

Retail Everywhere



Presented by
MIT Media Lab and

Deloitte.

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Friends and Guests,

Deloitte and the MIT Media Lab are pleased to share with you this brief report on our “Retail Everywhere” workshop hosted in Cambridge, Massachusetts. We hope that it will serve to remind you of the highlights of the workshop, while also sparking your interest in pursuing new and innovative approaches to connecting with and serving your customers.

This singular experience showcased some of the most fascinating projects underway at the MIT Media Lab. Although most are in different stages of development or deployment, they helped all of us think about how technology and science are changing the nature of commerce, the way we do our jobs, and the path of innovation — and what all that means for retail today and in the not-so-distant future. We explored developments and new frontiers in data analytics, social transactions, sensing, and open/personal design. Our objective was to ‘shake things up’ and inspire us to consider what could be... not just what is. We look forward to hearing from you, as you anticipate, plan, and think about deploying new technologies to reach and provide your customers with the retail experience and products they need and want.

Feel free to contact us if you would like to discuss these ideas further or would like access to the research from the session presentations. We look forward to continuing the dialogue and hearing about how the workshop inspired you to think differently about retail.

Thank you again for taking the time to participate in the workshop.

Best Regards,



Andy Lippman
Associate Director
MIT Media Lab



Alison Kenney Paul
Vice Chairman
U.S. Retail & Distribution Leader
Deloitte LLP

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The future of retail is now

Advances in the digital world are impacting every aspect of our lives — personal, professional, and commercial. Nowhere is this more evident than in the world of retail. Wherever we are, we can browse, compare, and decide not only which products interest us, but also which experience intrigues us and engages us. For retailers, this blurring of two worlds — the physical and the digital — creates new options for growth as well as innovative ways of understanding existing and potential customers.

Although ‘hologram’ sales associates are not in every boutique, it is clear that the future of retail is here. As MIT Media Lab Associate Director **Andy Lippman** suggests, retail is entering a vital new stage of digital evolution. In the 1980s and 1990s, we experienced a “world of digitalization” — digitalizing everything: words, music, photos, and videos.

Today, we are in a “world of digital understanding” — the result of a confluence of several developments and trends:

- **Big data** that cuts across silos in real time and offers extraordinary granularity and new understanding and awareness of customers and users
- **A new psychology** that enables machines to understand people and their emotions based on movement and pattern recognition as well as facial expressions
- **An era of sensors** that are everywhere, both gathering and emitting data
- **A new notion of space** that integrates mobile networks and physical space to create new lifestyles and ways of connecting, selling, and working

Our understanding of what these hold for the retail world is limited only by our imaginations. However, one thing is certain, the pace of technological change and its potential is such that retailers cannot sit on the sidelines. The time is right to engage and seize the future...now.

To understand the implications of these changes and what lies ahead for retail, Deloitte and the MIT Media Lab cohosted an exclusive workshop for 80 retail, technology, and consumer product executives in Cambridge, Massachusetts, in April. The workshop, “Retail Everywhere,” explored new technologies that are disrupting the nature of commerce, our jobs, and innovation in retail. New frontiers in data analytics, social transactions, sensing, 3-D printing, and design were discussed, ultimately inspiring participants to think about retail differently and to consider what the future holds.





Who are your
customers and where
are they going?

Digital understanding starts with digital data or as it is commonly called “big data.” Big data has enormous potential for providing retailers with all kinds of information. How we collect, sift, and capitalize on that data is a matter of imagination, exploration, and invention.

The more general challenge for retail is: How do we use the data collected to improve business results? More specifically: How can big data help us strengthen relationships with customers? What kinds of connections can retailers develop? How can retailers discover and capitalize on new types of data to develop products and product lines?

Answers to these types of questions begin with a better understanding of:

- The patterns of interaction potential customers have in their daily lives, whether at work, at play, or shopping
- What customers are saying about products
- What the supply chain may mean in terms of transparency and customer loyalty
- How to motivate employees to share information and ideas that will drive sales and growth

More than a fingerprint

As consumers of television, we all know the police can identify the bad guy based on his or her fingerprints. For a positive identification, fingerprints require some 12 points of information. Compare that to the potential of big data that can track individuals with amazing precision and with only a few coordinates of information, as few as three or four according to **Yves-Alexandre de Montjoye**, a graduate student at the MIT Media Lab.

