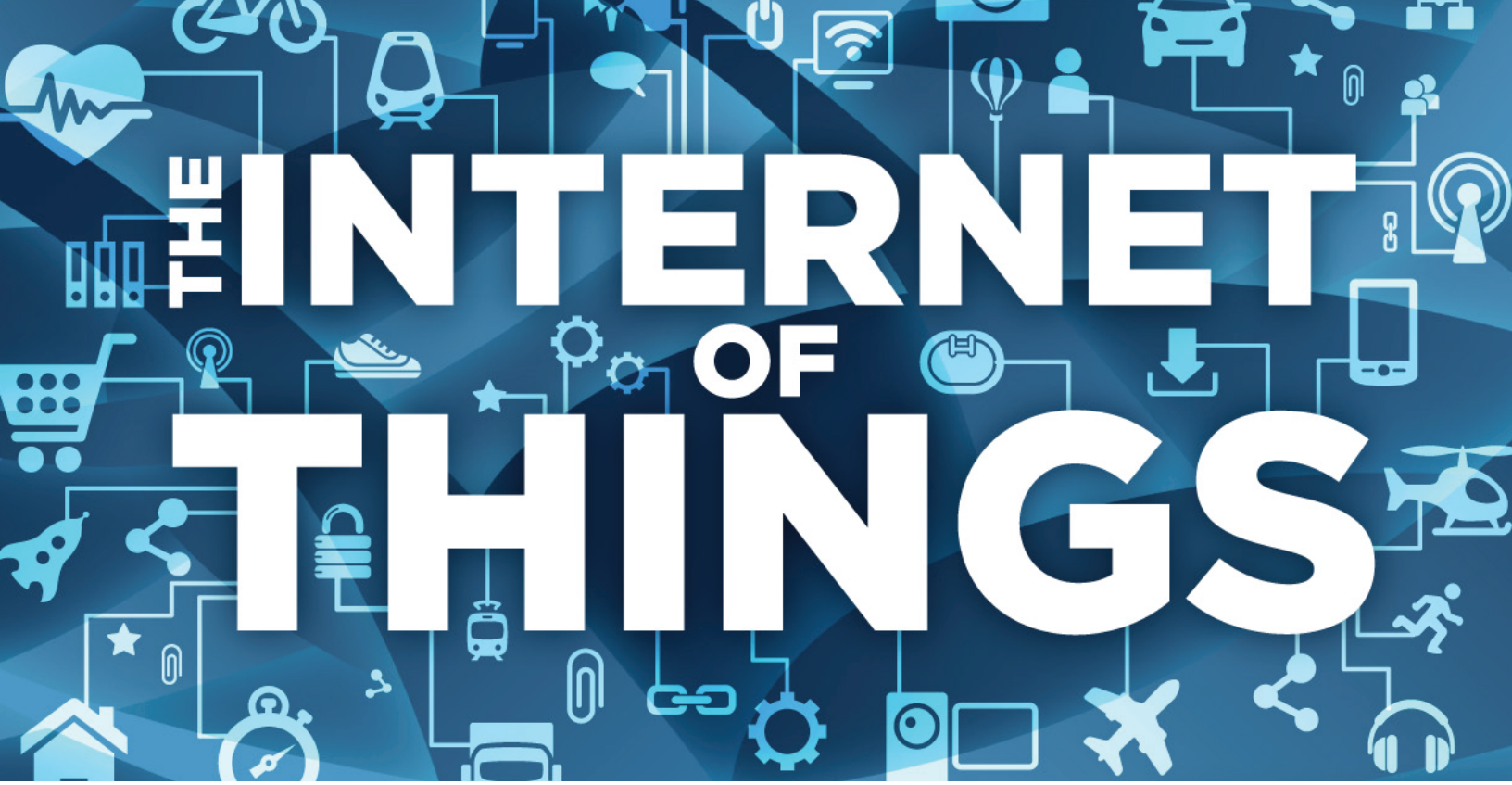


POSITION PAPER

How the Internet of Things is Reinventing Retail

And Why ComQi's EnGage Platform is the Seamless Solution

The buzz about big data and the Internet of Things has started to seem more like a roar in 2015. The scope of potential devices is measured in billions, and the implications are described as vast. But what does all that IoT buzz really mean for retail marketers, and how they interact with shoppers in stores?

