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The Age of With™
Leveraging AI to connect the
retail enterprise of the future

Introduction

A businessperson today can hardly open a magazine or sift through a Twitter feed without seeing the words: data, artificial intelligence, automation, IoT, bots, machines, and transformation. These words are connected to opportunity and the time to grasp it is now— we are at the turning point when everything changes. Forever.

To navigate the continually changing landscape of data, artificial intelligence (AI) becomes our roadmap. And how we start is by each of us initiating our own journey into the advancing world of technological growth.

This story can be summed up in a single word—"*with*."

What's happening around us—shared data, social engagement, digital assistants, cloud platforms, connected devices—is not about people versus machines. It's about human collaboration made greater with the machines we invent. It's a new age.

If we hope to perform, compete, and break through, we need to create a cognitive advantage by tapping the power of well-structured data *with* design thinking *with* analytics *with* machines.

While that feels a bit uncharted, it isn't. *With* has long been the great human advantage. We've sought it out. Benefitted from it. Built business models around it. In fact, *with* is at the core of many great inventions, from the municipality to the assembly line to the internet.

To succeed in the future, develop your human capabilities so they can be aided, enhanced, and augmented with AI. The potential is limitless.

The age of disruption in the retail industry

Substantial changes in the retail industry

Retailers across the globe are facing unprecedented changes in the fundamental business model and day-to-day operations.

Growth in competition, changing customer expectations, and the relentless development of technology is fundamentally remaking every facet of the retail business. Effectively responding to and taking advantage of these changes will be critical to sustaining performance and remaining relevant.

Four major trends at the forefront of these changes are driving a substantial amount of change in the retail industry: growth of non-traditional competition, a shift from goods to services, hyper-personalization, and a push to modernize technology

The growth of non-traditional competition has been impossible to ignore. The proliferation of online shopping has removed traditional barriers to entry, resulting in a proliferation of new retailers and brands offering direct-to-consumer online sales. The most obvious example of this is Amazon, which now owns 49 percent[1] of online market share in the United States and 5 percent of overall retail spend, making it the third largest retailer in the United States.[2] This is by no means a North American trend, as Alibaba has added almost 300 million active buyers in the last five years, more than doubling its user base.[3]

These new entrants have forced traditional retailers to find ways to differentiate themselves. Exacerbating the pressure on traditional retailers has been a shift in consumer behaviour from seeking goods to services and experiences. This is trend is accelerating, highlighted by a 300 percent growth in the gap between goods and services.

The demand for novelty along with a "why should I shop here?" attitude has put pressure on retailers to differentiate themselves in ways never imagined.

This desire for novel experiences has further manifested itself with consumers looking for hyper-personalization in a world where privacy concerns are still paramount. In the three years from 2014 to 2017, total customer journey interactions have grown 700 percent. As the depth and breadth of interactions between a retailer anda consumer grows, the opportunity to tailor the journey to individual consumers

Trends driving substantial change in the retail industry

Growth of non-traditional competition
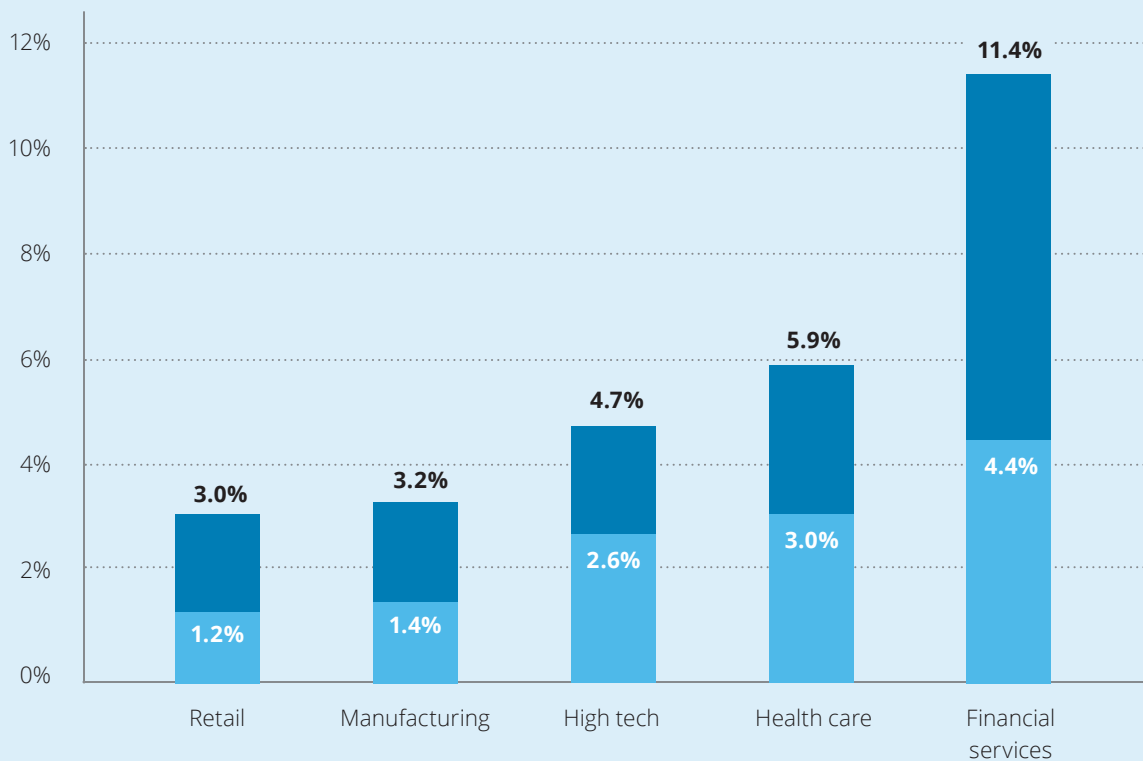
Shift from goods to services

