



# USHERING IN THE ERA OF CONNECTED EXPERIENCES

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With businesses interacting with their customers in numerous, diverse ways, digital customer experiences are becoming more critical to a company's success than ever before. Connected experiences leverage data from automated processes and self-learning software to build meaningful relationships with customers across channels. Connected experiences are consumable, adaptable, and can enable customers to achieve their objectives anywhere, anytime, and in a personalized and efficient way. Connected experiences are helping businesses across industries improve their bottom line and strengthen their competitive advantage. Companies that do not work towards accommodating this shift will risk losing their business to disruptive newcomers.

## Connected Experience is King

Digital engagements are at the heart of how enterprises address customer needs today. People are more connected to the world around them than ever before due to the growth in the volume and variety of devices and touchpoints. Businesses are challenged in response with integrating multiple channels—products, websites, applications, and other solutions—into seamless and connected experiences for their consumers.<sup>1</sup> Companies must find a way to create better experiences for their customers or risk leaving money on the table for their competitors.

Companies that are considered to be customer experience ‘Leaders’ have been shown to outperform the market and generate a return higher than the average S&P 500 Index by 35%, while companies considered as customer experience ‘Laggards’ trail the broader market by 45%. Even companies with a slight advantage in customer experience ratings have shown a 17% lead in both customer trust and number of customers willing to spend more, over businesses that delivered poor customer experiences.<sup>2</sup>

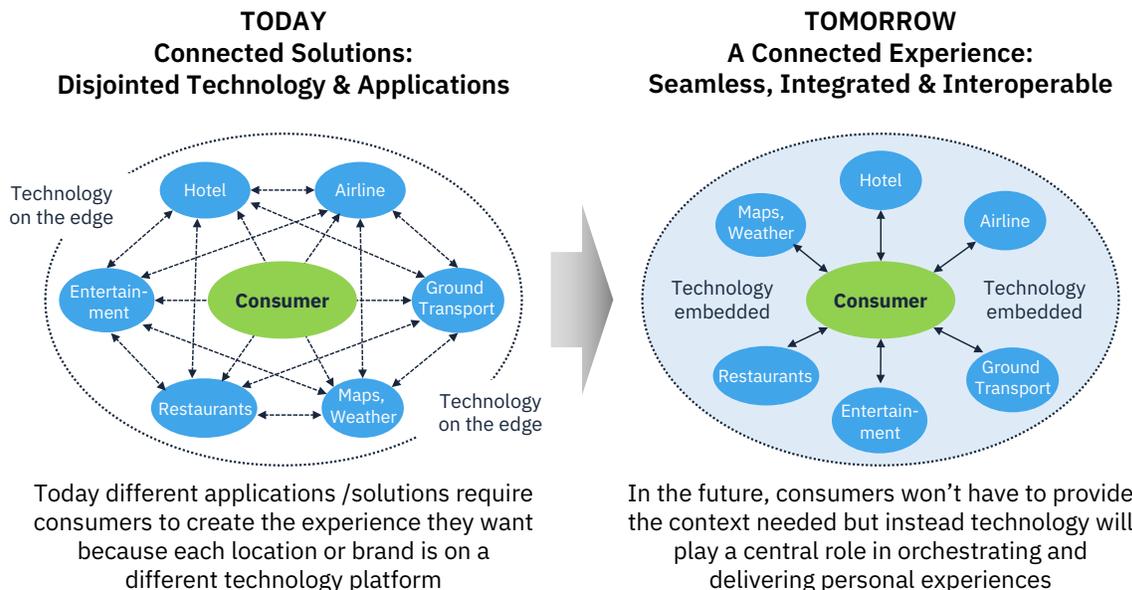
With experience becoming king in the digital age, it is more important now than ever that businesses create connected experiences for their customers. Connected experiences are defined by their ability to leverage data from automated processes and self-learning software to effectively build meaningful relationships with customers across channels. These experiences are consumable and adaptable, and feature seamless connectivity to support users in achieving their objectives in a personalized way.

