheduling. This means that stock can be re-routed to meet higher demand and avoid stock-outs in certain locations, or to prevent excess inventory in others.



By turning physical products into digital assets, consumer brands can create new capabilities such as Just-in-Time Replenishment, where products themselves know when they are being used and when it is time to order more.

THE NEXT GENERATION OF BUSINESS MODELS

When digitization targets the core business of an industry, the companies that win evolve their business models—and smart products are the core of new business models for consumer goods companies.

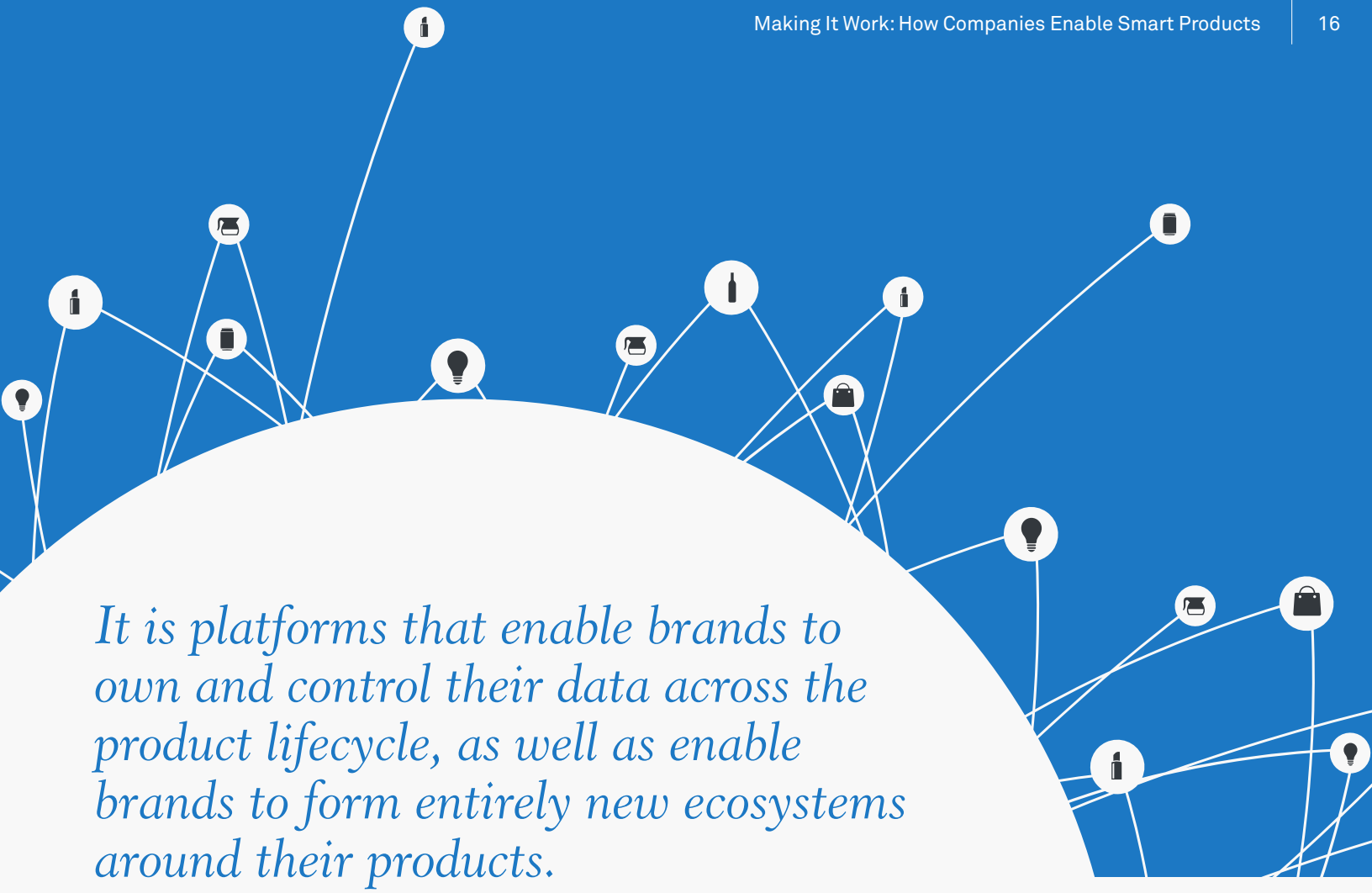
The new capabilities described above provide both specific examples of smart product applications as well as the opportunity to create an integrated data management capability that spans the product lifecycle, value chain, consumer engagement and operations. This in turn creates a virtuous feedback loop, driving better data, better learning and better performance, and ultimately drives a successful digital transformation strategy. To reap the benefits this change requires a new business model, including new organizational and incentive structures, new information and technology architectures, process and workflow integration, as well as the embrace of new technology partnerships. Leading companies also deploy smart products to both enhance existing products and services as well as bring entirely new value propositions to market.