In this position paper, we'll get beyond the big numbers and future forecasts to focus on one of the ways the Internet of Things (or IoT for short) really matters for a retail group – how it can start to leverage IoT-driven systems and make shopping better for its customers through seamless, effective visual messaging driven by ComQi's EnGage platform.

In this paper, you'll learn how ComQi's EnGage CMS, already deployed by top global retailers and food service brands, uses IoT:

- drive customer loyalty and revenue
- reinforce brands
- cross-sell and up-sell in store
- enable real-time product promotion
- improve customer service ratings
- boost in-store stock turns
- improve supply chain replenishment efficiencies
- lower total cost of ownership (TCO)
- increase business continuity

First, A Primer

If retail is your business directly or as a supplier, you can't help but see TV spots, print ads and lots of blogging about the Internet of Things.

Micro-processors and ubiquitous Internet connectivity means we've transitioned from a retail world where the intelligence was all at the sales counter and back office, to one that sees smart devices everywhere, and on just about anything.

It's a big concept, but it boils downs to this:

Billions and eventually trillions of devices are being deployed and connected – everything from the Point Of Sales systems to sensors at dressing room doors. They can differ wildly, but all have enough built-in smarts and connectivity to report on what they're doing, and what's going on around them.

"Retailers are banking on IoT technologies to catch shoppers' eyes and ultimately increase sales."

"IDC forecasts that the market for IoT solutions will grow by 19% in 2015. Leading this increased demand is digital signage as retail stores seek new ways to keep their cash registers ringing."

IDC, 2015

Those devices can send data that can then be rolled up and analyzed to provide rich, invaluable insights about activity and status. IoT devices can make sense of and optimize entire mass transport systems. Or they might be the triggers for simple customer service actions at a shop.

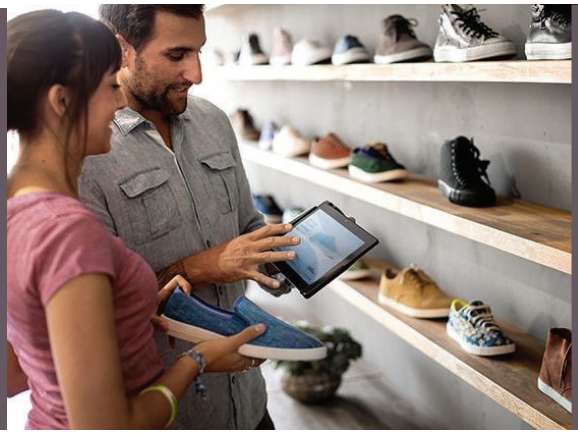
Here's a simple example for that:

A motion sensor or security camera located at the gateway to a dressing room triggers a notice to portable devices carried by sales associates, or at a service counter. The sensor has logged someone standing there for more than, say, 10 seconds. So help is dispatched and shoppers get a better experience, because they're not left waiting and the retailer can optimize their in-store staff. The salesperson's device might be nothing more than a smart watch that vibrates and flashes a notice: "Customer waiting at dressing room B".

That sensor, and that watch, are IoT "things". So is the software that brings those "things" together, raises a flag that someone is waiting, and triggers that message.

Applying IoT In Retail

Consumer demand for convenience, product availability, and both personalized and contextualized interactions will drive retailers to adopt multiple IoT technologies in the coming years



The use cases in retail cover a wide spectrum, and include:

- product tracking/traceability
- interactive consumer engagement and operations
- smart operations (which includes interactive consumer engagement and dynamic, hyper-local message targeting)
- shopper intelligence
- mobile payments
- inventory management
- asset management

There are huge efficiencies to be gained when devices and data can collect, present and use real-time information in meaningful, actionable ways. Retailers grow more nimble because the information and insights they need are readily available.

"78% of consumers said they'd be more likely to purchase from a retailer again if its offers were targeted to their interests, wants or needs.

86% said they'd be willing to pay up to 25% more for a better experience."

Infosys, 2014

IoT also has big implications for the in-store marketing efforts of retailers and brands. Connected devices – from POS and cameras to readers and beacons – can all help drive better, easier experiences for shoppers.

Driven by live data devices and systems, an "aware" store can deliver smarter messaging on screens of any size.

