

A photograph of a factory production line for bottled beverages. The bottles are filled with an amber-colored liquid and have green caps. They are arranged in rows on a conveyor belt. The background is slightly blurred, showing more of the factory environment. In the bottom right corner, there is a dark blue geometric overlay consisting of several overlapping squares and rectangles with a grid-like pattern.

**CLOUDERA**

# Consumer Packaged Goods Industry at a Crossroad

Connected Data Drives Future CPG Business Capabilities

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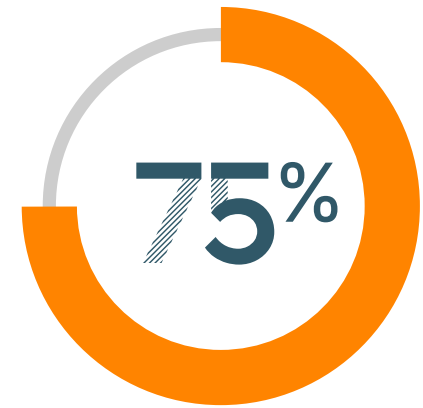
# Connected Consumers Remain in Control

Consumers are more in control than ever. Mobile and socially connected, they are armed with more knowledge than ever before. They're curious about where products come from, how they are made and the social causes that companies embrace. They are harder to influence, and they enjoy controlling their own shopping experience—redefining the meaning of “loyalty.”

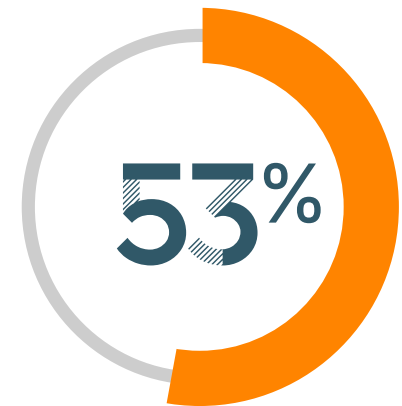
Brand loyalty is under intense pressure. To compound this new reality, during the 2020 global pandemic **75% of US consumers**<sup>1</sup> have strayed even further, trying different stores, websites, and CPG brands during the COVID-19 crisis with 53% of those same buyers influenced more than ever by digital channels before they buy in-store.

As a result, leading retailers and brands are integrating more tech (data, analytics and devices) into every step of the consumer purchase path to create a consumer-first approach. The entire consumer goods experience—starting with production and replenishment, and continuing into merchandising and marketing, and on to fulfillment and returns—has an opportunity (and challenge) to shape customer perception. Loyalty is being redefined by end-to-end experiences and becoming more important now than ever.

Consumer packaged goods companies thus need to balance rapidly changing consumer and market needs with relevant products, experiences, operational excellence, and the continued need to reinforce and strengthen the brand.



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# Consumer Packaged Goods (CPG) Emerging Disruptions

This trend is not waning, but rather accelerating. CPG's have the potential to experience even more disruption caused by socially connected and aware consumers and the rapidly changing retail landscape. Businesses today are realizing they need a different approach in addressing these challenges—an approach that leverages fast and connected data from all aspects of the enterprise.

## Areas where the path to future disruption is evident:

- The path to purchase is becoming an even more complex web of interactions due to the **proliferation of social channels, AI-based recommendation engines, emerging digital advertising platforms, marketplaces, and the blending of retail brick and mortar with ecommerce**. Consumers now not only have more choices in their route to purchase, but they are also being increasingly offered goods and services by all channels. Social networks used to be only about family and friends, now they facilitate a broad and complex digital landscape rich with consumer sentiment about brands.
- The **convergence of ecommerce and traditional brick and mortar** is accelerating the “buy online, deliver at home or in-store” activities for a wide variety of consumables like apparel, food, specialty, and hard goods. Shopping, once a pencil and paper exercise performed once a week, is increasingly displaced by an AI enabled phone app or web search directly syncing with consumer insights, demand forecasting, and fulfillment optimization delivered to your doorstep.