Hyper-personalization

Push to modernize technology

IT spend as a percentage of revenue

Industry	Lower value	Upper value	Total
Retail	1.2%		3.0%
Manufacturing	1.4%		3.2%
High tech	2.6%		4.7%
Health care	3.0%		5.9%
Financial services	4.4%		11.4%

Source: "IT Spending and Staffing Benchmarks," *Computer Economics*, July 2018, https://computereconomics.com/article.cfm?id=2626[5]

can result in greater loyalty and customer retention. A number of retailers are creating strong differentiations for themselves by investing in making the customer journey "personal" for each customer, which has the knock-on effect of raising expectations for the entire industry.

Supporting and enabling these major trends is a push to modernize technology. Global retail spending on IT topped US$196 billion in 2019 and is projected to grow to over US$225 billion by the end of 2022.[4] This drive has been spearheaded by traditional retailers investing in hardware and software across their operations so that they can adopt new techniques and ways of working. Even with this growth, retail still lags the IT investment scale of other industries

and there will inevitably be pressure to continue modernizing.

These changes and pressures on the industry have created tremendous opportunity to grow and move into new markets, but they also mean retailers need to be nimble to respond to changes in market demands. The marketplace is clearly in a phase of volatility, with over US$200 billion of retail sales being "traded" between competitors. With so much at stake, successfully navigating this disruptive period will require substantial effort and bold strategic bets.

In the last decade, 46 retailers with assets of over US$100 million[6] have gone bankrupt and in the first half of 2019 alone, closure

announcements have been made for over 7,000 retail stores[7] in the United States and over 1,000 locations in the United Kingdom.[8]

Ongoing changes in merchandising

With merchandising at the heart of any retail business, this core function needs to be re-imagined to address these disruptors in order to:

• Remain relevant with customers

• Drive bottom- and top-line growth

• Optimize the capabilities, performance, and experience of employees

Three substantial shifts will arise in the way merchants operate:

Product-centricity to experience-centricity	**Human intuition to advanced analytics**	**More responsive operations**

To remain relevant with customers, merchants are moving away from using category trends and mass-audience considerations toward partnering closer with marketing to build a deeper understanding of the specific journeys of their most profitable customers, using both internal and external data sources, and ensuring that experiences across those journeys are consistent and personalized. This means that expectations and customer offers produced by marketing departments need to be consistent with product strategy and the customer experience online and in-store.

To maximize the abilities and performance of merchants and drive top-line growth, complex algorithms are being employed to better understand, formalize, and augment the intuition that merchants develop over years of experience, allowing merchants to better predict trends, quickly identify exceptions and areas for opportunity, and make more informed decisions.

To drive efficiencies and deliver on the customer experience, it is imperative to apply an end-to-end view of operations. This will allow retailers to understand bottlenecks and risk points in logistics, break down silos between stores, merchandising, and the supply chain, and ensure they meet the customer with the right products where and when they want to shop.

Retailers need to develop a deeper connection between merchants and marketers to understand their customers and create a better customer experience.