Product-as-a-Service

Philips pioneered "lighting-as-a-service." GE touts "energy-as-a-service." Uber, GM and others are developing "transportation-as-a-service." August Smart Home Products deliver August Smart Home Access Solutions, permitting the secure and controlled delivery of e-commerce purchases to homes even when their residents are not in. As industries continue to seek new "product-as-a-service" opportunities, consumer goods companies must explore the implications for their own business models. A smart product, whether an appliance, a t-shirt, a coffee pod or a box of laundry detergent, can enable consumers to easily re-order goods from the products directly. By turning physical products into digital assets, consumer brands can create new capabilities such as Just-in-Time Replenishment[14], where products themselves know when they are being used and when it is time to order more. This direct link to consumers through the product drives cross-selling, increases revenues and builds long-term loyalty and customer lifetime value.

New Customer Value

Other companies add use new digital capabilities to enhance existing products and services. For example, Under Armour is on a mission to become the world's largest digital connected fitness company, placing data from smart running shoes and wearables, for example, at the center of its strategy to enhance the athlete's experience. These new smart products offer new value to customers, specifically by improving athletic performance and monitoring their health. Meanwhile, leading insurance companies are deploying smart devices to provide preventative monitoring across the home, including theft, water damage and other issues. This not only flips the insurance business model from reactive to proactive, but it also allows the insurance companies to offer reduced premiums in line with the reduced risk of claims.



It is platforms that enable brands to own and control their data across the product lifecycle, as well as enable brands to form entirely new ecosystems around their products.

MAKING IT WORK:

How Companies Enable Smart Products

The technology required to produce and deploy smart products is available now and at scale. Depending on the product type and use case, products can either be continuously connected to the Web via sensors and networks or intermittently connected to the Web via printed tags and scanning.

The main technology elements in the smart products stack are:

- On product triggers: including QR codes, RFID, NFC, GS1 identifiers[15], proprietary codes, printed electronics, sensors and others
- Smart devices: for specialized smart product interaction such as RFID-based inventory monitoring in the supply chain or smart phones for consumer scanning and applications
- IoT networks: including LPWAN, Bluetooth and WiFi, for products continuously connected to the Web via sensors and RFID
- Smart product data management platforms: provide digital product identities, end-to-end data management and analytics and data integration and power multiple applications
- Applications: specialized solutions and experiences across the product lifecycle

