# IoT & Digital Signage:
## The invisible Elephant in the room

# We are undergoing a significant transformation

# Thanks to the internet, we now have the ability to build networks for ourselves in ways that we would once never even have dreamed of.

*Technological innovations and a hyper-connected world have significantly influenced consumer behaviors and expectations. As a result, retailers are faced with a scary reality: Change or become obsolete."*

- Forbes, Bashar Nejdawi, CEO of Global Wireless Buisness Unit

Today, we would like to go one step further and shed some light on a development that goes far further than anything that the internet has given us so far. It could justly be called the development of a new era — and the transformation that this entails will be ubiquitous.

Technologies are being developed at a breakneck pace, while costs and sizes are reducing. Customer expectations are reaching new levels and ways of doing business in the retail sector require continuous modernization.

Connectivity is the new way of doing things, resulting in a world in which technology, consumption habits and the internet all converge, interacting and communicating with one another. This phenomenon is opening completely new doors for our everyday lives, for businesses and, most of all, for marketing. Everything will change.

Retailers in particular must see this as an opportunity, not as a threat. The online and offline worlds no longer exist as discrete entities: instead, the internet is ubiquitous. Online and offline channels exist in a symbiotic relationship with one another and add completely new dimensions to our ways of communicating. Businesses that continue to turn away from the internet will no longer be able to meet their customers' growing expectations.

The development that is driving this transformation is called the **Internet of Things**, which the online and marketing expert Neil Patel describes as follows:

*The Internet is ever-present. It operates as an automated entity that can carry out functions that reflect and affect the physical world. (...) The Internet of Things (IoT) refers to the way Internet connectivity has expanded to include everyday objects and to how those everyday objects interoperate with our daily lives."*

- Forbes, Neil Patel

As such, the IoT is, by definition:

*a concept in which physical objects are connected to the internet which makes it possible to access remote sensor data and control connected objects from a distance."*

So, what does that mean for us and our everyday lives, and above all:

what does that mean for retailers, for businesses, entrepreneurs and marketing professionals?

# 1 Recognize that online and offline worlds are growing closer together

The internet is setting new standards. When viewed from this perspective, it is clear that it is achieving something that retailers have been attempting to create for years: ultra-personal, data-driven, targeted communications.

The highly influential demographic of Millennials, also known as Generation Y, is also responsible for transmitting the standards of the internet into the offline world. When browsing online, we expect to be presented with whatever we are actually searching for.
Google provides us with all the information that we need about the product of our choice. After that, it only takes a few clicks and the right offer is sitting in our shopping cart. If, on the other hand, we need more time to make our final purchasing decision, Sponsored Posts on Facebook are there while we browse to remind us of our shopping cart. As such, the major drivers behind changing purchasing behaviors are the big players of the internet.

As we make the transition to the offline world, it quickly becomes clear where the real problems are. Traditional, brick-and-mortar retailers are lagging behind, in terms of technology, in terms of data and communications, and in terms of the inadequate customer experiences that they provide.

Why shouldn't the customer experience be the unique selling point that sets traditional retailers apart from the e-commerce sector? Why shouldn't we buy things online if there is no added value from buying in store?

## ONE THING IS CLEAR:

anyone who continues to advertise a business solely with traditional posters simply isn't meeting today's expectations and needs, let alone those of tomorrow.

Instead, the choice is stark:
"change or become obsolete."

## THE TECHNOLOGY IS ALREADY AVAILABLE.

Now it is the turn of businesses to view digitalization as a vital opportunity to win customers and, even more crucially, to build customer loyalty —
and to grasp that opportunity.

## BUSINESSES MUST CONSOLIDATE TODAY'S FLOOD OF INFORMATION

and make information available to customers that is actually relevant to them. It's high time to create a unique shopping experience.

# The status quo in the retail sector:

- ✖ Too much irrelevant information
- ✖ Too much choice and too wide a selection
- ✖ A constant onslaught of new product launches

# This is where the way must lead in the future:

- ✔ The right information
- ✔ At the right time
- ✔ At the right place
- ✔ And in the right context
- ✔ Information-dense and entertaining
- ✔ Memorable and interesting

Hostilities between online and offline retailers have ended. The walls are being broken down and each channel is enhancing the other, leading to convergence. As soon as the last retail entrepreneurs allow hostility to be replaced by cooperation, individual retailers will show great potential by combining the benefits of traditional stores and online shopping at the point of sale.