Merchants need to adopt more nuanced ways of understanding their consumers and markets, and embrace agile decision-making.

Merchants, supply chains, and stores need to be more closely integrated than ever to drive sustained loyalty and keep costs in check.

Merchandising with artificial intelligence

The explosion of AI has created opportunities to disrupt traditional ways of merchandising, coordinate and optimize activities across supply chains, and exert influence over demand for products.

What do we mean by AI? AI is a suite of technologies and methodologies that use large amounts of data and advanced algorithms that can "learn" on their own from that data to imitate three behaviours that are traditionally associated only with human intelligence:

• Interacting with humans

• Completing routine tasks

• Generating insights and predictions about future events

Merchants are beginning to use AI in a number of ways to enable the customer experiences that drive top- and bottom-line growth. The next page shows how.
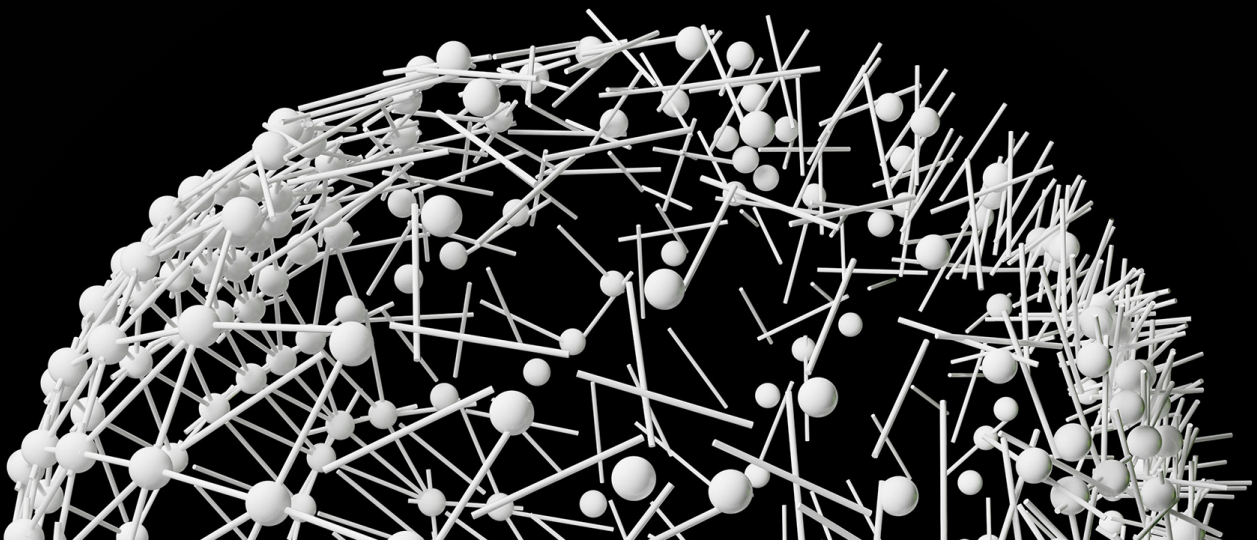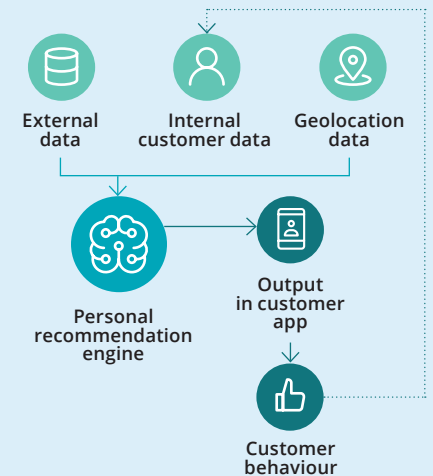
Personalization with AI