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Areas where the path to future disruption is evident: (continued)

- Historically buyers became aware of products and then purchased through narrow channels—weekly print ads, seasonal catalogs, or direct website landing pages. Future disruption is being seen by the **blending of social, mobile, direct to consumer (DTC), and traditional retail channels with AI powered recommendation engines** and push notifications based upon consumer profiles and tailored location-based consumer promotions to make selection and buying an “always on” experience. For example, grocery shopping lists were once built using individual meal components as consumed in meal preparation (“I need a can of this, a package of that”). Now, **recommendation engines and personalized offers** suggest complete meals for novel cuisines. Individual ingredients portioned to the recipe size are leveraged to provide a complete consumable meal package providing a wider range of recipes to those willing to explore novel cuisines creating a stream of purchases in real time, as the basket of goods ceases to exist.
- Shoppers are now being proactively prompted with offerings by **shopping services like Instacart, Shipt, Uber Eats, and so on**, with AI-powered intelligence based upon consumers’ broader social histories, location based demand signals, and personal tastes and preferences providing tailored recommendations.



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# Business Imperatives Improving the Customer Experience

Addressing these disruptions, consumer packaged goods providers have embarked on a number of business initiatives that are improving and solidifying the customer experience and operational excellence.

## Brand Differentiation

A shopper who engages with a retailer through social media is likely to spend **19% more than the average consumer**.<sup>2</sup> Focused on improving consumer insights, and increasing sales volume and margin, CPG firms are turning to direct digital conversations with consumers to more effectively connect, seeking to demonstrate clear differentiation of their brand by highlighting value and product level benefits while emphasizing the emotions that the brand conveys.

## Influencing the “Moment of Truth”

Seeking to decrease the cost to serve, CPG companies have empowered their front-line employees and consumers with more responsive and relevant content, delivered anytime, anywhere. Intimate product knowledge drives brand preference during these “moments of truth”.

## Personalizing the Engagement

CPG companies seek to understand their customers better and do so by driving timely, personalized engagements through Direct to Consumer (DTC) channels they own. These orchestrated conversations with consumers have improved new product R&D efforts, informed consumer decisions to drive better insights, visits, and improved retention, and increased up/cross sell opportunities.

## Improving the Fulfilment Promise

Out of stocks are a major source of lost revenue to a brand, costing **4% of lost revenue**.<sup>3</sup> Delivering the brand promise with improved traditional retail and partner ecommerce information sharing to achieve mutual customer engagement, while reducing out of stocks (lost sales) with a flexible supply chain and lowering fulfillment costs allows consumers a more flexible way to meet their buying needs.

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# Digital Transformation is Now a Business Imperative

## The CPG Reality

By 2023 eCommerce will make up



of total organic growth in CPG<sup>4</sup>

Shoppers who engage with retailers through social media are likely to spend



more than the average consumer<sup>2</sup>

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# The Three CPG Commerce Pillars Can Produce Data Silos

As shopping is redefined and retailers are increasingly becoming competitors, leading CPGs strive to achieve a holistic approach to today's realities and tomorrow's challenges.

Many CPGs are still category-focused and lack the shared customer insights that would arise from improved collaboration across the value chain. Though the digital maturity of CPG's varies, most still work in data silos built around these three key commerce pillars, each with its own challenges and goals:



## Marketing and e-Commerce

Traditional retail extends the traditional buying process in retail brick and mortar stores by seeking to influence offline selection and consumer sales by a digital pathway. Traditional retail has an advantage in that **over 80% of CPG sales still occur in-store<sup>5</sup>** and can leverage shopper location and data driven insights to augment the shopping experience with location-based offers and services.



## Category Management and Execution

Partner e-commerce increases sales volume opportunities via optimization and partner alignment via pure-play digital platforms and marketplaces such as Amazon, Chewy, and Alibaba, and strives to promote the right portfolio/assortment based on shopper missions. Partner e-commerce is most successful by considering key metrics such as conversion, engagement, search optimization, and dynamic pricing capabilities offered by the partner.



## Private Label and the Supply Chain

Brand.com, while nascent, this channel seeks to drive direct consumer insights, engagement, and even on-line sales via the brand's own Direct to Consumer (DTC) storefronts, by establishing direct consumer insights to aid them in capturing real-time consumer feedback on new products, marketing campaigns, promotions, quality control, services, and/or offerings that connect to customers' lives.

Data analytics capabilities delivered through an enterprise data platform change the game by promoting collaboration across the entire consumer goods ecosystem. Enterprise commerce and engagement are now breaking down the existing silos and connecting channels to markets.