Instead of canned, pre-determined messaging, smart screens in an aware retail environment are providing shoppers deeper information about what they're looking at, and influencing buying decisions, including up-sells.

Smart systems will trigger content based on multiple contributing factors, including what's under-performing and overstocked, what's running out of stock, time of day, environmental conditions, online trending and countless other potential variables.

Retailers can also market and merchandise based on shopping and buying patterns revealed through loyalty programs, online browsing and search trends. Bluetooth low energy beacons, when married to a retailer's dedicated or partner shopping apps on phones, can generate visual heat maps that show how consumers move around stores.
To generate even more detail it's also possible to maintain individual privacy by anonymously triangulating and mapping how shoppers move around stores, based on their phone's WiFi being activated.

Though Hollywood sometimes suggests dystopian futures where retailers and brands obliterate privacy and market to individuals even inside a store, the real world application would raise few alarms. Retailers are looking for actionable insights to tailor what they offer to what consumers actually want. When they get that right, consumers tend to be happy, make purchases, and most importantly, come back for more.

This highly-tuned, hyper-local and dynamic marketing and merchandising doesn't happen without a back office system and store-level messaging platform. Those IoT nodes, that data, the many triggers and actions, all need to be aggregated and harmonized. Then a system is needed to dynamically turn insights into actionable, impactful messaging.

Retail IoT In Use

Here are some examples of how major retailers are already applying IoT data to drive experience and sales:

> *"Digital Signage use in retail outlets will grow from $6.0 billion in 2013 to $27.5 billion in 2018, a 35.7% five-year CAGR, as retailers continue to digitize the consumer experience."*
>
> *IDC, 2015*

- Retailing giant Walmart heavily uses big data for consumer insights and store-level merchandising. The company mines social media trends to showcase types of products that are rising in popularity, and local weather data is compared against historical sales data to boost grocery sales. For example, Walmart's data shows sales for salad ingredients rise when the forecast suggests temperatures above 80 and light winds.
- Nordstrom tracks pins on Pinterest to see what products are trending, and uses that on signs in-store to show shoppers what interests their peers.
- Disney has RFID-enabled MagicBand wristbands that provide theme park access, entry access for guest hotel rooms, and cash and card-free payment food and merchandise. All that activity is also tracked data that helps build a better picture of how guests use Disney services.
- Online retailing giant Amazon is once again disrupting bricks and mortar retailing with the Dash Button, a WiFi enabled device that is mapped to specific consumer packaged goods products like laundry detergent. Stuck to a washing machine, all a consumer needs to do when the current supply is running low is tap the button and that generates an order, transaction and delivery of a fresh supply of detergent.

Devices, Data and Analytics

IoT in retail has three key components: Devices, Data and Analytics

DEVICES

IoT encompasses a wide variety of devices, including: point of sale, inventory management, card readers, scanners, cameras, access control systems, beacons, smartphones, contactless NFC tags, mobile customer/stock information applications, sensors, customer buying behavior analytics, merchandise supply chain planning applications, social networks, communications networks, business supply chain performance analytics, and in-store digital promotional systems (such as digital signage). Maybe watches, refrigerators and home thermostats one day will also have a role?

DATA IN ALL ITS MANY FORMS

Potential data sources are vast. Inside retail, there is the master data that describes pricing, transactions and customer relationships. Current observations data describes browsing and sales behavior, as well as external insights like social media trending. Action taken data models things like which items were purchased, which promotions were offered and which were accepted. Then there is another layer of external sources that can be applied, from logistics information (a shipment is late) to weather and news.

ANALYTICS

The largest technology companies are making big investments in IoT ($3 billion at IBM, for example) to develop systems and cloud infrastructure that can ingest, analyze and act on all that data being generated. Machine learning systems are being applied to the data that is collected in order to create insights into how the market is evolving in near real-time. Analytics systems require ready access to data from a wide variety of sources, especially in-store.

Making Insights Actionable

Technology is already well entrenched in retail environments, at the checkouts, back of house, in distribution centers and head office. Every supplier is looking for ways to expand their footprint with clients, and provide more services. They're all good at what they do – like transaction processing – but can these suppliers also serve very different purposes like making IoT data insights actionable?

"Forrester predicts that 2015 is the break-out year for the digital store, unlocking new experiences and value that can only be delivered in a physical location."

Forrester, 2015

Probably not.