By mining internal and external data about customers, merchants can gain insights about the preferences of similar individuals, allowing them to create offers, incentives, and a shopping experience that appeal to a specific set of people.
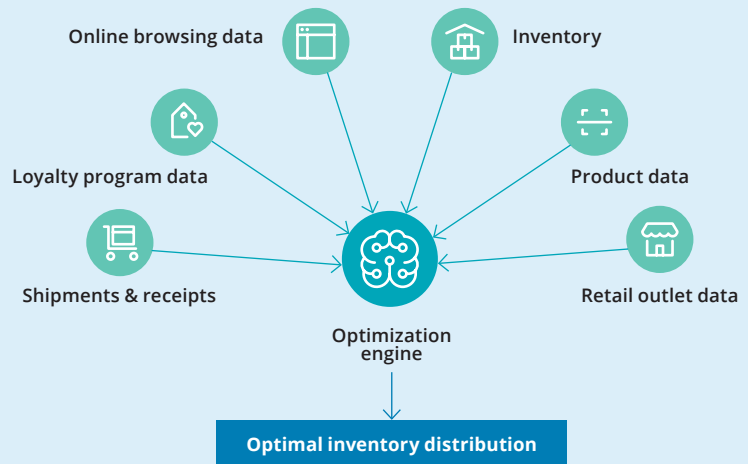
This increases loyalty and maximizes basket values. For example, a leading American grocery chain[9] is customizing the in-store experience through the use of "smart shelves." Sensors can identify customers who are using their mobile app in the store and will highlight products these customers might be interested in based on their purchase history. This could include highlighting kid-friendly snacks or gluten-free foods, or alerting them if an item on their shopping list is on sale. The data and insights gained from the app can be used to refine specific store assortments and better plan store layouts based on established shopping patterns. US-based Stitch Fix built its business on personalizing "style" for everybody, using data and analytics to suggest curated assortments to the individual shopper.

External data — Internal customer data — Geolocation data → Personal recommendation engine → Output in customer app → Customer behaviour
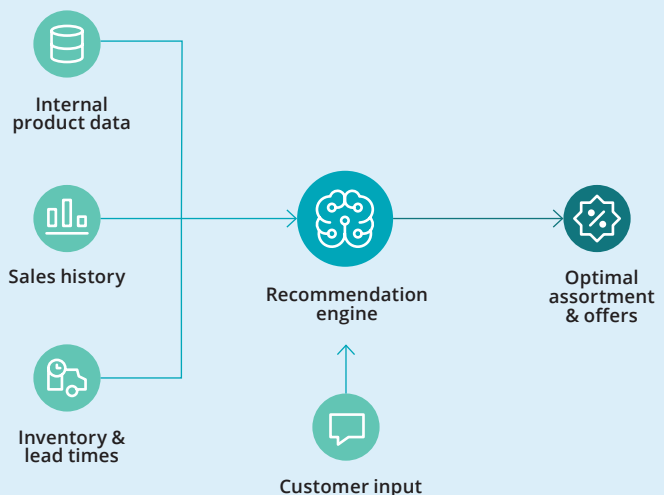
Cross-channel fulfillment with AI

By combining data from multiple channels with the power of machine learning, merchants can better understand the complex relationship between customers and products across all touchpoints. This allows them to optimize the use of their inventory to eliminate stock-outs and reduce the lead times to get products to customers. It's a significant challenge: a recent study by IHL Group found retailers could be losing up to US$1 trillion[10] in sales annually due to out-of-stocks. One example of a company capitalizing on AI is a leading German sportswear manufacturer and retailer, which is using the machine-learning algorithms to optimize inventory levels and omnichannel fulfillment across its online, third-party retailer, and private in-store businesses.

Online browsing data / Inventory / Loyalty program data / Product data / Shipments & receipts / Retail outlet data → Optimization engine → **Optimal inventory distribution**

Shaping demand with AI

Understanding your customer means you can not only better plan product offerings, but also be able to direct customers to those products. Ensuring the options that customers view are curated to their needs improves the customer experience and reduces the likelihood of an unexpected shock to inventories. A leading American outdoor apparel retailer is using AI to help customers determine the products that are right for them based on their preferred activities. Being able to get a handle on what customers need, connect this with inventory, and tailor the products that are recommended make sure that customers are exposed to products that are available, easy to ship, and meet their needs and expectations.

Internal product data / Sales history / Inventory & lead times → Recommendation engine ← Customer input → Optimal assortment & offers

Why is now the time for AI?

Four enablers are currently driving the exponential adoption of AI across the retail industry: data availability, advances in hardware, the development of machine learning tool sets, and the rise of AI-first organizations.

Data availability

Data is king. The successful development and deployment of AI requires large, clean, well- organized data sets. The implementation of modern e-commerce, planning, enterprise resource planning, and customer-relationship management platforms have created the large, structured data sets describing customer behaviour and retailer operations that underpin AI solutions. In addition to this, the growing availability of external data sets from government censuses, financial institutions, and social media platforms has allowed retailers to create a broader, more accurate picture of their customers and target markets.

