

# Internet of Retail Things Paves the Way for Autonomous Retailing

## Abstract

According to IDC, there will be 30 billion connected things by 2020<sup>1</sup>. The Internet of Things market for retail is expected to grow at a CAGR of 48.36% for the period 2014-2019 according to MordorIntelligence<sup>2</sup>.

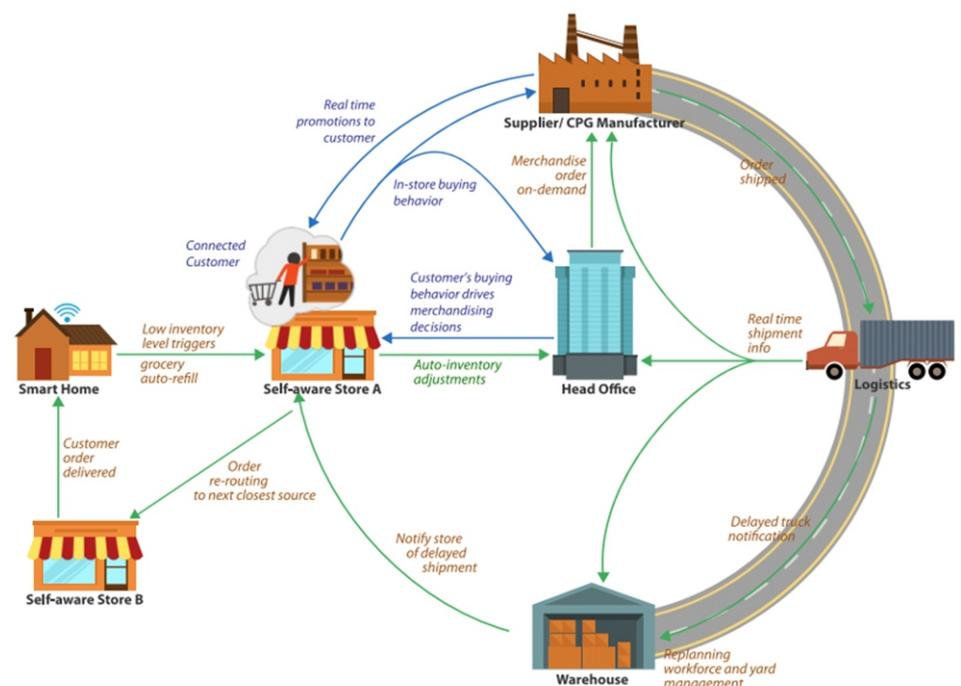
The adoption of IoT to create a more intelligent and connected retail ecosystem is referred to as the Internet of Retail Things (IoRT). By delivering networked information to relevant systems and end-users on a real-time basis, IoRT can catalyze the development of new business models and expand the scope of retail services. Combining IoRT with people, processes and digital technologies can lead to information rich, action-oriented, 'situationally aware', and 'contextually correct' retail entities, thereby leading to an autonomous retail world. Such a retail environment focuses on servicing rather than selling, is self-regulated, rich in networked information, characterized by higher levels of operational effectiveness, and well prepared for future growth.

## Transitioning to a Hyper-Customer Centric Era

In all the previous evolutions of retail industry, technology played only a supporting role in transformation. In the hyper customer-centric era, technology is at the forefront, driving—and not just enabling—business transformation for deeper customer engagement. This era is characterized by ubiquitous access to information; contextual, interactive, and personalized services as well as unhindered internal and external collaboration. Let us see how IoRT can power the hyper-customer centric era.

## Building the Internet of Retail Things Ecosystem

IoRT and an autonomous retail environment can be achieved only by creating an interconnected ecosystem of consumers, suppliers, and partners. Whether it is reaching consumers through the connected home or at the store through mobile devices or trade partners and suppliers, IoRT provides the capability to capture data from the interconnected universe of retail systems and devices. The data needs to be cleansed and processed and fed into a robust intelligence system, which can drive the right actions. These intelligent actions can include automatic refilling of customers' grocery, generating automatic order replenishment triggers, enabling temperature and lighting control in stores, tracking fleets, or managing the yard.



The IoRT Ecosystem

Walmart<sup>3</sup> was an early adopter of IoT for inventory management to optimize its warehouse and supply chain operations. Starbucks' Clover coffee machines<sup>4</sup> connect to the cloud to track consumer preferences. Kroger partnered with ZigBee to improve customer experience by tracking their movements in the stores, understanding common traffic patterns, and then providing customers with personalized coupons<sup>5</sup>. Leading retailers such as Home Depot, Best Buy, and Target also offer a line-up of connected home solutions.