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# Limitations to Traditional CPG Data Solutions

Today's CPG firms face limitations addressing the complexities of digitalization. Much of these limitations are due to having to piece together consumer and operational data from hundreds of disparate trading partners (e.g., retailers, ecommerce partners, syndicated data providers), and the rapid evolution of new and connected (e.g., IoT) data sources with exploding volumes and complexities this brings.

## Some of the critical challenges and key considerations that organizations face with respect to data management for Connected Consumer Packaged Goods are:

- **Infrastructure:** In terms of the data itself, many CPG organizations are still lacking an enterprise data strategy and comprehensive infrastructure solution, one that can handle multi-structured and multi-location (on premise or multi-cloud) data. Making this more challenging is the perpetual growth of disparate data sources, from remote devices to external partners to enterprise data. Easily accessible data must be leveraged across on-premises and multi-cloud environments to drive solutions that deliver answers to the most complex business questions.
- **Real-Time Complexity:** Data is both CPG's friend and enemy. CPG has never had a problem acquiring data. It does, however, have a challenge ingesting, analyzing, and acting on data in real time. To manage the complexity of real-time information, consumer goods data management platforms must enable real-time analytics on streaming data, effectively ingesting, storing, and processing data to instantly deliver insights and action.
- **Handling the Volume and Variety of IoT Data:** To enable use cases like supply-chain optimization or personalized marketing to "segments of one", CPG firms demand a platform that can handle diverse data structures and schemas—everything from intermittent data originating from click-stream or point of sale, to unstructured data (e.g., images, video, text and sensors) from the edge, delivered through a variety of supported drivers and protocols.
- **Diverse Analytical Capabilities:** Existing platforms offer limited ability to provide insights and analytics into platform usage and performance. For CPG solutions, a data platform must provide a wide range of analytical options—including everything from SQL analytics and search capabilities, to tools to support advanced analytics, ML modeling, and AI development. To be most effective, it must also allow for tight integration with leading business intelligence (BI) solutions that offer reporting dashboards and specialized business analytics capabilities.

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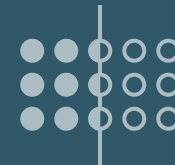
# Connected Data Enables Product Insight

Consumer packaged goods firms have the daunting task of managing both product development, manufacturing, logistics and the supply chain complexity with that of category and brand management. That complexity though, also provides an unparalleled opportunity to leverage advanced analytics through the many and varied data sources in the value chain that originate from both manufacturing and the consumer.

CPG organizations leverage data along the entire value chain, starting with voice of customer conversation through the "Moment of Truth," to post consumer sentiment and support for the brand. Consumer goods companies face a unique set of challenges in the development and creation of new products. For example, their products tend to require quicker response to consumer trends and needs, and often require consumer trend detection and localization compared to industrial companies that have longer product lifespans and a largely world-wide solution. To address this challenge, enterprise data originating from sales and marketing efforts (consumer demand by channel, social commentary, third-party research, and consumer profiles) can be integrated into innovation efforts so that the voice of the consumer is embedded in the product, not an afterthought.

"Big data is becoming the basis for a better understanding and assessment of the market and consumers... Our Cloudera solution with this global retailer illustrates how getting an edge over the competition is as easy as analyzing existing data."