Advances in hardware

Hardware advances have acted as a key enabler for AI. Dedicated cloud storage facilities, distributed storage and processing platforms, and processors optimized for machine learning algorithms have substantially reduced the cost of developing and deploying powerful statistical algorithms and has reduced the capital required to build a mature data and analytics practice.

Development of machine learning tool sets

Machine learning and open source tool sets are accelerating the journey for organizations. As the development and uses of machine learning algorithms grow, the complexity, reliability, performance, and availability of the fundamental tools have significantly improved, making it easier for retailers to start developing their own AI-powered insights.

The rise of AI-first organizations

Finally, AI-first organizations are pushing the pace of change. New competitors that have AI built into their DNA are entering the marketplace and differentiating themselves, putting pressure on existing retailers to keep pace while offering a template for where value exists and how to realize that value.

What is holding merchants back?

The traditional merchandising function has a few unique challenges that are stymying retailers' initiatives to incorporate AI into their businesses.

Breaking through the trust barrier with technology

Merchants prioritize deep understanding of their categories and develop that understanding through years of experience on the job. This has resulted in a world where intuition and gut feel are sometimes prioritized above all else. This leads to a culture in which it is difficult to trust technological advancements, and there is skepticism about the ability of a machine to provide the same level of insights.

Existing tools are cumbersome and easy access to clean data is hard to come by

Data is typically housed on separate, unconnected systems and the few tools that are designed for merchants are not intuitive to use. That makes it difficult to engage and sustain the use of these the tools, which reduces the likelihood that a merchant can take advantage of their full potential. In addition, where insights can be generated, merchants struggle to make them work on older technology stacks that are not well integrated and do not support omni-channel selling and fulfillment.

Conventional career paths for merchants fail to provide the learning and development required to serve the next generation of customers

Merchants are typically hired at an early point in their career and learn on the job from senior merchants in an apprentice model. This is problematic because new hires may be trained in the same methods, tools, and category knowledge that have been passed down for years— and in an age of disruption, this is not sufficient. Making a step-change in the tools that merchants use and pivoting to a customer-first approach means providing merchants with structured, dedicated training to disrupt this cycle and apply the potential of AI.

Incorporating artificial intelligence into your business
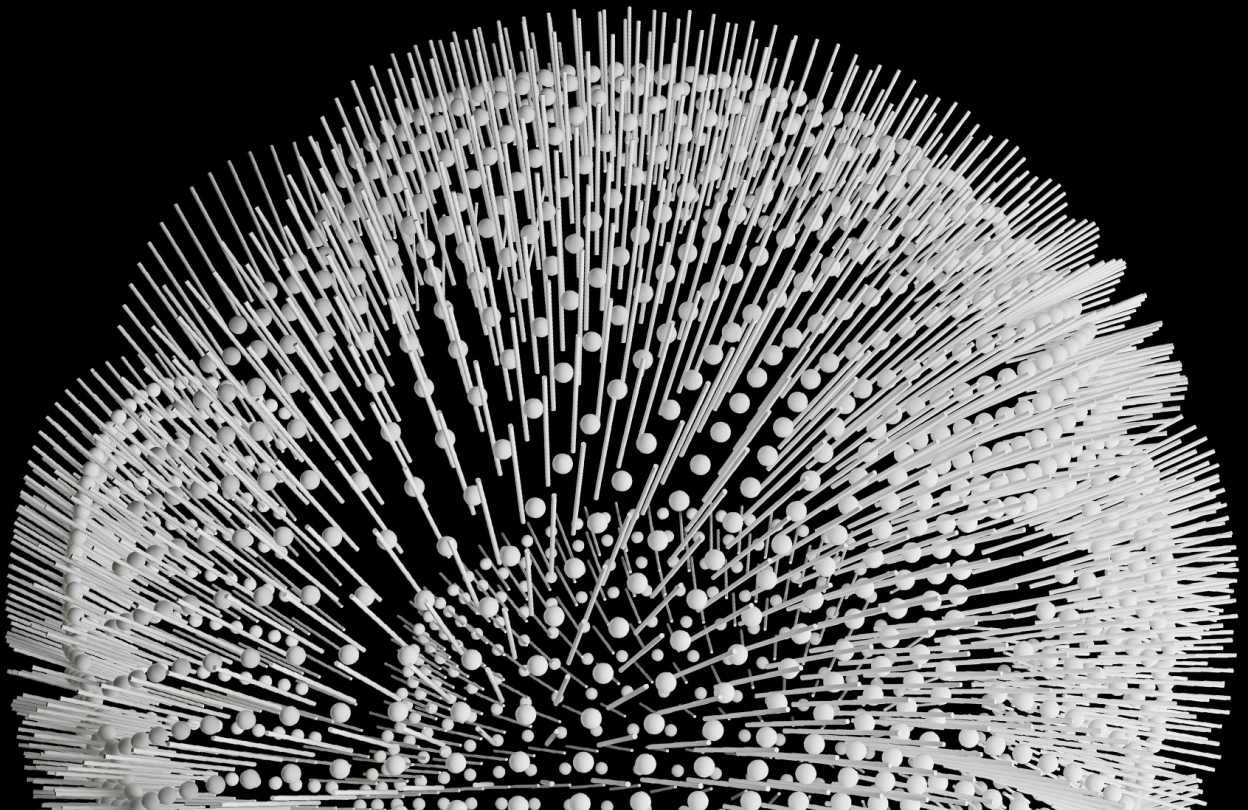
While the scale of becoming an AI-first organization can seem daunting, a focused, incremental approach to introducing AI to the role of the merchant will help to deliver immediate value and mobilize the entire organization in a new direction.

