ZS

Connecting the Bots

Aligning Insights to Decision-Making and Customer Experience

In this issue

Gartner

Welcome

Today, life sciences organizations face myriad challenges using data to drive business and customer engagement initiatives. Identifying and gaining access to the insights that influence business and customer success is difficult and becomes even more complicated when you want to connect those insights to practical and effective next steps.

Technology and advanced analytics, including artificial intelligence and machine learning, can be vital mechanisms for delivering next-generation business solutions and improving customer engagement. Organizations can use these capabilities to uncover business or customer trends, prioritize opportunities and provide actionable recommendations for maximizing business outcomes.

In this news briefing, you'll learn how technology and machine learning can be used to make strategic business decisions, evolve business models and ecosystems, and improve customer experience. We'll share how life sciences organizations are using advanced data science to orchestrate customer engagement and improve sales and marketing effectiveness.

Elevating the Customer Experience with Field Suggestions

The convergence of sales force effectiveness and data science in the pharmaceutical industry

By Saby Mitra

For years, pharmaceutical companies have targeted their customers with an increasing number of sales and marketing activities because they could afford to. With every launch of a new product or indication, the noise has increased. According to ZS's AffinityMonitor®, the top 30,000 doctors in a sample set receive a projected 2,700 industry contacts a year, or 7.5 each day (including weekends and holidays). For physicians in certain therapeutic areas that have a lot of overlap among pharmaceutical companies, the number of promotional activities can grow even higher—up to twice as many.

Several pharmaceutical companies recognize that maintaining relevance and access to their customers in this environment requires competitive differentiation and a new approach to customer engagement. To better engage customers, in the recent past many companies have initiated programs that are focused on making marketing more customer centric. While this is a good first step in fashioning a customer experience, outbound marketing constitutes only a portion of the customer touch points, and by integrating just the marketing interactions, it will result in a modest change in customer engagement and, as a result, a modest change in sales growth.

Based on 2015 ZS Oncology Customer Experience Tracker, Oncology companies can add $50 - $75 million in incremental sales for every $1 billion in current sales by delivering a better customer experience.

With over 60% of industry marketing budgets typically spent on sales activities, it's essential that the sales force is also strategically integrated with multichannel efforts in order to optimize promotional effectiveness and pull-through. Companies that are optimizing the customer experience across all marketing and sales touch points will see significant gains in customer engagement and, ultimately, sales growth.

Today, as rep access continues to rapidly erode and customer preferences lean increasingly toward digital engagements, there is a significant opportunity for pharmaceutical companies to amplify their customer-centric agenda by establishing strong integration between sales and marketing and evolving the sales rep into an orchestrator of customer activities, leading to better reinforcement and scale. Creating this linkage between sales and marketing is already underway by some early adopters in the industry.

Introducing Rep Orchestration

In an environment where delivering an exceptional customer experience is a strategic imperative, the question becomes, How do we integrate sales and marketing and elevate the sales rep to drive orchestrated customer engagements? The vision of rep-enabled orchestration can be achieved through a set of business capabilities as shown in Exhibit 1, which can collectively enhance customer experience. As customer access continues to decline and customers engage across multiple company assets, sales organizations need to work smarter than before, and sales reps need to coordinate more

Exhibit 1. Rep Orchestration

Source: ZS Associates
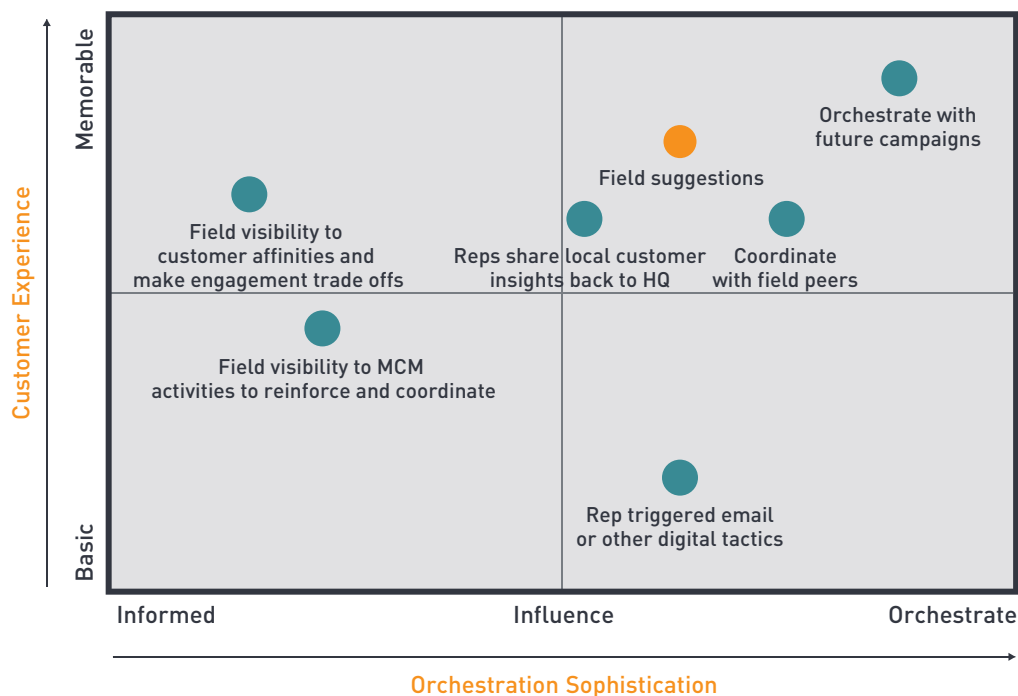
Digital technologies have had a profound impact on how customers hear about, evaluate, select, use, seek support for, and recommend products and services.
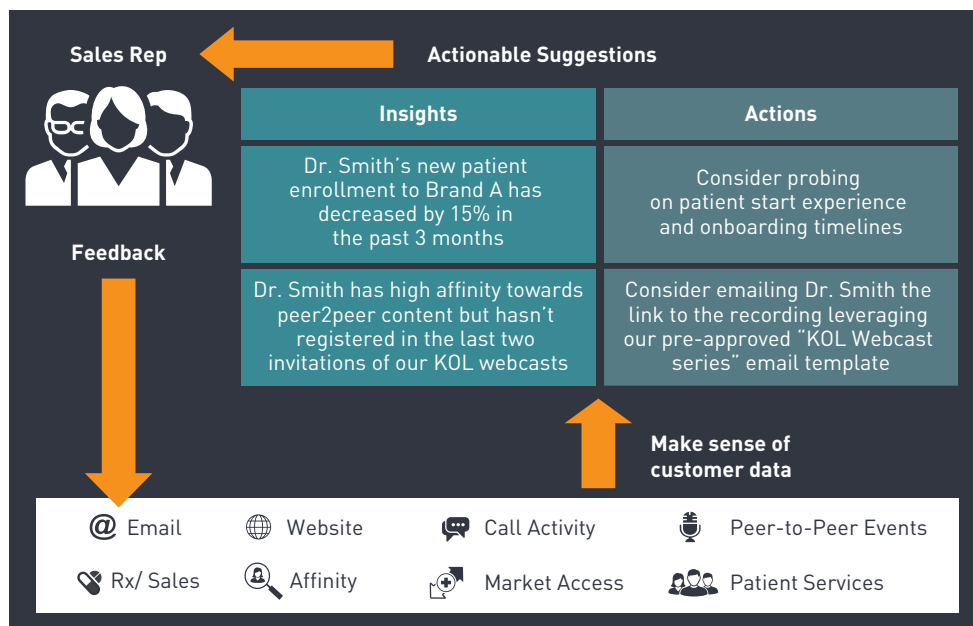
purposefully with marketing channels. Given the change in customer preferences for channel, content and cadence, field suggestions through the use of workflows and data analytics will serve as a key lever for tailoring an experience for each customer and, thereby, stronger competitive differentiation.