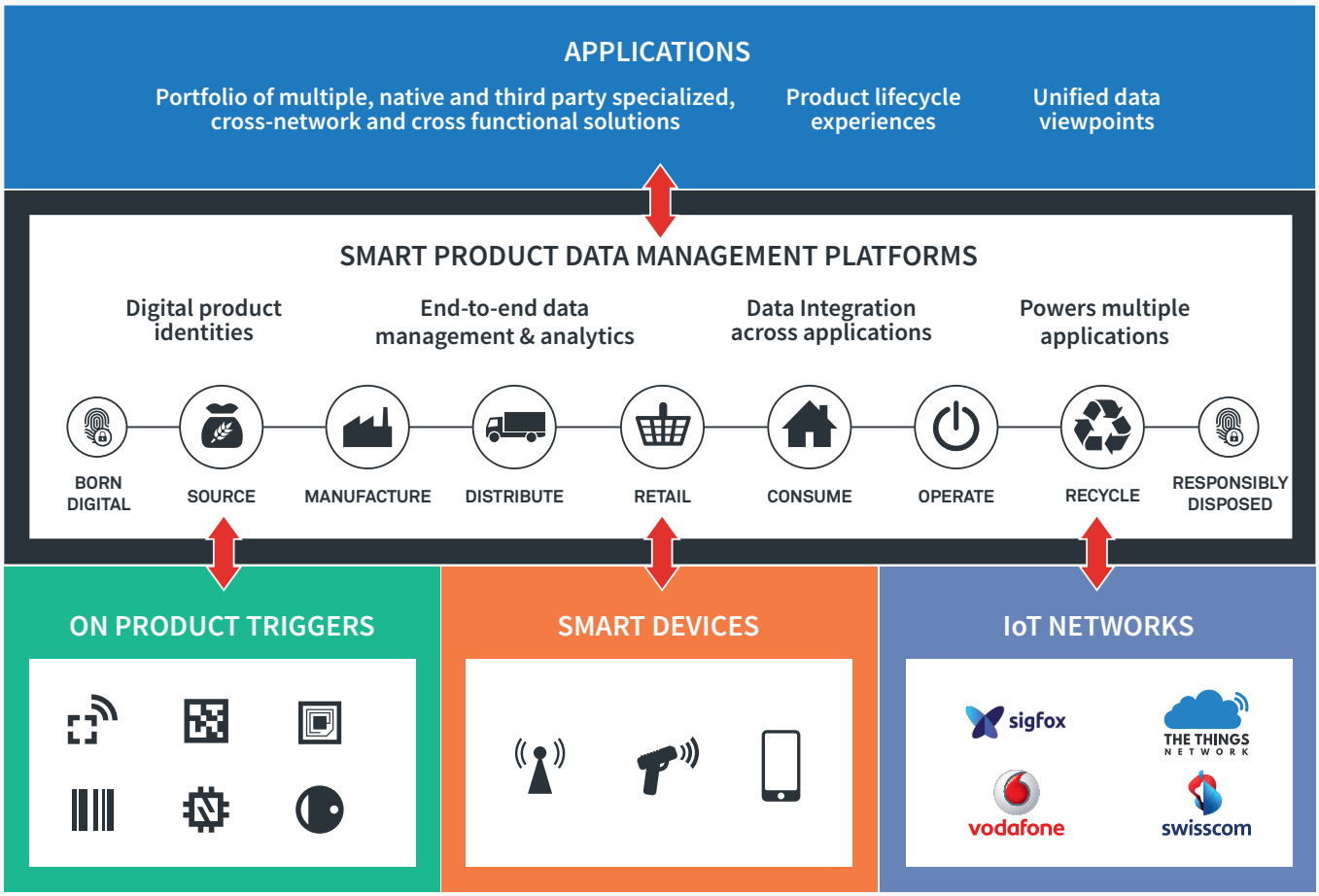


Figure 4: Smart Product Technology Stack

Data management platforms are the newest of these elements and represent the heart of smart products and digital transformation, as they tie together all of the other technical elements—integrating data and applications across the product lifecycle regardless of trigger, network, third party solution or use case. Critically, it is platforms that enable brands to own and control their data across the product lifecycle, as well as enable brands to form entirely new ecosystems around their products.

For example, through EVRYTHNG's ecosystem partnerships—with global leaders such as Avery Dennison, Crown and WestRock—and the digital enablement of GS1 identifiers, hundreds of billions of consumer products will be #BornDigital™ each year, with each product provisioned with an Active Digital Identityl™ in the cloud at the point of manufacture. The EVRYTHNG platform furthermore provides integrations with leading application providers across supply chain, consumer engagement and retail applications—including augmented reality, blockchain and sustainability applications—providing the world's biggest consumer product brands with an effectively turnkey ecosystem to easily and rapidly deploy smart products and services, and enable their digital transformation strategies.