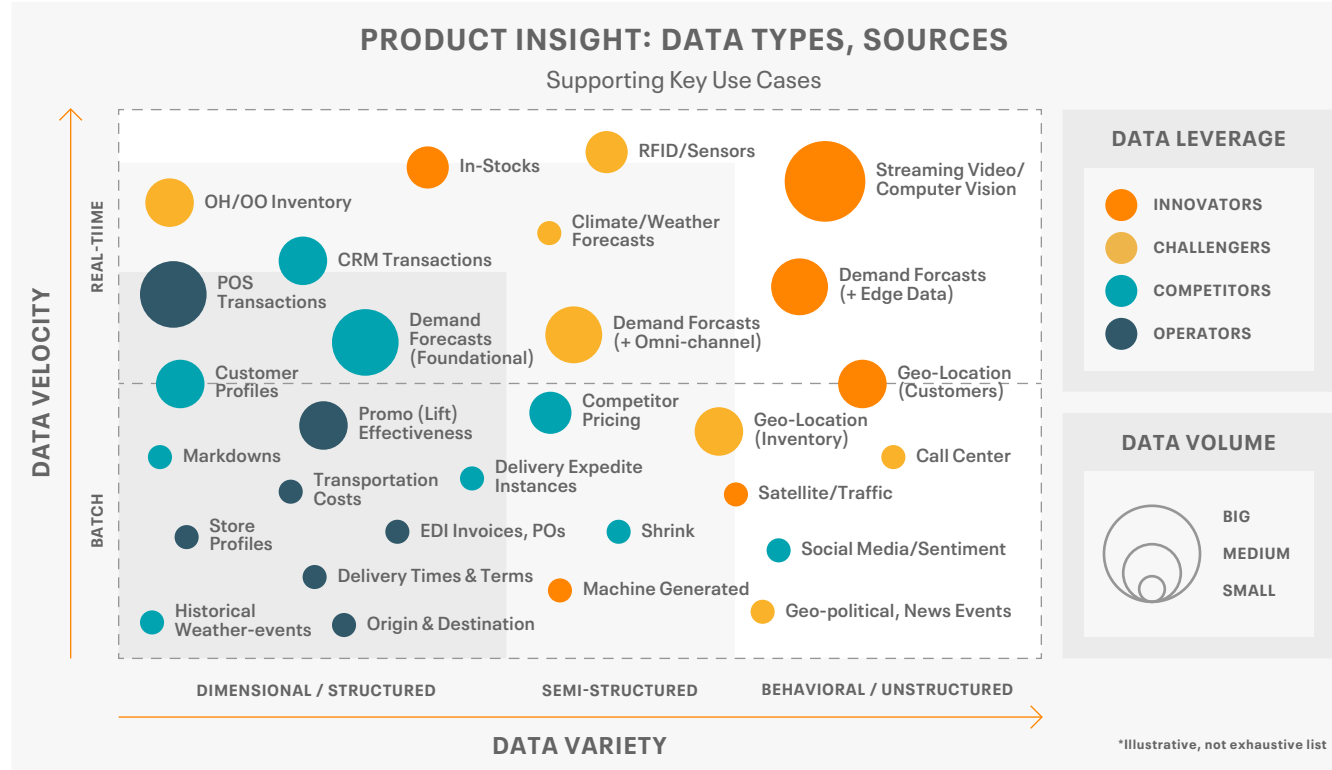
Aleksander Fafula, Manager,  
Data Science, PwC Poland



Operational Technology (OT) data presents itself in the manufacturing process through IoT sensors, PLC controllers, RFID, MES, and data historians all emanating from the manufacturing or packing line shop floor. This data can also be combined with Information Technology (IT) data from platforms (SAP, Oracle, IBM, etc.) to provide rich insights to enable practical use cases. Enterprise data streaming in real-time is being applied to quality control, leveraging computer vision on a packaging line ensuring correct fill and heat-sealed closure, or the often referenced, equipment predictive maintenance. Predictive maintenance is especially effective when OT and IT data is merged—not only can the machine learning analytics predict when a process will fail, it can coordinate with the Computerized Maintenance Systems (CMS) to schedule the downtime, on your time, with the replacement parts being delivered just in time.

