

The Network 2020: Gearing Up for 5G

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While 5G is set to make its commercial debut around 2020, the jury is still out on precisely when we will see true 5G available across a widespread area, but businesses in just about every industry are already dreaming about the possibilities.



In basic terms, 5G will provide broadband-like data speeds from anywhere, making content and data streaming nearly seamless, and opening the door to video consumption virtually anywhere and everywhere, on any device, without a broadband connection. If 5G meets its ambitious goals, we can expect very low latency, high bandwidth, greater availability, faster speeds, and more consistent coverage.

More than just a new generation of mobile technology, 5G will create a major shift in how businesses use cellular networks. Currently, many digital signage applications utilize pre-loaded data and content. 5G will allow these same applications to use real-time data collection, analysis, and dissemination as well stream higher-resolution video, audio and pictures more quickly, expanding digital signage's content and interactivity options.

Additionally, 5G's enhanced network bandwidth is the key to smooth integration of Internet of Things (IoT) devices into digital signage. Interconnected devices are going to be a defining characteristic of 5G, and the ability to enhance digital signage using connected devices and innovative technologies will open up new ways for businesses to engage their audiences and advertise products.

5G will augment a number of rising trends and technologies in the digital signage space.

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DOOH Advertising

Digital out-of-home (DOOH) advertising will be more targeted with 5G; the more data points a business can obtain, and the faster speed at which it can obtain and react to that data, the more content it can push to a consumer in real time.

For example, a small grocery store may carry five different flavors of ice cream, with the inventory database showing one flavor in particular is overstocked. On an 80-degree summer day, a camera with facial detection capabilities senses that a person has entered the store and is walking toward a

digital display. Data analysis of the outside temperature as well as the inventory overstock triggers real-time content on the digital display, announcing a special sale on the ice cream flavor that isn't selling well.

Another tool that DOOH advertising can use to trigger content are beacons, a Bluetooth-based one-way communication tool users must opt into that lets a business communicate with a consumer entirely via a mobile phone. After a customer opts in, communications can be pushed to a smart device to increase sales or drive foot traffic. The use of 5G will allow multiple beacons to communicate to the consumer and deliver information without stressing the existing store network. This also will allow stronger use in outdoor applications and areas with limited access to traditional network infrastructure (such as in smart cities).

In an entertainment, retail or food service environment, pop-up ads or coupons can appear on a customer's smartphone as they shop. Beacons can even be used in a mall environment or shopping district to detect when a customer is near – not yet in – a store, and use that information to bring that customer in. For example, a business can see via beacon that a frequent customer who has opted in to promotions is a few doors away, shopping in another store. The location can push a promotion to the customer's smartphone that tells him to come into the store in the next hour for a percentage or dollar amount off a purchase.

Biometrics

Biometrics using facial detection tools is another way of gathering data. The ability to determine information such as a customer's gender and age group can help target digital signage advertising toward a specific demographic in real time, but this can be difficult to do without instantaneous connectivity. 5G will make this seamless.

For example, using biometrics, a retailer can see what age group and gender are shopping in a store at any given moment, and can push digital advertising that appeals to the customer demographics in certain areas of the store. This gives the ability to create a more personalized, instantaneous branding campaign on a digital display; such as in a department store, a child would be interested in ads for toys and games, whereas an adult would be more interested in seeing sales on housewares.

Wearables

Wearables like smart watches and fitness trackers allow technology to be literally wrapped around the wearer as the device collects and disseminates data based on a person's touch, body and location. Currently, wearables remain a highly personal device, with a wearer controlling the content via apps, but future uses could allow integration with digital signage, especially as 5G allows more seamless data streaming.