We need to think of our smartphones and other mobile devices as transmitters. Each mobile unit has its own identity markers — media access control (MAC) address — and as we move about our day, we leave traces of data, and ourselves. Over a period of several days, we might follow a typical routine of leaving home; driving the car to work; going out for lunch; returning to the office; and ultimately, returning home. Along the way, our mobile device will have created a series of electronic coordinates. In fact, by using only four such data points, we already have the means to identify some 95 percent of Americans who carry a mobile device. While the issues of privacy have yet to be addressed, the ability to capture that data and the identities is here.

Can companies learn about potential customers without necessarily listening?

Typically, we learn a lot about customers by hearing and listening to what they have to say. That makes eminent sense. Yet, MIT researchers and others are finding that we can learn a lot about the daily lives of people by looking at the electronic traces they leave as they go about their daily business. Studying these patterns and deciphering their meaning can tell us a lot about individuals without hearing a word they are saying.

What that means for customizing offers and understanding the buying patterns and needs of consumers has yet to be fully determined. Yet, there are studies that have gone beyond pinpointing the movements of individuals to study how they interact. As **Ben Waber**, visiting scientist at the MIT Media Lab and chief executive officer (CEO) of **Sociometric Solutions**, demonstrated, the sensors we carry and can deploy — including smartphones, Bluetooth, microphones, video cameras, ID badges, and the very computers on which we work — also create data about what we do. Today, we have the means to capture the typical actions of a business or shopping day — from talking on the phone to emailing. Also we can know with whom and for how long each individual is interacting; which party is playing the dominant role in the conversation; and as **Nick Gillian**, a postdoctorate at the MIT Media Lab, demonstrated, what their gestures are, whether they are tense or relaxed, and the very tone of their language based on facial expressions.

Using social sensing technology, a recent study of three different branches of the same bank in the Czech Republic was able to chart the patterns of communication of the one branch that was much more productive and effective than two others nearby. In the best performing branch, researchers found that people in related functions walked effortlessly to discuss specific cases and issues with colleagues nearby and that they used several social apps to enhance interactions at the office. They compared that with the other two branches where the organization was focused around bank functions rather than being organized to expedite customer needs. The results clearly indicated that an office layout maximized for open customer-focused collaboration generated increased sales and greater results.

Similarly, at the call center of a major U.S. bank, a mapping effort was undertaken. The bank has call centers across the country with similar organizational structures, but varying levels of performance. Bank executives believed “cultural differences” were a root cause, but conventional assessment methods did not provide them with actionable insights. By analyzing communication patterns (voice, email, etc.), the findings of this study were simple, but powerful:

- The most effective call center teams were cohesive, shared tips and best practices as well as life stories, especially during lunch breaks
- They suffered less stress and had increased productivity
- Their turnover rates were radically lower than other comparable groups
- They completed their calls 25 percent faster than their colleagues
- Total savings generated by this team for the bank in one year: \$15 million

Our ability to analyze how people work, interact, and the time they spend in a variety of activities can ultimately yield valuable information about employees and customers.

Beyond motion, gestures, and time spent, words also reveal a lot about customers. How do we capture the words customers use to describe a product when they are often scattered across the Internet on different social media sites? That challenge is one that has preoccupied MIT Media Lab researcher and **Luminoso** CEO, **Catherine Havasi**, whose company built a cloud-based, multilingual, scalable solution for understanding text. By identifying the nuances and colorations of meaning, companies can turn words into actionable business intelligence. They can capture what people are saying about their company and product, directly and indirectly, through hints, allusions, and even metaphors.

In terms of refining a product, shaping its marketing strategy, and targeting a customer base, this cloud-platformed approach to understanding text holds vast potential for companies. Already a number of prominent retailers are using this word-recognition-discovery-analytics technology to better listen to their customers without the need for formal interviews or surveys.

Where is my product?