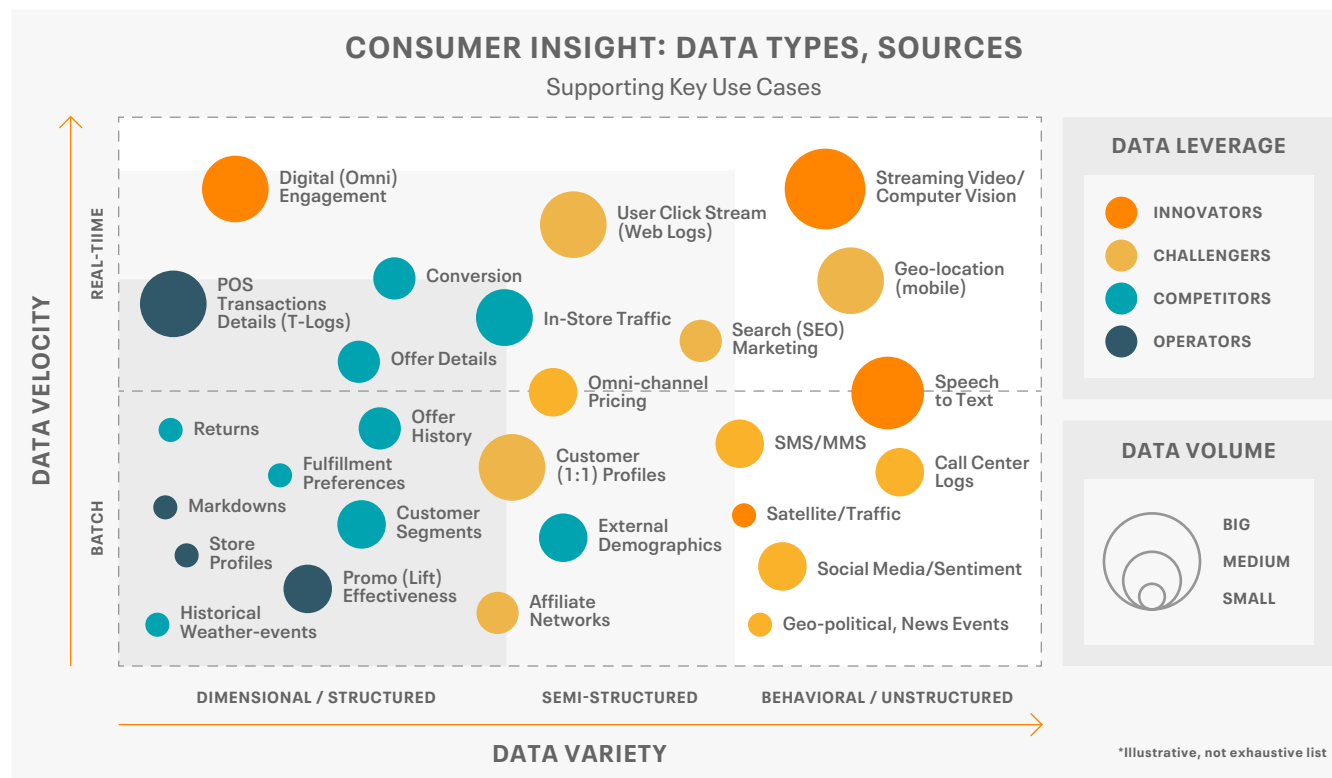
“One of our clients experienced a nine percent sales increase in one of their main categories after making changes to the layout to increase the traffic and dwell time in the area.”

Jorge García Bueno, CEO, Shoppermotion



# Connected Data Enables Consumer Insights and Category Management

Consumers deliver a host of data sources that reinforce the brand and fuel innovation in product development and marketing. CPG companies have leveraged Point of Sales (POS), CRM data, demographics, click stream, and paid search for years, but the proliferation of mobile devices, streaming data, and connected apps that allow instant purchase and delivery have delivered additional sources of data. Geolocation, kiosks, call center logs, virtual assistants, order statuses, returns, and LTV are sources innovators leverage for real-time, personalized services.