## Three Key IoRT Application Areas

Retailers can extract the greatest value by focusing on three key areas:

### 1. Self-aware stores

An IoRT-enabled retail store can provide superior service, right from greeting customers to helping them navigate the cart based on their shopping list, sharing relevant offers, and offering customer assistance. Retailers can ensure smoother checkouts by using RFID, image capturing technology, and smart payment processing systems. By tracking in-store traffic patterns and enabling automatic inventory adjustments and replenishment, the store associates' workload can be reduced, and help ensure the availability of merchandise based on actual demand. IoRT can help make the entire retail experience real time, personalized, and relevant.

### 2. Self-regulated supply chain

Connecting stores and the supply chain through IoRT can help improve the demand sensing capabilities that trigger a relevant set of events. The installation of real-time sensors and cloud-based GPS systems along with RFID chips embedded in pallets can be termed the Internet of Supply Chain Things. Such a supply chain offers greater in-transit visibility and real time data on weather, driver details, traffic, and delays among others. Environment related data such as fuel consumption can help in monitoring and reducing fuel costs, while RFID sensors can significantly improve food traceability and tracking of perishables. Extending and connecting the supply chain to the manufacturer can enable and simplify the tracking of items right from the source till it reaches the consumer. It may also help in processing returns and predicting customer behavior as well as preempting the need for maintenance services. All this leads to a more proactive, predictive, and sustainable supply chain that is responsive to future needs.

### 3. Connected merchandising

Matching merchandise availability with consumer preferences and demand through right product assortments and a better in-stock position has always been a top priority for retailers. Sensors that track customers' in-store buying behavior combined with a powerful predictive and prescriptive analytics engine can help resolve merchandising challenges. They offer answers to critical questions such as what customers want to buy, in what quantities, and at what prices. IoRT can also help address gaps in planogram compliance through interconnected sensors in products and smart shelves.

## Three Steps for Tapping into the Power of IoRT

Leveraging IoRT need not entail totally disrupting the current retail environment but determining what works based on specific business requirements. Retail organizations can approach the IoRT phenomenon to drive better business results by:

1. Monitoring and tracking of simple aspects such as temperature, functioning of POS devices, or lighting. After successful pilots, IoRT can further be extended to select core retail functional areas such as in-store offers,
2. Sensing certain events, for instance when the temperature of perishable items is not optimal and triggering appropriate alerts to store associates to set those items on promotions to prevent waste.
3. Responding in real time, for instance, by collecting information across the supply chain to track shipments and appropriately responding with workforce schedule changes at the warehouses will take the application of IoRT to the next level, thereby creating an autonomous retail ecosystem

## Conclusion

As consumer awareness and acceptance grows, retailers need to adopt IoRT to become more autonomous and responsive. The reducing cost of sensors accompanied by the advancements in analytics and cloud computing are paving the way for an autonomous retail world. It is no longer about a single technology but a completely connected retail ecosystem that is supported by a strong foundation of decision support systems driven by advanced analytics. Such an interconnected environment can improve productivity, operational efficiency, and the utilization of assets. In addition, it is likely to tighten collaboration across departments and with external partners, and deliver richer omni-channel experiences.

## References

- [1] [1] IDC: Internet of Things Base to Reach 30 billion in 2020, Published on 7th November 2014, Accessed on 1st December 2014, <http://www.telecompetitor.com/idc-internet-of-things-base-to-reach-30-billion-in-2020/>
- [2] Mordor Intelligence "Internet of Things in Retail" Growth, Trends and Forecasts, Published in June 2014, Accessed on 1st December 2014, <http://mordorintelligence.com/product/internet-of-things-in-retail-applications-devices-analytics-smart-products-growth-trends-and-forecasts-2014-2019/>
- [3] 5 Ways Retailers benefit from 'Internet of Things', Published in December 4th 2013, Accessed in October 2014, <http://www.practiclecommerce.com/articles/61319-5-Ways-Retailers-Benefit-from-Internet-of-Things>
- [4] Forget coffee, Starbucks is a tech company, Published in June 2014, Accessed October 2014, <http://www.computerworld.com/article/2490746/retail-it/forget-coffee--starbucks-is-a-tech-company.html>
- [5] ZigBee: The Language of Internet of Things, Published January 2015, Accessed January 2015, <http://www.sensorsmag.com/internet-things/zigbee-language-internet-things-16778>

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