Think of a person looking to plan a vacation as an example. Today, individuals are usually forced to input data manually and book airfare, ground transportation,

hotels, and activities across different platforms and through different businesses. With the rise of connected experiences, planning a vacation will become easier and more efficient in the future. Vacation planners will work on a single platform that integrates all travel applications and suggests personalized recommendations for travel, activities, and restaurants. This platform will pull in data from a wide variety of sources, including social media accounts, loyalty programs, and other sources such as weather and maps. Itineraries will adapt to changes and disruptions (flight cancellations, traffic, overbookings) in real time to ensure that consumers have great experiences (Figure 1).

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Figure 1: From Connected Solutions to Connected Experiences - Vacation Scenario



## Shifting to a Digital Landscape

Markets are already changing in response to the need for connected experiences with companies such as Uber, Airbnb, Blue Apron, and WeWork disrupting industries and expanding ecosystems to create better customer experiences. Multiple drivers are pushing enterprises to create these experiences for their customers including:

- 1. Digital Natives<sup>3</sup>:** Millennials' native comfort with technology and desire for better experiences is forcing enterprises to cater to them
- 2. Device Proliferation:** By 2020, there will be 20.4 billion connected things and consumers will manage 85% of business relationships without human interaction.<sup>4</sup> Growth in personal device usage has made users more capable and connected than ever before.
- 3. Stay-At-Home Economy:** Automation, IoT, and devices like Amazon Echo and Google Home have spurred

a new 'stay-at-home' economy, where customers can fulfill more needs from the comfort of their homes.

These drivers enable the shift to connected experiences, evidenced by the expansion into new markets by non-traditional market players. For example, when Amazon acquired Whole Foods Market, not only did it gain brick-and-mortar storefronts and distribution centers, but also the opportunity to capture a wealth of information on how Whole Foods' traditionally high-income customers shop in stores. Useful data points that Amazon can leverage from the acquisition include habitual purchase data and relationship data between different products being purchased. Amazon can now predict when a customer runs out of groceries and upsell other products in conjunction. Amazon can also use sales data to build up another private brand, Whole Foods's 365 label, and benefit from

higher margins in the process. Combining in-store information with online shopping data will enable Amazon to expand its foothold in the retail industry by improving the digital shopping experience for their consumers.<sup>5</sup>



## Key Capabilities for Connected Experiences

There are three foundational capabilities that help distinguish between static digital engagements and connected experiences: consumability, adaptive engagement, and seamless connectivity. For businesses to successfully create connected experiences, the following questions need to be addressed:

- 1. Consumability:** How do we create a fresh and engaging user experience with each customer interaction?
- 2. Adaptive Engagement:** How can we quickly leverage vast amounts of data available to increase the engagement quality needed to drive consumer intimacy and loyalty?
- 3. Seamless Connectivity:** How do we securely stream real-time insights at all times even in remote or compromised environments?

Consumability helps create an exceptional and fresh experience with each engagement. These experiences are interactive, immersive, and collaborative, all while delivering a specific trusted outcome. Consumability not only ensures consistency and personalization, but also seamless orchestration of the technologies involved, which may include any combination of augmented and virtual reality, 3D imagery, and gamification. Additionally,