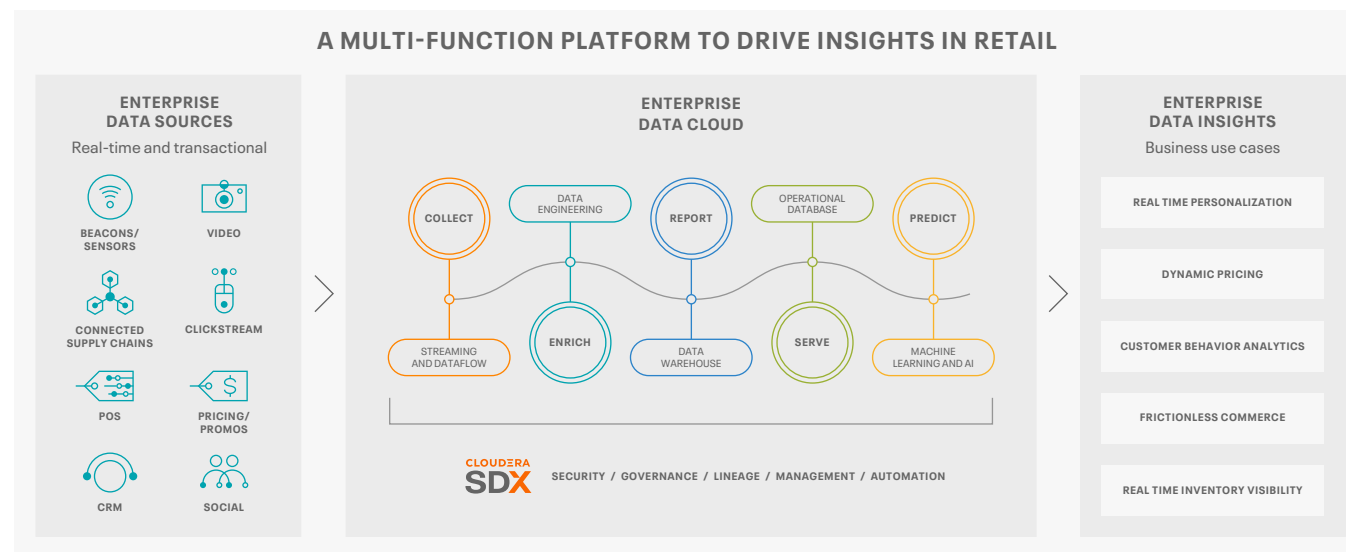
# What Cloudera Offers CPG Organizations

Cloudera offers an end-to-end data management and analytics platform that can help CPG organizations drive insights and action from any data, anywhere, in real-time.

- Ability to ingest, process and analyze high volumes of real-time data from any source—sensors, RFID tags, robotics, video, images, external third-party providers, historians, ERP and SCM systems, historical archives, master data management databases, fleet vehicles, or even associate wearables.
- Offer massively distributed storage and processing engines for large data sets to execute a wide range of data processing workloads.
- Enable predictive analytics or apply machine learning algorithms to petabytes of data, while maintaining strict enterprise data security, governance, and compliance, audit trails across on-premises and cloud hybrid environments.
- Provide multiple analytical options to drive insights, intelligence, and action from data at the edge, on premise, or in any public, private, or hybrid cloud.

“Cloudera is at the heart of our data-driven decision making and all internal stakeholders use it to analyze campaign and operations performance at a granular level, and steer the business.”

Kai von Grambusch, Director, Data & Analytics, HelloFresh



## Cloudera is 100% Open

The Cloudera Platform is 100 percent open source, supporting your objectives, easily integrating with existing legacy systems, avoiding vendor lock-in and accelerating enterprise innovation.

- Open source prevents vendor lock-in
- Open compute enables efficient server, storage, and infrastructure designs for scalable computing
- Open architecture mitigates interoperability (legacy system integration) concerns
- Open APIs with visualization-agnostic tools
- Open cloud enables a cloud-agnostic approach

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# Strategic CPG Leading Best Practices in Digital Transformation

Leveraging real-time data to power streaming analytics use cases across all enterprise data sources empowers CPG firms with unprecedented digital transformation capabilities. Cloudera has a point of view in best leveraging this opportunity with these recommended leading practices:

- 1 Connect your Enterprise Commerce and Engagement strategy considering all Routes to Market as the enterprise data platform will ingest, process, analyze, and store data on-prem, hybrid, or cloud, breaking down data silos, providing cross-enterprise insight
- 2 Integrate a Single View of Consumers across all brands to drive cross-category synergies and increase value of your Enterprise Data providing a holistic view from all points of consumer contact that will uncover insight not seen with a single view
- 3 Optimize investments and channel partnerships to realized Omni-channel Fulfillment based upon volume and cost structures to lower the cost of the supply chain, improve stock-outs, and provide supply chain agility based on customer preferences and demand
- 4 Deploy an Enterprise Data Platform supporting analytic innovation and enable global DMP to deliver rich, multi-channel experiences that provide a Customer 360 view
- 5 Transition to an Agile Operating Model designed to rapidly develop solutions and respond to evolving consumer tastes and preferences by building a customer centric innovation philosophy by creating new ways to bring together different sources of customer marketing driven insights (click-throughs, SEO, social) into the innovation process
- 6 Align the organization to orchestrate globally, while allowing flexibility within individual brands/markets. Provide local solutions, innovation, and products based upon global enterprise solutions by leveraging enterprise data from Operational Technology and Information Technology sources. Connect product development, operations, supply chain, and sales and marketing thus creating a Connected Goods company.

