

# cloud managed networks



## Sensor-Driven IoT Innovation in Superstructures, Shopping, Space, Soil and...

By Jane-Michèle Clark  
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To quote Ripley, believe it or not, sensors have been a part of our lives for almost a century and a half. Ever since the first thermostat was invented in the 1880s, we've been relying on sensors to detect and help us respond to changes in our environment.

When connected to a network, sensor output data can be shared with other connected devices and management systems. Not only are sensors used to make products and services more effective and user-friendly, the data collected is being used by business managers to assess trends and make critical business decisions.

### *Retail Reimagined*

Stories about retail giants closing doors have become common headlines. It is not because retail is dying, or that COVID-19 is keeping people home. The pandemic simply accelerated the demise of retailers who are unable to see that the retail experience needed rejuvenating.

Retailers were able to bridge the gap between the online experience in the in-store experience will continue to thrive. Sensors can become saviours.

Imagine a clothing store where there are sensors on hangers, garments, changing room doors and mirrors in and out of the change room – and where other Bluetooth-enabled devices throughout the stores are also connected into a central system.

A customer enters the store and can choose to connect his or her device to the store VPN, or use one of the store tablets. This will enable the shopper to have a highly-personalized and superb customer service experience. But let's start with the customer (and let's call her Mary) does, with the clothes.

Mary picks up atop, and holds it up to see if she likes it. Or she lifts a dress on a hanger from its rack to get a better look. Sensors in the garment send the signal to the system, indicating there has been interest in this garment (and yes, there are several ways to account for employee folding and movement of items).

Based on stored and evolving metrics, the retailer knows how often an item will be tried on, or purchased, after X number of "let us look at this" lifts. This starts to give retailers insights into what clothes have hanger appeal or not.



Mary the site she likes the top and makes her way to the change room. Here all kinds of magic can happen. Again, metrics will tell us that out of every X number of times a garment is tried on, it should be purchased. For garment with a high hanger appeal score that is purchased fewer times than expected, you know there is either a problem with the fit or the price. There are things you can do to play with the price to help you determine the primary problem.

Suppose Mary really likes the garment and would like to see what it looks like in a different colour. Like most people, Mary hates having to change over and over. By using the mirror as a virtual change room, Mary could tap the mirror and bring up a dashboard that would let her try on the clothes virtually. Suggestions could be made in terms of items suitable for her shape, that would work with the garment chosen.

If Mary did want to try them on, she could simply tap a button and a sales associate would be alerted to bring the garment to Mary's changeroom. What about the size? Sensors had already detected what size(s) Mary took to try on, and the mirror sensors adjusted based on her shape and the cut of the recommended clothes.

When customers are not tired out by pulling their clothes on and off, over and over, they are more likely to purchase. You can also use your systems to make that part of the process easier, too. Before leaving the change room, Mary simply uses her phone or store tablet or mirror dashboard to indicate which garments she wants to buy. She can then choose to take the them with her, leave them at the store until she has finished her other errands or, have them delivered for a small charge.

Weird fact: As much as customers hate shipping charges when shopping online, they don't mind a nominal charge to avoid carrying things home. The exception: If the store does not have a customer size, the shipping should be free.

As for the items that Mary is taking with her, these will be ready at the cash desk by the time Mary is ready to check out, which she could also do from her phone or store device, if desired. When Mary chose her purchases, a sales associate was alerted and nicely-folded garments and cellophane packages were pulled from the storeroom in the back and taken to the counter. Mary doesn't have to wait, making the experience even better.

The added benefit: Fewer garments need to be kept on the showroom floor, so they can be displayed to best advantage. This also means that fewer clothes are damaged in-store – and the level of theft drops, too.

This is just one simple way that sensors can be used. If you can imagine it, sensors can help bring your vision to life... and we can help with both the sensors and the dreaming.

*Thanks to a 5 Cent Sensor, COVID-19 Shopping Concerns May Vanish*

According to an October 5, 2020 *Fast Company* article, a quick at-home or in-store SARS-CoV-2 is on the horizon. To learn more, please go to: [Bit.ly/ 35jXrRe](https://bit.ly/35jXrRe)



On October 1<sup>st</sup>, SpaceX also made headlines when its Starlink launch was aborted 18 seconds before takeoff, avoiding potentially explosive consequences, thanks to an anomalous ground-sensor reading. Rocket launches and space missions rely on thousands of sensors which collect and transmit data on everything from astronaut health (going far beyond simple heartbeats, blood pressure and urine output), to environmental conditions and engine health. Indeed, sensors have become mission-critical components.

Long before launch, scientists rely on sensors to ensure every aspect of the operation will be a “go”.

One small example: As the rocket engines start their burn, building up enough energy to take off, sigmoid (S-shaped) beams hold the rocket in place. A lot of testing goes into making sure the beams can handle the engines’ thrust as the energy builds.

Key are the strain gauges (which are basically thin-film resistors) and the thrust sensors that go into the strain gauge stress measurement system.

Note: The amount of thrust is determined in part, by the amount of fuel and oxidizer in the combustion chamber. Again, sensors play a vital role, which is why they are found in just about every type of motor vehicle these days.

### *Sensors in the Soil*

Sensors on tractors can be used to measure soil acidity, moisture levels and other factors – and then adjust the depth at which seeds should be planted. Data collected from other farms, correlated with weather reports and long-term growing data, can also be used to let the farmer know when to plant, when to water and other critical information. But that is a story best left for another time.

In the meantime, if you would like to explore ways in which sensors can be used to help you improve your business and your bottom line, please feel free to contact us at [info@cloudmanaged.ca](mailto:info@cloudmanaged.ca) or by phone 416.429.0796 or 1.877.238.9944 (toll free).

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