**Using digitalization to create unique customer experiences**

"*64 % of people think that customer experience is more important than price in their choice of a brand.*"

- Neosperience

*When it comes to shopping, we found that 68 percent of all Millennials demand an integrated, seamless experience regardless of the channel."*

- Accenture

# 2 An insight into the consumers of the future: Millennials

First, the good news: traditional, brick-and-mortar retail is not about to go die out. On the contrary: the young demographic, which will be responsible for around 30% of retail turnover in the USA by 2020, is still quite happy to shop in stores. That means that even in future, touch, smell and taste will still matter. Millennials want a complete sensory experience when shopping. However, interaction with digital media is part and parcel of this experience and continues to influence purchasing behavior more than ever before.

It is therefore worthwhile to pay attention to four emerging trends that will lead to a fundamental change in shopping behavior, both online and offline.

## Multiplicity
### We expect experiences.

That means that, instead of being neutral observers, we want to be active participants (Forbes). Touch, tweet, share, like...or whatever. While this may be hard to understand at first, it needs to become firmly embedded in retailers' thought processes, as when Digital Natives and Millennials go shopping, they don't simply buy a new T-shirt. They experience the purchase process, the product, and the entire experience that this entails. What does that mean? Retailers need to recognize this powerful and influential demographic, and reach out to its members, making them want raise the brand's profile with their friends, their social networks, and the whole world.

## Stand out and be different

Interactive technologies and digital media can create an in-store atmosphere that makes the younger demographic feel at home – which is vital to building long-term customer relationships.

## Escape
### We all want to let go for a while

and let stress bounce off us. That can be a joyful or relaxing experience – or simply a moment that provides us with a brief escape from reality. Everyone knows the feeling: the more intensely connected to the world we are, the harder it is to avoid the intrusion of stress and chaos into our daily lives. We take work home from the office with us and are always contactable, even as we're chilling in the sun during our well-deserved vacations on the perfect beaches of Phuket (which we had to work damn hard for by the way). The main thing is that there is an internet connection somewhere.

Yet despite this, or perhaps because of it, the desire for a better work-life balance and the ability to be entertained during our leisure time continues to grow.

In this context, it's not surprising that retailers who manage to create an unforgettable customer experience will be rewarded as we talk about them to others.

## Super-personalization
### With the availability of detailed datasets,

**ultra-personal products and information can be created to fulfil our needs to the highest possible degree. For the Millennial audience, the internet and social media are a second home.**

For example, on Facebook, sponsored articles and ads are ultra-personal and based on our entire browsing behavior. Every step taken online is used to create the user experience. Think about that for a moment:

advertising based on comprehensive and near-real-time data blows an old-fashioned poster that shows last month's stocks of jeans into the weeds in terms of effectiveness. Will a simple poster really manage to attract the attention of a Millennial? We think you already know the answer.

That's exactly why the IoT plays a central role in POS marketing, and you're about to see how powerful digital signage can be in this respect.

## No smartphone, no shopping
### Shopping without your smartphone?

" *90 % of retail shoppers use smartphones in stores*"

- marketingland.com, Greg Sterling

It's become as unthinkable as going to the movies without popcorn. Millennials look at reviews and comparisons as they travel before taking the product off the shelves. They google to find more information or get opinions from social networks. Without a smartphone, it's just not happening.