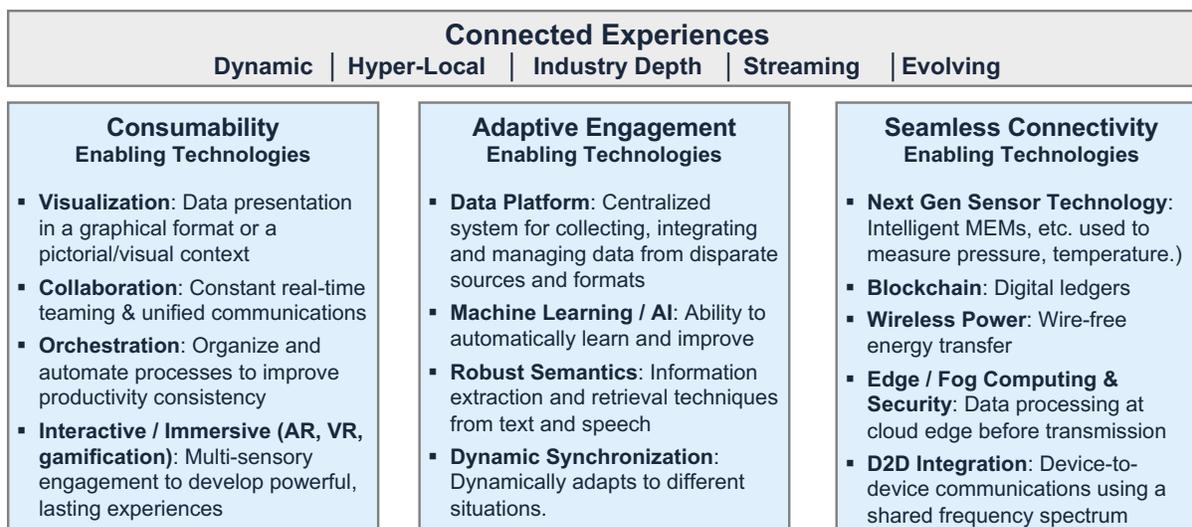
data visualization tools provide access to a huge amount of data and analytics that can be easily consumed for rapid insights. As technologies like voice-to-voice communication and AR become more sophisticated in their ability to reason and understand context, connected experiences will become more consumable and engaging.

Adaptive engagement is another key capability. At the core of all connected experiences is a comprehensive and integrated platform that continuously learns and adapts to improve the quality of engagement. The platform ingests and analyzes different types of data (consumer, shopping history, environmental, etc.) to understand the consumer and take intelligent, proactive actions to improve the quality of the experience. For example, in the previous vacation scenario, an integrated, interoperable vacation platform exploits user data to ensure restaurant recommendations are dynamically adapted to preferences and dietary restrictions. The underlying platform, or “platform of platforms,” uses interconnected data platforms, dynamic synchronization, deep learning and artificial intelligence capabilities (e.g., natural language processing and semantic analysis) to adapt in real-time based on changing scenarios.

The third capability of a connected experience is the seamless connectivity required to constantly deliver real-time insights without interruption. As IoT expands, a nonstop stream of data will be generated, at annual rates of 15.3 Zettabytes by 2020.<sup>6</sup> Connected experiences will need infrastructure and connectivity to handle diverse sets of structured and unstructured data and input from sensors, images, audio, and video in the future.

The seamless connectivity technologies delivering connected experiences will create a network-of-networks supported by 5G/spatial spectrum, blockchain for consistent records, wireless power, and next-generation sensors. 5G wireless technologies will provide consumers and enterprises with the stable connectivity capacity and speed needed to power a future with billions of connected devices. Companies such as the Kymeta Corporation are working on enabling a future state of constant connectivity by developing new antenna technology that can tap into the satellite spectrum and offer more than 5,000x the spectrum compared to terrestrial networks. Kymeta’s networks work across land, sea, and air, ensuring communication, connectivity, and secure streaming of real-time insights even in the most remote areas.<sup>7</sup>

Figure 2: Key Capabilities for Connected Experiences



## Building Connected Value Chains

Both consumers and enterprises stand to significantly gain from connected experiences in the future. As digital interactions and programs progress towards connected experiences, business models will shift in response to increased interoperability across platforms and expanded ecosystems and result in hyper-personalized goods and services for customers (Figure 3).