For retailers and manufacturers alike, supply chains are the lifeblood of their business. Typically, computers enable them to track the shipment of components and final products to and from assembly plants around the world and, ultimately, to the store or warehouse from which the final sale will take place.

Visualizing that supply chain as an interactive map — not just being able to track components or products at specific points in the supply chain — can provide companies with a whole new perspective on their business. That process already exists thanks to the work of **Leo Bonanni**, MIT Media Lab graduate and CEO of **Sourcemap**. The benefits of such a process are considerable. Companies can now:

- Visualize their supply chains as a global map
- Empower other people to contribute data to the supply chain map through social media — for example connecting with the cotton farmer in India who provides the raw material for shirts

- Better understand their carbon footprint and share relevant data as part of an effort to build brand around social responsibility
- Better isolate and determine vital risks, such as overdependence on a single supplier or a source material
- Overlay critical information, such as civic unrest and weather patterns
- Crowdfund to gather data to anticipate future risks or shortages

One prominent shoe manufacturer has elevated its supply chain to be not only a matter of corporate responsibility, but also a core component of its brand. Its hope and expectation is that once customers know where the materials for the shoes come from, at what factories they are made, who the workers are, and how they are compensated, customers will be encouraged to buy the shoes. The assumption? An informed buyer wants to buy quality and act responsibly.

Can we share?

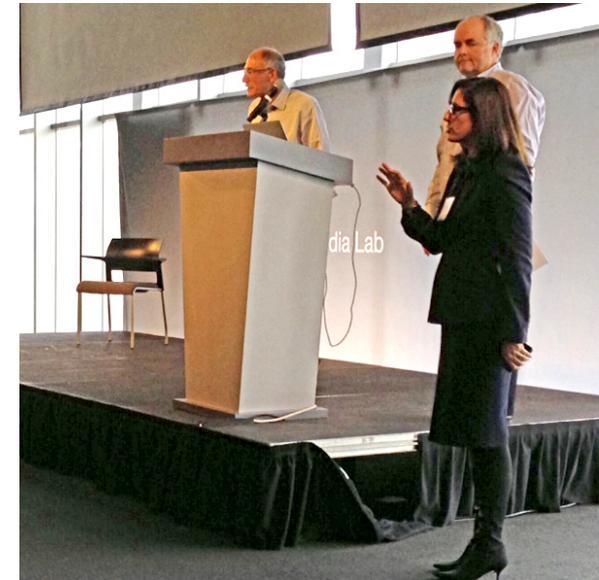
With all the best data and information in the world, little is to be gained, unless that information can be shared and appropriately leveraged within a company. One idea that has been piloted by **Dawei Shen**, a PhD student and a research assistant in the **Viral Spaces** group at **MIT Media Lab**, is to introduce a market mechanism into companies that can create incentives for the formation of an internal information economy, innovation markets, and ultimately idea markets.

The catalysts for sharing can include social incentives and awards (such as a signature T-shirt or lunch with the CEO) and economic incentives (gift cards or points) that provide employees with the currency to eventually buy something they want.

Fostering this kind of internal information economy in a company can be difficult. After all, it is premised on the assumption that most employees have relatively equal access to good information so they can all compete and that they are willing to change behaviors.

For retail, the implications of promoting network-based information sharing centers are evident. The network can:

- Promote the building of ideas to enhance the customer experience
- Enable the sharing of sales best practices
- Encourage greater collaboration — not just competition — among sales professionals





*Are your customers
armed and dangerous?*

Thanks to mobile devices, unprepared retailers might be facing customers who are armed and dangerous. “Armed” because they have the technology to learn more about a product’s features and whether it fits their lifestyle and values. “Dangerous” because mobile devices provide them with a variety of shopping options and opportunities that make differentiation of the shopping experience — from manufacturing to the final sale — a vital component of retail success.

Smart retailers are looking to engage their customers, answer their questions, and provide them with a variety of shopping options and experiences. If we already know more than we might imagine, thanks to big data, how can this knowledge enhance the customer experience? Typically, the larger retailer has advantages of scale and access compared to the smaller business. However, now the paradigm of seller-customer interaction is changing and the relationship is being viewed, not as discreet moments of exchange, but as a holistic experience.