**For that reason, digital signage and mobile technologies will go hand in hand in future to create a new dimension of interactive experience in combination with technologies such as NFC (near field communication) or beacons.**

Shopping whithout smartphone becomes as **unthinkable** as going to movies without **popcorn**

# What happens when IoT meets Digital Signage?

> ❯ **76% of consumers surveyed have gone into a business because a digital sign caught their attention**

> ❯ **An additional 75% of these had recommended this business to friends because of the signage**

> ❯ **68% have made a purchase because of the appealing nature of digital signage**

> ❯ **Digital signage has increased brand awareness by nearly 48%**

> ❯ **Purchase amounts increased by nearly 30%**

> ❯ **In addition, repeat buyers and in-store traffic increased by almost 33%**

Source: Digital Signage Today

The figures speak for themselves and highlight the potential of digital In Store Communication. Nonetheless, the emphasis must be on the word 'potential'. The precise point at which digital signage begins and, especially, where direct benefits for the consumer kick in, is still subject to debate even today. Can a 40-inch screen that shows the same playlist 24-7 really be described as a digital signage Solution?

Or does a pure, digital product showcase represent genuine added value for customers?

As we return to customers' evolving expectations and the increasing significance of the internet, we can summarize by saying that these concepts fall short of what is needed.

It has been a long time since a digital signage implementation without a cohesive content strategy and a long-term approach was an adequate response. Instead, much more is needed.

Sales volumes increased by **32%**

Source: Digital Slgnage Today

# 1 The right approach to high data volumes: digital signage meets Big Data

**The right message, at the right place, at the right time. In future, digital signage will break down old barriers and react to its immediate surroundings.**

It is all about the interplay of networked Smart Devices, digital signage Content and events that are unfolding in the immediate surroundings. Content will no longer be presented randomly in the hope of reaching the right person with advertising for a new shampoo.

Digital signage meets Big Data – a partnership that will develop strongly in future.

Sensors will detect footfall and customer behavior through individual aisles and departments and automatically make the data available to the relevant marketers. Similarly, special software will generate detailed customer profiles and automatically adapt the playlist for digital content in light of the data that is received.

How long do customers spend in front of the screen? And how do they interact with the content?

**With increasing integration between the retail sector and the Internet of Things, the doors will be opened further to data collection and interactive, data-backed digital signage applications will become possible.**

Digital Signage meets Big Data
a **partnership**
that will develop **strongly**
in future

# 2 Event Driven Content & Content Driven Events

## Event Driven Content

**The interaction of sensors that identify actions in the environment and digital content that reacts to these actions as a result is also called Event Driven Content.**

Content will react to actions in the immediate surroundings:
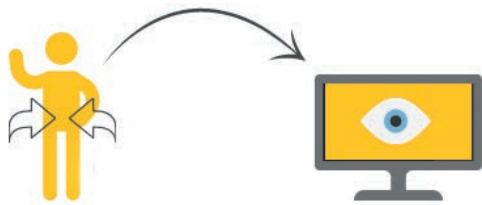


1. Movement          2. Content changes

Imagine a guest walking into a hotel lobby. Directly behind the revolving door, a sensor detects the guest's movements and responds with a welcome greeting. The sensor recognizes additional guests, who are already carrying room keys as they enter the premises. The room key may take the form of a smartphone app or a card with an inbuilt RFID chip. Both keys – app or chip – are detected and recognized by the sensor. This allows new guests to be given a friendly greeting, while customers who have already checked in can be given the complete range of content, such as what's on that evening or a spa package that can be booked directly from the guest's smartphone. The sensor doesn't just recognize hotel guests; it also counts them and uploads the data to the cloud automatically.

The hotel manager can then display this data graphically at any time, providing an overview of the individual locations of guests and, using these statistics, can recognize highly-traffic areas of the hotel and react to this. If the sensor doesn't detect any motion in the immediate area, the playlist can be changed to a different set of content, presenting cool, refreshing drinks at the hotel bar or showing ads for local sightseeing. By augmenting digital signage with sensors, the technology opens the door to a completely new world of communications.