How to make AI work for you

The first step on this journey is to define a vision for the role you expect AI to play in your business and the value you expect to generate. This gives the organization a vision of the capabilities, skillsets, and applications to rally around and guide the journey.

Turning this vision into reality can be summed up as: **Start small, scale fast, and build iteratively.** Attempting to transition to a new way of operating and thinking in a "big bang" could mean missing out on key lessons that would be learned in a more incremental approach. It is preferable to build low-risk use cases that deliver clear and immediate value, such as better identifying repeat stock-outs of a core product.

Deciding on a suitable approach to building use cases starts with being honest about your risk tolerance, scale, and competitive environment. For retailers looking to lead in this space, and with the scope and ambition to build and maintain unique AI solutions, starting on the journey now can build a long-term advantage over the competition.

Once use cases have been optimized and are routinely delivering value, they can be swiftly rolled out across the organization to maximize the value and spread the benefits. In the example described above, this could mean the indicators that best predict recurring stock-outs in a core product may also apply to a number of similar products. Successful scaling of a use case depends on the retailer's existing capabilities and skill sets for supporting enterprise-level solutions. Processes and systems to clean, catalogue, and manage source data, assess and monitor solution performance, and assess AI models for risk and bias all need to be developed and scaled as the number and scope of use cases grows.

Who needs to be involved?

As with all technological innovations, it falls to business leaders to ensure funding and effort are prioritized for AI solutions that address real business issues and support the broader strategic objectives of the company. However, because the world of AI is so new, there is no one right way of dividing ownership. The design and implementation of solutions needs to be a

true partnership to recognize, prioritize, and pursue new opportunities as they open up. between relevant cross-functional leaders. The ownership of AI activity will depend on the strategic importance of AI to a retailer as well as the size of the investment being made in this technology. Most importantly, there will inevitably be lessons learned and insights gained that run contrary to the initial hypotheses. Maximizing value depends on the organization being nimble enough to recognize, prioritize, and pursue new opportunities as they open up.

Start small, scale fast, and build iteratively
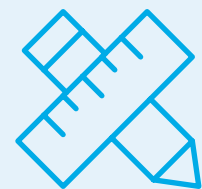
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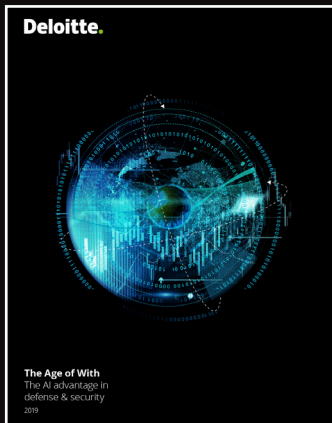
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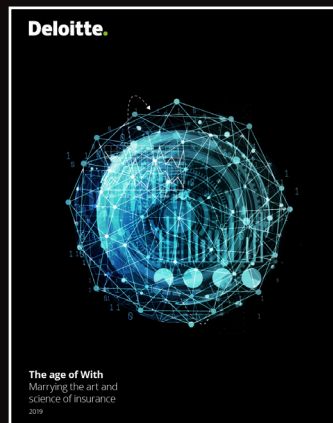
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