Defining the retail path

Again the pillar of that experience will be mobile devices, and many retailers are adapting technology to the immediate needs of the consumer, notably by allowing the user to interface with information and data without the use of a keyboard.

As **Max Metral**, cofounder of Fig Card, an acquisition of **PayPal**, explained, some 58 percent of shoppers now use smartphones for comparative shopping, to get information about certain products, or to navigate larger stores. With the right sensors in their stores, retailers can capitalize on mobile devices to:

- Determine the number of people in the store at any moment
- Pinpoint their locations and areas of greatest concentrations — toy department versus cosmetics

- Identify those shoppers who have used the store WiFi through their MAC address
- Push relevant data to select customers based on previous visits/ transactions

With all of this data in the hands of retailers, developing trust and ensuring privacy must remain top-of-mind for retailers. Although privacy rules are still evolving among policymakers, perceived violations of privacy can be costly. Conversely, retailers need to make the case for the value of such data exchanges: if the customer is willing to share their personal shopping information and habits, in return they may receive more personalized information, discounts, and other incentives that will enhance and facilitate their shopping experience.

A convergence of experiences

Thanks to new technologies and changing attitudes and behaviors among shoppers, there is a convergence of in-person shopping (offline) with the convenience and information-gathering capabilities of online shopping. The convergence of online/offline shopping is making customers even more knowledgeable, thanks to such tools as owner reviews, price transparency apps, and wish lists.

Each of these tools naturally taps into a human experience — the desire either to confirm or offer an opinion. While brick and mortar stores are currently recording 10 times the volume of sales of online stores, online shopping is growing three times as fast as that at traditional stores.

Designing for this converged, omnichannel approach to the shopping experience begins with customer centricity — one customer at a time; and by offering as many relevant products as possible. Compare that to the traditional approach that is product-centric and tries to drive one product to as many customers as possible.

As **Rebecca Hornbuckle**, **IDEO** business designer, suggested, to create this converged experience, retailers need to embrace:

- **Design for the omnichannel.** Integrate retail channels to allow customers to shop how and when they want in a transparent pricing environment. This can include the use of in-store shopping apps that can act as item locators, create voice-activated shopping lists, provide price scanning capabilities for smartphones, and arrange free shipping if the product is not available in-store.
- **Merchantainment.** Stage products for shoppers so that they can feel and absorb all the elements of the brand and enter a virtual reality in which the product is shown or used. For example, clothes can be displayed in a way that conveys the vision of the designer — elegance, sophistication, provocation — not just their look and size. Store employees are engaged to serve as embodiments of the brand and brand promoters, not just as providers of helpful information.
- **Design for browsing.** Promote the joy of discovery by introducing new products on specific days or at specific intervals. Provide customers with the tools to see how the product will integrate with what they currently own from that same store or how to combine several products to create a different living environment, sound/audio environment, etc.
- **Design for owners.** Develop ways to attract owners of the product back to the store so that they can serve as brand enthusiasts. One survey suggests that 85 percent of shoppers trust owner reviews and that those reviews have a significant impact on some 80 percent of online purchases. The challenge then is to find ways to capture those reviews and convert owners into brand champions in the stores themselves.

- **Design for trial.** You can try on clothes and cosmetics to see if they are right for you. Also, what about other products? How can technology help move in-store trials to sales? A well-known furniture and furnishing retailer has developed 3-D software to enable customers to enter the dimensions of different rooms in their homes and see how a piece of furniture might look and how other items can be customized to give a room a particular style or flair.
- **Personalization.** Retailers need to find ways to recognize their customers quickly, access data about their past purchases, and customize the shopping experience, both in-store and online.
- **Designing for insight.** Big data offers retailers an opportunity to convert frontline information into insights that can help develop new products, services, and experiences. For example, one fashion retailer equips its sales associates with mobile devices so they can ask and record what customers like and do not like and thereby customize the stock of that store to better match customer wants and needs.

To capitalize on the convergence of in-store and online shopping experiences, it pays to think about and learn from extreme examples — from how race car pit crews coordinate data received from the car to service it in the pits, to the ways in which emergency room operators prepare to receive patients on a moment's notice. Speed and exact execution can be all the difference between a lost opportunity and sale.