The advertisement is a rectangular graphic with a dark blue background. At the top left, there are three white chevrons pointing downwards. To the right of the chevrons is the word "Pipeline" in a large, white, sans-serif font, with "MARKET RESEARCH" in a smaller, white, sans-serif font underneath it. Below this, a yellow horizontal band contains the text "CUSTOM RESEARCH REPORTS AND SURVEYS" in a bold, black, sans-serif font. Underneath the yellow band, the text "LEVERAGING THE COLLECTIVE KNOWLEDGE OF THE GLOBAL MARKETPLACE" is written in a white, sans-serif font. At the bottom of the advertisement, there is a red button with the text "GET PRICING & DETAILS" in white, sans-serif font. Below the button, there is a thin white line with a small circle on the left and right, and the text "Click this ad for more information" in a small, grey, sans-serif font.

For example, a wearer may be looking for a restaurant reservation via a smart watch app as he or she walks around a mall or retail area; the app will show popups for open reservations, while the

smart watch alerts digital signage in the area to display dining options.

Other wearable technology of the future is smart clothing, which provides wearers with fitness and biometric data, but can have other applications as well. As someone wearing a smart clothing item goes into a store, a trigger in the clothing item might “talk” to a digital display nearby, indicating what clothing brand the person is wearing, and digital displays would instantly show ads or sales for clothing items of the same brand.

RFID

5G combined with triggers like RFID will let businesses reach their audience in real time, helping to boost their sales and better service their customers.

For example, in a retail setting, RFID tags can be used for multi-way communication between a user, a digital display, a 5G network, and a back-end data repository. If a customer in a clothing store picks up a pair of pants, an RFID tag in the pants can instantly activate nearby digital displays to show shirts that would complement the pants. As the customer scrolls through the options on the display and picks out a shirt in his size and color preference, a feature built into the display pings a store employee to bring the item over.

Augmented Reality & Virtual Reality

Augmented and virtual reality tied into digital signage offer new ways to present content and assist in advertising, education and marketing by showing a viewer a new reality – not just telling her about it.

These interfaces eventually could take over many existing digital signage protocols, including those used in retail, education, and entertainment. 5G will create opportunities to incorporate interactive technologies such as Microsoft HoloLens and Oculus Rift, which reside in a mobile environment, into digital signage.

OPS: Enabling IoT in Digital Signage

To ensure that today’s digital signage investments are still useful when 5G technologies become fully possible – in 2020 and beyond – users can select digital signage that uses Open Pluggable Specification (OPS) computer modules.

OPS simplifies device installation usage and maintenance while making it easier to upgrade digital signage equipment. It standardizes the system architecture between signage and media players – as well as slot size, display connection and power supply specifications – and offers multiple interchangeable solutions, including computing technology, signal distribution, media playback, and wireless data transmission.

A business can easily standardize display hardware (compatible displays and projectors) across their enterprise and use multiple computing cards to fit the specific content/software demands. As a company’s network and capability needs grow, the digital signage solution can grow with it through deployment of newer computer modules while still utilizing the investment on the displays.

For example, a business that wishes to someday take advantage of future IoT and digital signage pairings, but does not need such a high level of OPS functionality at the moment, can utilize an Atom-based or Celeron processor, which provides all the base benefits of OPS as well as superior graphic representation and content playback.

Later, if the business wants to capitalize on some of the digital signage trends 5G will facilitate – IoT, 4K and high-res, touch interactivity, motion trackers or facial analytics – the i5 or i7 “Skylake” processors are the most powerful OPS options. They are ideal for applications like IP-based video wall solutions – where every screen has a computer tied to it and requires powerful processors to

form seamless images and graphics – and IoT connectivity, interactivity and analytics.

Moving Toward the Future

While true 5G might still be a couple of years down the line, businesses are champing at the bit to get the seamless content streaming and instant data collection and analysis 5G promises, which will allow them to interconnect more devices, connect with more customers and deliver higher-quality content through new technologies and IoT.

Digital signage technologies will continue to advance to help businesses engage with their audiences, and they will need a powerful next-generation network technology behind them. These rising trends are not the end of what's to come – they are just the beginning.