The better option is a platform tuned to ingesting content and data, and then using that data to generate and target appropriate messaging across very large, distributed networks of displays across retail estates.

A system designed from inception to organize, schedule and target content – based on data – will be highly efficient – saving on time and resources, and largely automating many processes.

A solid IoT plan also opens wide the doors to more detailed analytics about what's really happening at the store level.

"We have a deep understanding of retailers' current and evolving needs as well as the changing shopper dynamic, based on years of experience in working in both the retail and food service space," says ComQi Chief Revenue Officer and Group President Stuart Armstrong. "When we discuss their omni-channel plans light bulbs go off on the higher value capabilities that EnGage can deliver to support a smart store environment."

Putting ComQi's EnGage To Work In Store

ComQi's EnGage is a mature, cloud-based content management platform designed to support smart integration with in-store devices, including those doing digital signage, transactional systems, in-store mobile, beacons, analytics and more. EnGage is already in use by top retail banners globally, including Gap, H&M, McDonald's, and Victoria's Secret.

Built for rapid scale, with an extensive API for development and integration, ComQi enables retail technology partners to rapidly extend new services to their customer base without opening costly, time-consuming new development projects.

The EnGage platform reflects more than a decade of research, development and real-world experience. ComQi's foundational platform was among the first in the digital signage industry to introduce and leverage web services, deliver solutions on a software as a service (SaaS) basis, and focus heavily on mission-critical remote device management.

Its roots in data-driven content also trace back more than a decade, applying meta-data to all aspects of its workflow, long before the rest of the market.

EnGage Functionality Highlights:

- Measure and control all devices in venue
- Every "thing" is geo-located and searchable
- Bi-directional communication between cloud and devices
- Complete device health and lifecycle management
- Flexible model for capturing data for analytical analysis
- Meeting highest standards of Business Continuity
- Extensive API to support integration
- Advanced reporting
- Layered access and functionality rights set by the retailer

EnGage Platform Technical Overview

EnGage is designed with multiple points of extension and integration. On the server side, the data feed subsystem can pull data from a variety of sources, or have data pushed into it. A hybrid SOAP and REST API provide extensive means to command and control the system.

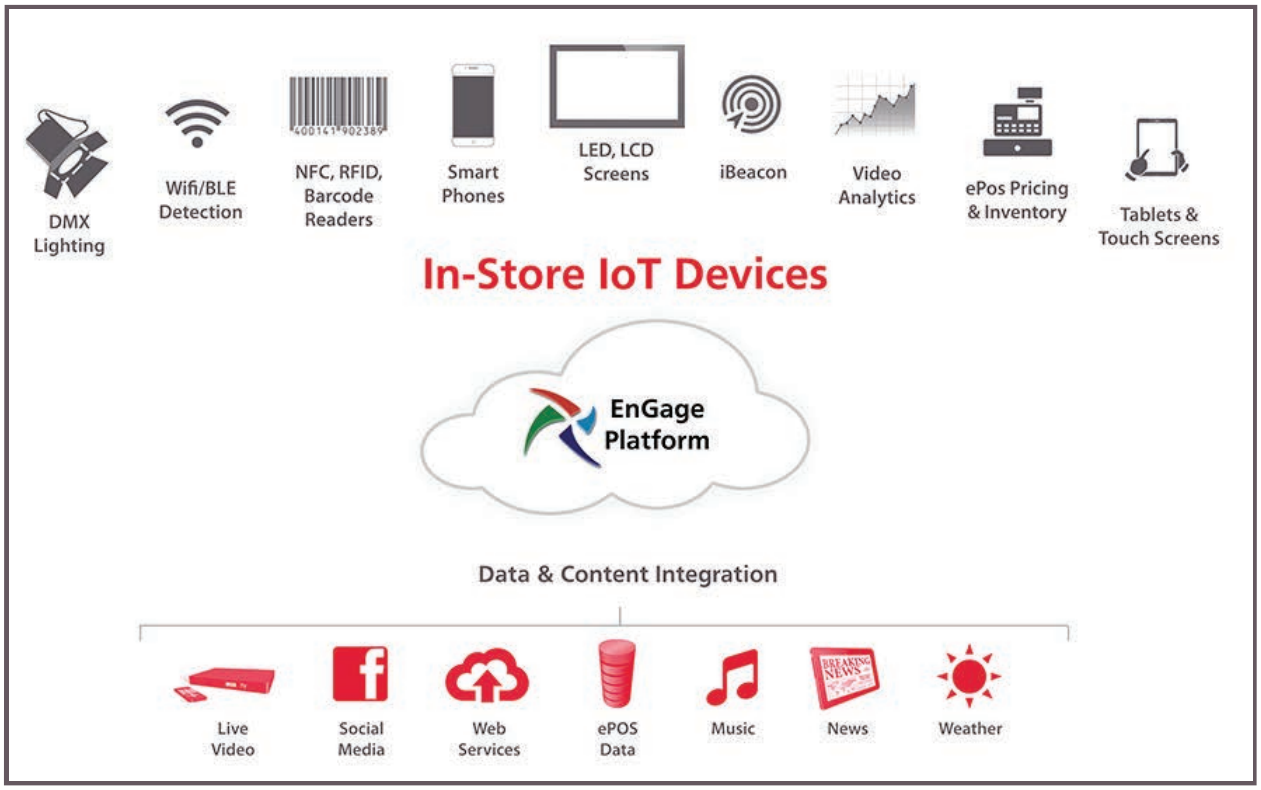
The primary EnGage Player is a highly extensible and robust end-point. Built using Linux, these rugged, reliable devices act as data integration points, fetching and transforming data from other systems. Via the local player REST API, data and events can be published to the device in real-time. The player's extensive scheduling and programming capabilities enable it to perform a broad range of playback and control functions within the store.