Can you solve the extreme shopping challenges below?

At the end of the discussion sessions, the executives participating in "Retail Everywhere" were organized into seven teams to address specific "extreme shopping" challenges. The intent of the exercise was to challenge the teams to think beyond their typical comfort zone and to push them to develop more creative and unexpected solutions.

The goal of the exercise was to engage the teams in finding retail solutions for potential customers who faced unusual or very specific retail needs or presented unusual retail demands. The teams brainstormed to find solutions to these challenges.

How would you serve these customers?

- The lottery winner
- Someone who hates shopping
- Someone who lost everything
- A group of seven 'tweeners'
- A shopping neophyte
- Someone who wants nothing: a monk
- 20-second shopper

As there are no correct answers to these extreme challenges, take a moment to imagine how you might address these issues. What would the key elements be to your innovative solution?



Three rules to remember

Recent research pioneered by Deloitte's Michael Raynor and Mumtaz Ahmed in their new book, *Three Rules: How Exceptional Companies Think*, adopted a different approach to successful companies. Drawing on a purely data-driven analysis — a database of more than 25,000 companies traded on U.S. exchanges between 1966 and 2010 — the research identified 344 exceptional companies and developed a rigorous method for determining what makes them great. The measure of success that the researched zeroed in on was return on assets (ROA), a stable measure of performance not subject to the vagaries of the market or investor expectations. The study yielded surprising advice that has been long overlooked despite its apparent simplicity.

While various factors may contribute to success, they do not define it. Instead, exceptional companies, intentionally or unintentionally, heed three rules:

1. **Better before cheaper**, Compete on differentiators, not price
2. **Revenue before cost**, Prioritize increasing revenues over reducing costs
3. **There are no other rules**, Change anything/everything in order to abide by the first two rules

These three rules provide a compass, rather than a map. They can serve as a catalyst for thinking about new technologies, how they might be deployed, and which technologies might best serve a particular business objective — i.e., lowering costs, raising revenue, or investing in new markets and opportunities.

The Case of a Specialty Retailer

Following its spin-off from a larger holding company; this specialty retailer enjoyed several years of rapid store growth and industry-leading margins and ROA. Its position was defined by a combination of leading-edge style, differentiated advertising, and a unique in-store experience that made it a leader. This often required that the company incur higher relative costs than its competitors, spending more on, for example, its store locations, store fixtures, and in-store personnel. It generated higher profitability despite incurring higher costs, thanks to prices that were consistently and materially higher than its competitors.

Retail, however, has a stereotypical growth and decline cycle. So, a concept that proves popular can grow quickly and profitably for as long as it remains popular and there are new shopping malls to colonize. Once customers get bored or the real estate runway has been exhausted, a retailer must focus on same-store sales growth and somehow find ways to stay “trendy” and “relevant” to fashion-conscious shoppers for whom there is nothing less cool than what they used to like.

This specialty retailer tackled those issues head on, working hard to keep its core brand on the leading edge, while also launching new brands that targeted different segments of its market. By doing that, the company enjoyed industry-leading ROA results. In short, it was willing to create whole new images — perhaps the defining feature of its retail market — in order to target more effectively new segments. Yet, it never wavered in its dedication to a position driven by nonprice value and a price-driven profit formula.

To learn more about the book, *The Three Rules*, click [here](#).



Will customers be the
designers of the future?

Apart from the obvious need to make a decision about a particular purchase, traditionally, shoppers have been relatively docile beings — they develop or receive pertinent information, they narrow their product choices, and they decide and buy. The process is one of receptivity and sorting of information.

However, what if shoppers were less passive and much more involved in the process that not only led to their shopping decisions, but to the very creation and manufacturing of the product they are buying?

That is one of several challenges retailers face in terms of their role as a bridge and conduit between manufacturer and consumer.

The ecology of new products

Traditionally, retailers have determined with manufacturers the design and production of goods. However, the way and wave of the future may well be different. The future design and manufacturing of products may not reside exclusively on the wholesale/retail side of the equation. The customer of tomorrow may well have more than his or her say in a product's design. They may, in time, actually participate in its production to ensure certain specifications, including color combinations, measurements, and the like.