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# Advanced Analytics in Action— Customer Use Cases

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## Customer Use Case A

Global Top 10 CPG company/Trade Promotion Effectiveness

### Challenge

Integrating dozens of traditional retailer trade plans with syndicated data (e.g. IRI, Nielsen, Spectra) and promotional execution data (Ad, TPR, Display) to better understand promotional lift, retail execution, and trade spend effectiveness.

### Solution/Benefit:

Leveraging Cloudera's enterprise data platform, this CPG company was able to **improve speed to post-promotion results by 45%**, enabling field sales and marketing teams to better align future trade spends (Ads, TPRs, Displays) with traditional retail partner programs that were most impactful.

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## Customer Use Case B

Global Top 10 CPG company/Demand Forecasting

### Challenge

Collecting demand forecasts in a timely manner, and augmenting this data with third-party demand signals (e.g. local event calendars and weather) to improve demand forecast accuracy for replenishment at key retail trading partners.

### Solution/Benefit:

Leveraging Cloudera Data Platform and Data Flow experience, this CPG company was able to automate the integration and profiling of demand forecasts for product categories, **improving processing time by 4x**, **improve integration of third-party demand signals** and **reduce out-of-stocks by over 15%** at key retailers.

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## Customer Use Case C

Global Top 20 CPG company/New Product Development

### Challenge

Collecting and integrating social sentiment and brand engagement with traditional retail, partner ecommerce and brand.com purchase behavior to better understand emerging consumer tastes and preferences to improve new product 'winners'.

### Solution/Benefit:

Leveraging Cloudera Data Platform to ingest third-party data (e.g. Facebook, Pinterest, Instagram), integrating these insights with DTC engagement and purchase behavior across all sales channels to uncover emerging product trends helped improve new product launch success by 25%.



## Drive Insights and Business Outcomes

The Cloudera Data Platform enables retailers and consumer packaged goods companies to maintain their momentum and accelerate digital transformation by leveraging data from any source whether on-premise, cloud, or hybrid platforms—powered by open-source technology.

Cloudera delivers the data lifecycle solution through Cloudera Data Platform, from retail's edge to AI.

### Why Cloudera



#### HYBRID AND MULTI-CLOUD

Run analytics on any cloud, easily and securely moving data and metadata between on-premises file systems and cloud object stores.



#### ANALYTICS FROM EDGE TO AI

Apply real-time stream processing, data warehousing, data science and iterative machine learning across shared data, securely, at scale on data anywhere.



#### SECURITY AND GOVERNANCE

Use a common security model, role and attribute-based access policies and sophisticated schema, lineage and provenance controls on any cloud.



#### 100% OPEN

Open source, open compute, open storage, open architecture and open clouds. Open for developers, partners and open for business. No lock-in. Ever.

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# Learn More

Get an exclusive look at [Cloudera Data Platform](#) and learn more about how Cloudera is transforming [Retail and Consumer Packaged Goods](#).

## About Cloudera

At Cloudera, we believe that data can make what is impossible today, possible tomorrow. We empower people to transform complex data into clear and actionable insights. Cloudera delivers an enterprise data cloud for any data, anywhere, from the Edge to AI. Powered by the relentless innovation of the open source community, Cloudera advances digital transformation for the world's largest enterprises.

Learn more at [cloudera.com](https://cloudera.com) | US: +1 888 789 1488 | Outside the US: +1 650 362 0488

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### Sources

<sup>1</sup> The Great Consumer Shift: Ten Charts that Show How US Shopping Behavior is Changing, MyKinsey & Company, 2020

<sup>2</sup> Social Media-engaged Shoppers Spend More on Purchases, Retail Dive, 2017

<sup>3</sup> Retailers Suffer the High Cost of Overstocks and Out-of-stocks, RetailWire, 2015

<sup>4</sup> Groceryshop 2019: Highlights of the Retail and CPG Brand Event, Clarkston Consulting, 2019

<sup>5</sup> Perspectives on Retail and Consumer Goods, McKinsey & Company, 2020

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