See how content will
**react** to
**actions**
in the immediate surroundings

**Quite simply, we turn the process for Event Driven Content on its head.**
**The interaction of actuators that identify/decode content and events that are triggered by this content as a result is also called Content Driven Event.**

Content triggers concrete events in the surrounding area



1. Product video          2. Spot on real product

The latest collection in your boutique is displayed in the storefront, as usual – where the attention of passers-by can immediately be drawn to the latest trends. The spectacularly presented mannequins and their tailored, matching outfits are displayed in front of a video wall. Promotional films create a setting for selected women's fashion as well as the latest men's clothes. The playlist is about to show a video for the summer dress on display in the window, and the model selected for the campaign is shown on a sunny beach in Miami. A light breeze blows through her hair and causes the dress to float elegantly in the wind. Outside the displays, radio receivers and actuators are used to create a reaction that reflects the video content. The sunlight shown in the video

is synchronized with the radio power socket to make warm, white LEDs light up the dress. Even the pleasant breeze that can be seen in the video comes to life in the storefront, as vents built into the sides react to the content as it is played, causing the dress on the mannequin to flutter playfully.

The result is a pure summer feeling in your own store. When the playlist switches to the new men's collection, the robotics recognize that the content has changed and react appropriately to the new content.

**With the support of Content Driven Events, products can always be presented with the appropriate context, creating unique shopping experiences with the wow factor.**

See how content concrete **triggers events** in the surrounding area

# Digital Signage: smarter through IFTTT

IFTTT follows a simple concept that amounts to a powerful tool for digital signage users:

## IF THIS, **THEN** THAT.

Today, the IoT Portal is overwhelmingly used in the private sector to automate everyday tasks, also known by the term 'life hacking.' Using recipes, that can either be pre-defined or created by the user, pre-defined triggers give rise to similarly pre-defined actions. If this, than that.

If the temperature in New York drops below zero, then send me a message on my cellphone at 7 a.m.

This means that the New Yorker will always be notified whether to take gloves and a hat for the way to work and exactly when they'll be needed. From automatic e-mails that are sent to your wife if you don't leave the office on time, through complete control of each individual light bulb in the house, to networking across all social media channels.

IFTTT allows processes to be fully automated, which makes it possible to imagine exciting new ways to use digital signage and grow the sector. There are already solutions like the viewneo Butler, which can communicate with portals like IFTTT or Thingspeak via a digital signage Player, leading to digital signage hacking, with outcomes that are similar to life hacking as described above. We've created a few use cases to show what recipes to achieve this could look like.

## RECIPES

Some examples:

"**If** the outside temperature falls below zero degrees, **then** change the playlist automatically to show the menu with waffles and hot chocolate."

"**If** a customer tweets with the #myrestaurant hashtag, **then** invite the guest to enjoy a free beer via the menu board."
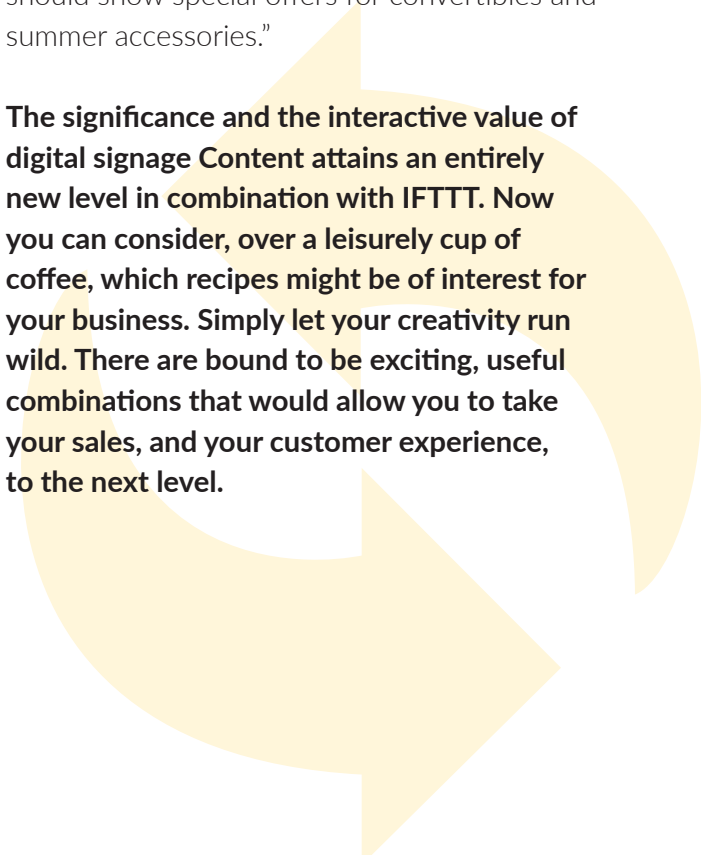
"**If** a customer reaches for tomatoes in my produce section, **then** show suitable recipe ideas on the nearest screen."