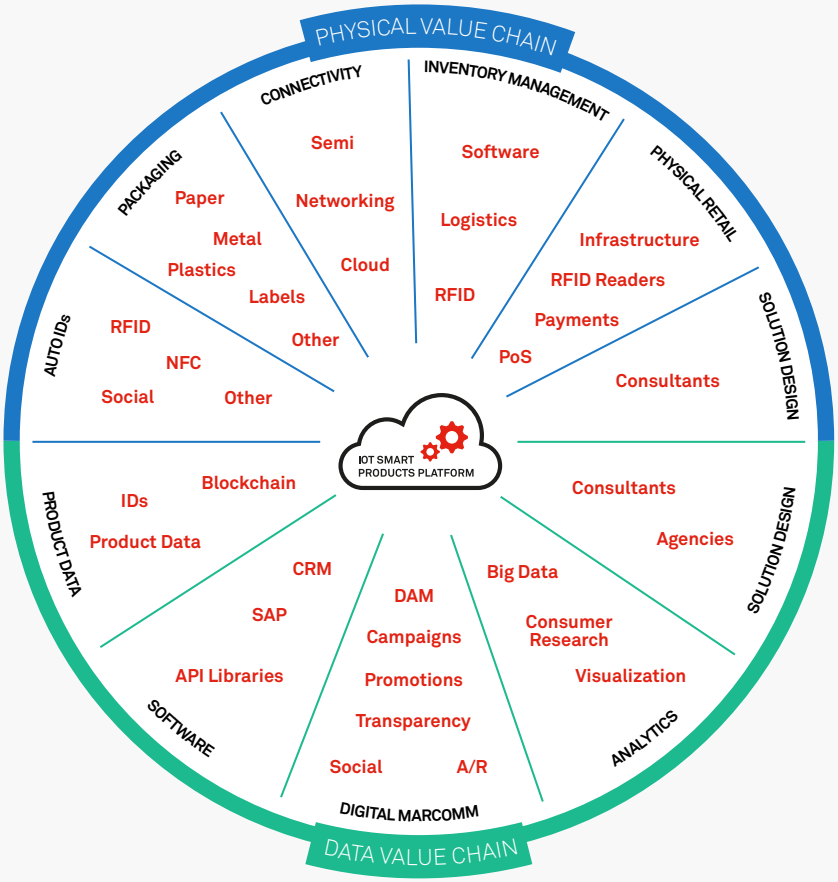


Figure 5: EVRYTHNG smart products ecosystem

The very nature of technology is to continuously evolve, and many of the triggers, networks and applications vying for primacy today may be replaced tomorrow. Leading data management platforms also "future proof" brands against these continuously and rapidly developing new technology cycles.

Rather than needing to keep up with every iteration and change, not to mention the significant costs of go-to-market delays and multiple solution implementations, leading data management platforms provide out-of-the box integrations based on established standards. Brands are able to maintain ownership of—and repurpose—their data in the core platform while deploying new technologies at speed, including emerging blockchain, machine learning, augmented reality and mobile payments capabilities. Brands can reduce their investment and innovation risk because they don't need to place a bet on where technology is headed or which standards will win. A platform effectively allows them to play all sides at once, hedge all their bets and have operational coverage regardless of what may come.

THE TECHNOLOGY IS HERE, THE FUTURE IS NOW

Consumer goods companies must choose whether they will act now or cede first-mover advantage to their competition.

Indeed, acting now is an offensive measure; as **McKinsey** describes: *"Companies that strategically go on a digital offensive generate three times as much revenue and profit as their defensive counterparts."*[16]

History shows what to expect from every phase of digitization: digital leaders succeed wildly while many other companies perish because they fail to evolve, making the grave mistake of continuing business as usual and ignoring digital transformation until it is too late.

There is no question that the era of smart products will have its share of winners and losers, too. The only question is: Will your business adapt in time to come out on top?

If you would like to find out more about how to make your products smart to digitally transform your business, please get in touch at hello@evrythng.com.

About EVRYTHNG

EVRYTHNG is the Internet of Things Smart Products Platform connecting consumer products to the Web and managing real-time data to drive applications and analytics throughout the product lifecycle. The world's leading consumer product manufacturers work with EVRYTHNG to manage billions of intelligent identities in the cloud for their products. This enables brands to deliver digital services directly to end-users through their products, manage supply chains more effectively using real-time data, and operate smart products connected to the broader ecosystem of applications and services on the Web and in the enterprise. To find out more about how EVRYTHNG's IoT platform delivers digital product lifecycle management, visit **evrythng.com**.

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