Out of the box, EnGage supports the following:

- BLE Beacons
- NFC
- RFID
- DMX lighting
- GPIO
- RS232 & TCP panel control
- data access through RESTful push and pull
- streaming video input

Video analytics including gender, age, and interest are optional modules. WiFi and Bluetooth monitoring to detect unique visitors is also supported. Device drivers can also be added to extend the system to provide additional capabilities.

Integrating All In-Store Devices and Technologies



Working With EnGage

Back office technology suppliers can integrate their systems and data with EnGage, which then handles all of these tasks:

Provisioning - EnGage manages all of the aspects involved in provisioning a network of remote devices. Underlying the EnGage system is a spatial database, enabling calculations for the location of a device or devices, as well as finding all the devices within a given proximity.

Monitoring - The server monitors the operation of the network of devices and automatically notifies operators of any anomalous behavior.

Control - The end-points can be controlled in real-time via a bi-directional connection, or via a polled interface.

Acquire - The platform provides a broad range of capabilities to acquire content and data from external systems. Content and data can be integrated at both the server and the end-point.

Target - Effective meta-data organization means the correct data and content is published to the right end-point.

Function - EnGage can drive content playout and specific functions, and it can also host independently developed software to perform specific functions.

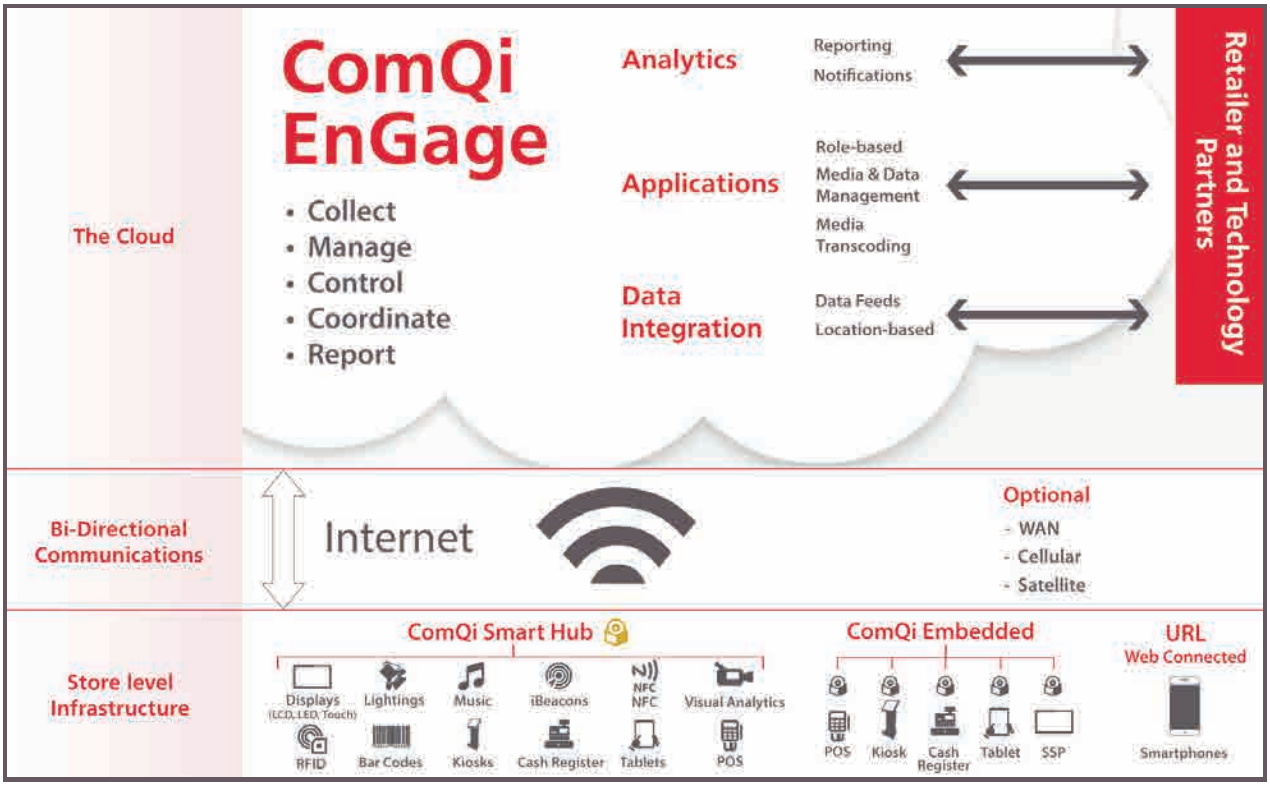
Capture - The metrics from end-points are logged and stored in a time-series database, based on Apache Cassandra, and can be displayed or extracted.

Reporting - A reporting console provides access to the data that is collected. Reports can be scheduled and emailed, or accessed via web services.

Analytics - The EnGage platform is designed to integrate with external analytics systems to support the analysis and refinement of the business function.

Scale - Thousands of active in-store smart hubs can be monetized and reproduced across additional market verticals using EnGage.

EnGage IoT Platform: Designed for Integration