Already, a manufacturer and retailer of athletic shoes enables customers to design their shoes at the retail store and then return a short time later to find that a robot 3-D printer has created shoes that match every specification they indicated.

According to today's design principles, production optimization follows the creation of an original idea. Tomorrow, such a separation may be unnecessary. Design and production optimization may well become one as manufacturers, retailers, and customers focus not on "form making"— i.e., production of something imagined, but instead on "form finding," a notion of production based on patterns and processes existing in nature. In such an environment, buyers of the future will not just be acquiring a product.

At the Media Lab, MIT faculty, **Neri Oxman, and her students in the Mediated Matter Lab**, are studying closely the process by which the silkworm builds its cocoon. From that careful examination, they hope to derive not just new processes to help everything from building design to weaving, but also to engage customers in the very process of design itself.

Bringing it all back home

The tide of the industrial age seems to be reversing. Not so long ago, people worked in factories and offices; we took trains to connect with family and friends; we went to the hospital when we were ill; and we went to the movies to relax.

When we think of cutting-edge technological platforms, we typically think of computers. However in the past decade, according to **Kent Larson**, MIT Media Lab principal research scientist, more and more services have found their way back home — the new platform of our age. We watch current movies at home through subscription services of various kinds. Many of us work at home several days a week... or at least we can take work home and connect seamlessly with the office and colleagues via the Internet.

For reasons that are not entirely obvious, the way we design and use our houses has not kept pace with the change in how we work and live. Once again, today the home is a hearth and hive of activity — the center of family life, work, and health care.

Retailers need to appreciate these changes and be ready to help customers design, organize, furnish, and enrich their lives, all within the shifting confines of their home. Also, the bold retailers will embrace the notion that potential customers are everywhere and that the point of sale can have no physical limits.