Today’s food quality and safety experience, which is currently inadequate for the enterprise side of the food supply chain, is a great example. Farmers, distributors, and restaurants are faced with the challenges of eliminating food waste, increasing productivity, and preventing outbreaks from diseased food. To add to these difficulties, they are also faced with bad data quality, which makes it difficult to find insights and improve.

The current food ecosystem dynamic results in a predominantly static business model for farmers, distributors, and consumers. Most inventory follows a supply-to-stock model in which consumers are limited to buying only what is available at a grocery store at the moment they shop. Horizontal collaboration bringing together groups of farmers is mostly nonexistent, as is vertical collaboration that pulls farmers, distributors, and consumers together.

Tomorrow’s food ecosystem can improve on business model aspects and transform into a connected experience with the integration of solutions including precision agriculture, digital markets, Blockchain, and 3D printers. Precision agriculture solutions with sensors to measure and analyze soil for data on temperature, nutrients, and vegetative health will provide fertilizer and irrigation recommendations to help farmers track crop yield and improve productivity. Farmers around the world could collaborate with each other as part of this ecosystem to share best practices through social networks, similar to what the French company Agrifind enables.<sup>8</sup>

Blockchain can help to expand this ecosystem beyond farmers and allow everyone involved from farmers to consumers to monitor their food from production to consumption. Questions around how certain ingredients are grown, whether products are genetically modified (GMO) or organic, or how locally grown crops are could be easily answered. Blockchain could also help stop the outbreak of contaminated products before they reach consumers. For example, IBM partnered with Walmart to pilot a study demonstrating the benefits of tracing food products using blockchain. Results showed that tracking information took only 2.2

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seconds, as opposed to seven days using previous methods.<sup>9</sup>

Additionally, with 1/3 of the food produced, lost, or wasted globally, there is a large opportunity to apply digital markets and custom food production to help food producers reduce waste.<sup>10</sup> Companies like Full Harvest connect farmers and food distributors to sell imperfect produce at a discount with dynamic pricing.<sup>11</sup> Bringing consumers directly into this equation to pick the produce they want directly from farmers could increase process efficiency in the future. As part of tomorrow’s connected food quality experience, 3D printers can be used to create custom foods locally based on consumer demand and dietary needs at the moment of intended purchase, increasing freshness, efficiency, and waste reduction.

Figure 3: Food Quality & Safety Connected Experience Example

TODAY		TOMORROW	
ATTRIBUTES	BUSINESS MODEL	BUSINESS MODEL	ATTRIBUTES
Farmer to Distributor	B2B	B2B2C	User picks specific farm for each type of produce
Supply to stock stores	Inventory on hand	Engineer-to-order	Food grown based on nutritional needs/custom food
Limited data visibility	Feedback loop	Food value chain engagement	All parties have views into data from producers to consumers
Distributorship-based model	Standard pricing	Value-based pricing	Pricing is dynamic based on value of product design & engagement
Minimal points of entry for collaboration	Limited ecosystem	Collaborative ecosystem	Ecosystem is open and shares best practices to decrease food waste

Just as connected experiences encourage industry collaboration, tomorrow's improved connected food quality and safety experience will also integrate into other connected experiences, such as health and wellness. Consumers with dietary or weight-loss restrictions will find value in a connected experience

that integrates smart fridges. These appliances can send alerts when certain ingredients are running low and locate stock of preferred brands in real time. Consumers will be able to prepare meals according to dietary restrictions with recipes and portion information integrated with wearables

to track calorie intake and nutritional needs, creating a holistic experience around food consumption. In this way, connected experiences will enable consumers to achieve their objectives in a seamless fashion by integrating personalization, various digital interactions, and technologies together.

## Delivering Value Through Connected Experiences

While it's evident that connected experiences provide consumers with a host of benefits, enterprises creating connected experiences will also benefit their bottom line by extracting the value of the data generated throughout the customer journey. The arrival of connected experiences facilitates a continuous feedback loop for enterprises, enabling them to access the voice of their customers in real time. When the data from disparate platforms combines and creates a "Platform of Platforms," companies will be able to create new solutions and experiences that drive greater loyalty and revenue opportunities with the ability to use customer insights and predictive analytics to tailor unique experiences (Figure 4).