ComQi's EnGage platform includes Smart Hub innovation that goes beyond managing in-store digital signage to enabling smart integration with in-store engagement technologies. ComQi's Smart Hub provides retailers with access to valuable data and analytics that creates a better setting for decision making.

Store Level Infrastructure

ComQi connects the store's multiple customer sensor technologies through ComQi Smart Hubs, ComQi Embedded and Web Applications/ URL Web Connected.

ComQi Smart Hub is a software appliance running in-store which manages data and content and supports displays, kiosks, beacons, RFID, NFC, ePOS, etc. The Smart Hub provides superior benefits over the ComQi Embedded as it relates to interaction, playback, content/data, and integration capabilities. Currently thousands of Smart Hubs are already installed in Fortune 500 retailers.

ComQi Embedded is a ComQi software application installed on a retailer device which has a pre-existing O/S, such as cash registers, tablets, kiosks, and Samsung SSP (integrated media players).

Web Applications allow any smartphone device to integrate with the EnGage platform through web applications such as VOD, product lookup, etc.

Fast Tracking Retail IoT

“The feedback we get from our top tier retail customers is that they want a cloud-based, highly-integrated platform,” says ComQi CEO Ifti Ifhar. “They might not use the term Internet of Things, but it’s clear they want an IoT solution, and this is the way our EnGage platform is designed. We are in a time of accelerated innovation, with amazing new technologies and solutions popping up daily. We integrate them all under one roof, saving the retailer the hassle and costs of addressing them separately."

Smart devices and sensors are not entirely new to the retail eco-system. Sensors and readers have for years been a big part of upstream manufacturing, as well as supply chain management, logistics and inventory.

But leveraging IoT for the biggest of retail moments – that time in front of shoppers – is very different.

There are two tracks for retailers and their technology partners wanting to deploy an IoT solution. One is to build it themselves.The efficient, safe, and fast track is to consider EnGage, a retail-tested solution, open and ready for integration.

To learn how you can make significant strides faster and more efficiently reach out to ComQi.