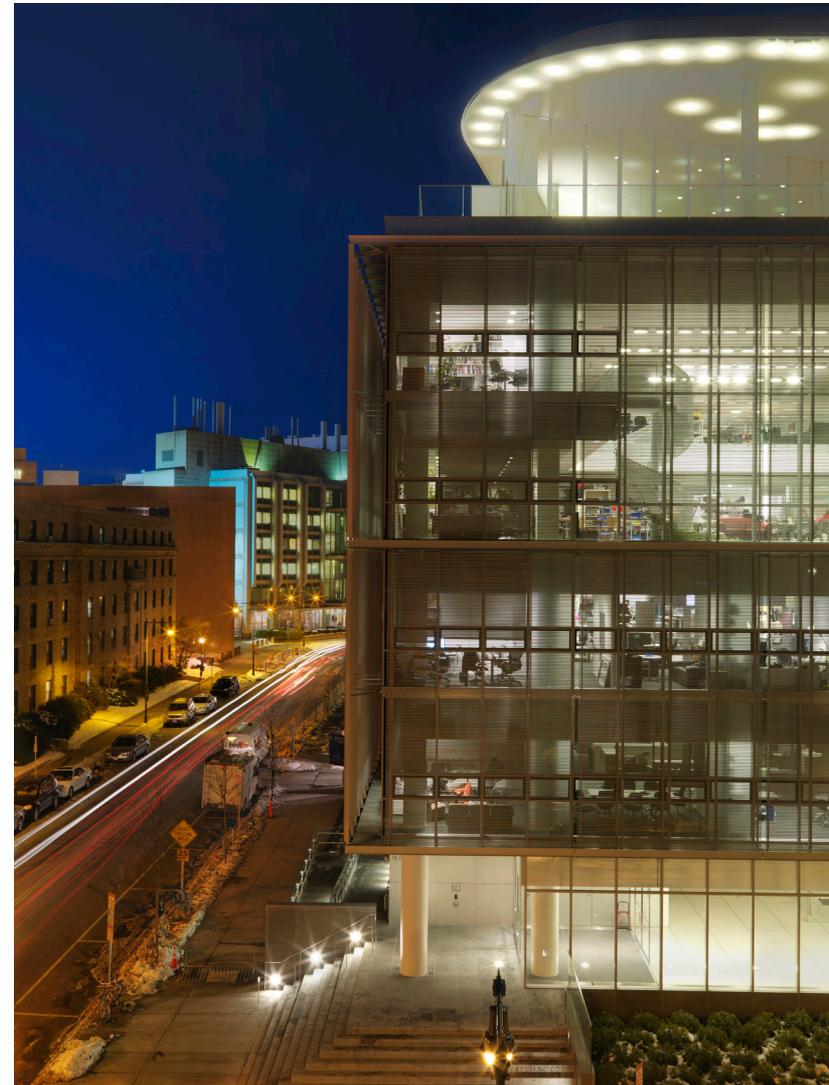
Takeaways and outtakes



The age of digital understanding now provides retailers with a host of possibilities and challenges. They can explore technologies that enable them to better appreciate and understand the needs of potential customers. For example, they can gauge customers' reactions to store displays and learn about what they really think without even speaking to them. They can track the sourcing of the raw materials that go into a finished product and involve the customer in the manufacturing process from the rainforest to the breakfast table or from the clean room to the living room where the laptop connects to the TV to offer a variety of information and entertainment options.

The "Retail Everywhere" workshop explored with participants provocative ideas, disruptive technologies, and a framework for making sense of it all, so that they can begin to imagine the future as it unfolds today. There were takeaways for some that can lead to immediate action. For others, there were outtakes — small snippets of ideas that stood out among all the new information as offering long-term possibilities.

The workshop offered participants a valuable opportunity to think about the future unencumbered by the daily burdens and responsibility of business and to begin to see business and customers in a whole new light and environment — a "Retail Everywhere" environment.



Participating companies:

Aegis Media
Ahold USA
Amazon.com, Inc.
Belk, Inc.
BJ's Wholesale Club, Inc.
Boston Globe
BT
Digital Garage, Inc.
Foot Locker, Inc.
Francesca's Holdings Corp.

Hasbro, Inc.
Huawei Technology Co. Ltd.
IDEO LLC
InstantInsight, Inc.
Intel Corporation
Intuit, Inc.
Kohl's Corporation
LG Electronics, Inc.
Natura Cosméticos
NEC Corporation

PayPal, Inc.
Retail Marketing International
REI
RR Donnelley
Samsung Electronics Co. Ltd.
Schneider Electric
Target Corporation
The TJX Companies, Inc.
UNC Charlotte, Belk College of Business

Contacts

Deloitte

Alison Paul

Vice Chairman
U.S. Retail & Distribution Leader
Deloitte LLP
+1 312 486 4457
alpaul@deloitte.com

Kasey Lobaugh

Chief Retail Innovation Officer and
Omnichannel Retail Leader
Deloitte Consulting LLP
+1 816 802 7463
klobaugh@deloitte.com

Michael Raynor

Director and Author, *The Three Rules: How
Exceptional Companies Think*
Deloitte Services LP
+1 617 437 2830
mraynor@deloitte.com

MIT Media Lab and Lab spin-off companies

Andy Lippman

Associate Director and Senior Research
Scientist, MIT Media Lab
lip@media.mit.edu

Leonardo Bonanni

Founder and CEO, Sourcemap
leo@sourcemap.com

Yves-Alexandre de Montjoye

PhD Candidate, MIT Media Lab
yva@mit.edu

Nick Gillian

Postdoctoral Fellow, MIT Media Lab
ngillian@media.mit.edu

Catherine Havasi

Cofounder and CEO, Luminoso
havasi@lumino.so

Rebecca Hornbuckle,

Business Designer, IDEO
rhornbuckle@ideo.com

Kent Larson

Principal Research Scientist, MIT Media Lab
kll@mit.edu

Max Metral

Principal Software Engineer, PayPal, Inc.
ma@x.com

Neri Oxman

Professor, MIT Media Lab
neri@mit.edu

Dawei Shen

Research Affiliate, MIT Media Lab
dawei@mit.edu

Ben Waber

Visiting Scientist, MIT Media Lab and CEO,
Sociometric Solutions
bwaber@mit.edu