Today, connected devices are fragmented across platforms and brands and require manual input from customers for any degree of customization. Tomorrow, these devices will speak to each other across platforms, brands, and channels to proactively infer the needs of customers without requiring direct input from solutions that already know customers. Home Depot, for example, has seen success by delivering a seamless omnichannel service experience through its mobile appli-

cation. Through the app, customers are able to create shopping lists, order items, speak with an expert, and see what products might look like in their homes through augmented reality. Home Depot is seeing the benefits of helping customers through their decision-making and purchase journey in this way, with a 21% increase in online sales in 2016, and 5% y/y growth in store sales.<sup>12</sup>

Home Depot has also been actively selling home automation systems. On the Home Depot website, customers are provided an informative guide on smart bulbs, plugs, thermostats, and cameras, as well as all-in-one bundles to create a connected home. Companies who make these products, such as Philips, Wink, and Samsung, have an opportunity in the future, to gather usage data from each customer, and partner with companies like Home Depot to leverage their platform and create a complete customer profile with aggregated data. This data could be used to create ideal environments for customers at all times that is not limited to the scope of the home improvement or consumer products industries, and provides constant end-to-end engagement. A traveler's next stay at an AirBnB could be elevated by

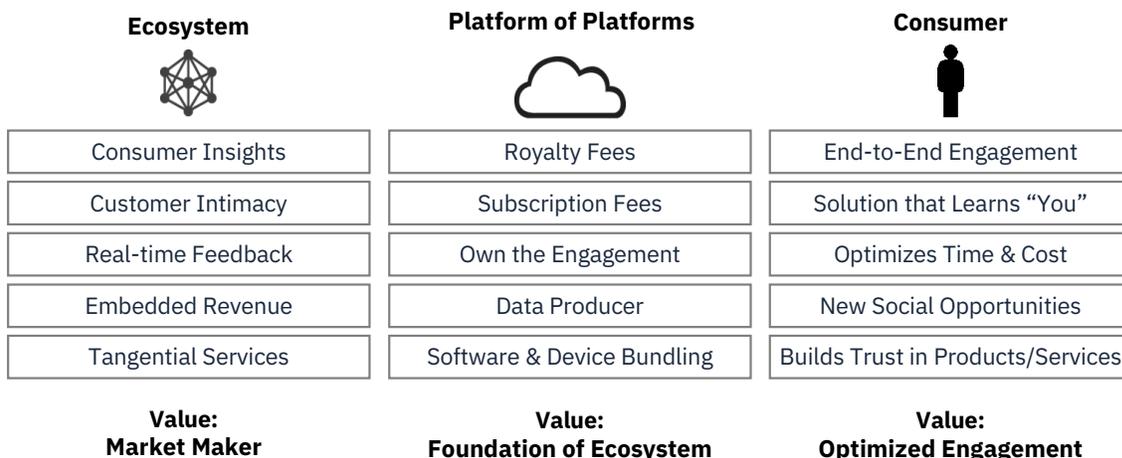
the use of data like this to adjust the lights, temperature, and other home conditions to personalized preferences, while data from their smart fridge could be used to provide a list of restaurant recommendations generated at the apartment based on foods eaten at home. While the ecosystem benefits from increased customer insights and intimacy, the platform owner (in this case Home Depot) could collect royalty fees, produce powerful data and insights, and own the overall customer engagement.

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The companies that do not embrace this new era of personalized, connected experiences will become irrelevant, while the enterprises that are the first-movers will hold a competitive advantage over laggards.

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Figure 4: Monetizing Connected Experiences



## It Takes a Village to Deliver a Connected Experience

For the vast majority of companies, it will be impossible to develop these experiences on their own. To deliver an excellent customer experience, enterprises will need to develop a web of partnerships and ecosystems that stretches across industries.