"**If** my playlist is currently showing an ad for a particular product, **then** light up that product with my Philips Hue lights."

"**If** there are only ten jeans left in stock, **then** show this to your customers on the displays in the jeans section."

"**If** the weather report forecasts temperatures above 25 degrees, **then** my car rental business should show special offers for convertibles and summer accessories."

**The significance and the interactive value of digital signage Content attains an entirely new level in combination with IFTTT. Now you can consider, over a leisurely cup of coffee, which recipes might be of interest for your business. Simply let your creativity run wild. There are bound to be exciting, useful combinations that would allow you to take your sales, and your customer experience, to the next level.**

# How the Internet of Things will change Digital Signage

The collection and use of data is a fundamental requirement for businesses to operate, manage and continuously improve effective digital signage applications, as this is the way for content and custom playlists to become truly relevant for customers. This will lead to highly individual, tailored offers and a high-quality customer experience, maximizing the business's ability to satisfy its customers' needs.

We are entering a new era, defining new trends and providing retailers with a unique opportunity to connect with their consumers at all times.

## 1 Smart digital signage will connect to the mobile world

Information is gaining context. No one needs business cards stuck to the windshields of their cars. Seriously, stop already. The online world, particularly major players like Google, Facebook, or Amazon, is setting new standards for ease of access to personalized information (and raising customer expectations in the process).

Precisely these expectations are being carried over into the retail sector. Millennials in particular are contributing their fair share in that respect, with their expectations that digital solutions should be ultra-personal and touchpoints should not fall short.

## 2 Digital signage meets Big Data

While screens in the form of video walls, interactive displays or large format advertising monitors are standard for retailers, marketers must gain a much better understanding of how to present the right information, at the right place, and at the right time. "Hey, we're using digital signage" is not enough, and superficial use of technology isn't an option – nor has it been for a long time.

Instead, IoT digital signage solutions build a bridge between displays and their networked environment, and allow the deployment of "Event Driven Content" and "Content Driven Events."

Sensors or actuators make it possible for digital signage to interact with other objects beyond the screen. The absolute cutting edge of relevant content is represented by IoT portals such as Thingspeak or IFTTT, which can be networked with digital signage Systems. When entrepreneurs recognize these opportunities, they can break new ground in terms of customer experience and customer loyalty.

## 3 Digital signage must be social

*Social consumption is the norm. And so is social decision-making as to whether or not to consume."*

**That is the conclusion drawn by Forbes' Micah Solomon about an essential aspect of Millennials' shopping behavior.**

At a time when this precise demographic will take over 25,000 selfies in their lives, and everything is shared, liked, retweeted, and much more – even offline. As such, shopping no longer means walking through the city or the mall and picking up a new blue T-shirt or a new pair of pants from the same old stores, then driving home again. No way.

### Consumption as an experience

And it's not an individual activity either – it's best undertaken as a group. For exactly that reason, social media integration plays an increasingly important role in relation to digital signage. Once again, it is the case that, without IoT, nothing would happen in this context. Advertising on your own Facebook site is hardly worth it. The benefits are much more significant when customers are actively involved, sharing their opinions and feeling valued in return.

One thing is clear: brick-and-mortar retail is far from dying out. It does however stand at a crossroads, forced to decide whether to view digital transformation as a helpful opportunity or a mortal enemy. This development is clearly recognizable, and anyone who tries to resist change is bound to be thrown to the wolves of the internet.

*"Technological innovations and a hyper-connected world have significantly influenced consumer behaviors and expectations. As a result, retailers are faced with a scary reality: Change or become obsolete."*

## But if....

**you begin to comply these new expectations, or even better outstrip them, there is a promising potential of bringing the online and offline power together and create a memorable consumer experience.**

## 25,000
# Selfies
will be shared, liked, retweeted and more

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