IBM and HARMAN, for example, are partnering to create voice-enabled cognitive rooms that deliver more natural and intuitive connected experiences for customers. These spaces combine IBM’s cognitive technology with HARMAN soundbars to create interactive rooms that allow people to control their in-room subsystems and discover businesses near their location with natural language interactions. With an adaptive system, the room can learn about people and their preferences from user data over time and execute automatic commands based on previous interactions. The technology is already being used by Thomas Jefferson University Hospital in patient rooms. Patients now have the ability to interact with in-room speakers connected to the IBM Watson IoT Platform, to enhance their hospital experience by asking the room to automatically operate lights and temperature settings, and ask questions about

the hospital facilities or background information on physicians.<sup>13</sup>

As IBM and HARMAN expand their ecosystem to include retailers, restaurants, and other technology providers, the connected experience will become more complete, and Cognitive rooms will become capable of offering more services to customers. This is just one possible example of how this partnership can evolve to demonstrate how determining which partners to help deliver outstanding connected experiences to customers is a key challenge that most organizations face.

Supporting this new business approach will require organizations to imple-

ment a new set of competencies to be able to harness connected experience opportunities.

Designing an interactive user interface that combines disparate data sources to baseline environmental norms and prescribe relevant actions will be imperative in allowing organizations to relate to and target a diverse set of customers to provide great experiences. The best and most successful connected experiences will be provided by enterprises that integrate multiple software and device assets including IoT, wearables, cloud, semantics, security, and visualization, into an intuitive engagement.

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## A Connected Tomorrow

The rise of connected experiences is inevitable. As connected solutions and the variety and volume of digital relationships between customers and enterprises continue to grow in the near future, the need for simplified experiences that integrate intelligent platforms and help consumers achieve their objectives in an easier and more efficient way will permeate industries. Companies that do not work towards accommodating this shift will risk losing their business to disruptive newcomers.

To start building connected experiences, businesses should use a phased approach (Figure 5). First steps include

identifying segments ripe for disruption at the market level and then developing ecosystem partnerships, after deciding which experiences will successfully integrate connected technologies and enable the creation of a “platform of platforms.” Businesses will eventually need to build up to constructing engagement models that focus on revenue generation and channel strategies that effectively pull together touch points, improving consumer experiences in the process.

As with the rise of any emerging trends and technologies, a few impediments need to be addressed and overcome in the process by enterprises in the

creation of connected experiences. These include regulations around how customer data is shared between companies and across industries and ensuring that collaboration efforts across silos and expanded ecosystems run smoothly so that connected experiences are not fragmented or confusing for users.

Enterprises are already working towards connected experiences today by building out data sources and ecosystems. While these developments already exist in pockets today, tomorrow they will be found across market segments and will change the way enterprises conduct business and consumers live their lives.

Figure 5: How to Get Started with Connected Experiences

PHASE I	PHASE II	PHASE III
Identify the market segments ripe for disruption	Build engagement model focused on consumer retention and revenue generation	Build channel strategy: the ecosystem of each experience creates channels to market
Examine existing engagements and experiences within these segments	Establish / Augment communities focused on experiences selected in Phase I	Determine pricing structures that rewards engagement / interaction
Assess software and device capabilities	Establish commercial and service level constructs including incentives (e.g., gamification)	Establish white label opportunities for deployment
Engage ecosystem partnerships to fill voids	Ingest ecosystem, industry and community data	Develop reference architecture and data models
Evaluate which experiences cross segments	Develop technical roadmap segmented by consumption, platform of platforms and infrastructure	Acquire the competencies necessary to build and support the environment
Evaluate which experiences unify / integrate existing connected solutions	Craft the initial design based on engagement model	Build digital replicas for ideation and design refinement

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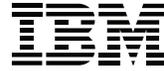
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