What Are Field Suggestions?

Onboarding new reps quickly, reducing the time that reps spend searching for data, and coaching reps are some of the top priorities of sales organizations today. However, today's pharmaceutical sales reps are inundated with multiple reports, and are typically left connecting the dots between data from CRM systems, sales reports and multiple other data cuts to piece together meaningful customer insights. This slows down even the most efficient reps in the sales team. Additionally, while traditional sales reports provide visibility into customer trends, they do not offer insights to diagnose the root cause of the issues and help reps adapt their engagement approaches. Field suggestions, if designed right, address this problem by first integrating multiple data sets across sales, marketing, market access and other functions, and then assembling a provocative and easy-to-digest combination of business insight and action plan served to the rep in a single location, as shown in Exhibit 2. These suggestions enable better pre-call plan preparedness for reps by surfacing critical insights about why customer behavior is changing so that reps can fix the "right" problem with each customer, prioritize sales opportunities and improve customer performance. From a marketing organization

Exhibit 2. Field Suggestions Concept

Sales Rep	Actionable Suggestions	
	Insights	**Actions**
	Dr. Smith's new patient enrollment to Brand A has decreased by 15% in the past 3 months	Consider probing on patient start experience and onboarding timelines
Feedback	Dr. Smith has high affinity towards peer2peer content but hasn't registered in the last two invitations of our KOL webcasts	Consider emailing Dr. Smith the link to the recording leveraging our pre-approved "KOL Webcast series" email template

Make sense of customer data

@ Email   Website   Call Activity   Peer-to-Peer Events

Rx/ Sales   Affinity   Market Access   Patient Services

Source: ZS Associates

standpoint, a field suggestion is an incredibly powerful vehicle to influence rep pull-through and scale engagements based on a brand's strategic priorities, and learn about customer preferences through suggestion-usage trends.

Field suggestions can be classified into three broad categories ranging from simple business rules to those that are more advanced and analytically derived:

- Business-rule based: This type of suggestion is generated when a trigger condition meets a static threshold value (for example, generating a suggestion when 50% or more market volume flows through unfavorable managed-care plans).

- Event-based: This type of suggestion is generated based on an event in the customer journey or when a customer performs a specific action (such as when a customer registers as a member in a peer-to-peer network or conducts a valued action on a website).

- Data-science-based: This type of suggestion provides reps actionable insights based on changes in customer behavior by combining multiple sources that will be otherwise difficult to identify through traditional reports and business intelligence techniques (for example, generating suggestions by identifying changes in a customer's market share, customer engagement score, and managed care favorability altogether).

While the core design of suggestions may remain unchanged across commercial models, some variability is expected between primary care and specialty therapeutic areas. For example, in promoting specialty portfolios, such as oncology, reps will need to navigate institutional accounts (for example, group practices, healthcare systems, integrated delivery care networks), orchestrate heavily with other field peers (such as medical science liaisons or reimbursement specialists) and closely follow patient dispositions. However, sales performance data may not be always available at an individual customer level. In that case, special sales attribution techniques may be necessary to generate individual customer-level insights. Suggestions can also be more predictive in nature in specialty businesses to empower sales teams to closely follow new patient opportunities. For example, generating suggestions when the doctor orders a biomarker test, or when the doctor enrolls a patient into a competitor's clinical trial.

Pharmaceutical companies in the U.S. typically have access to a wide variety of customer-level data to inform deeper customer insights and suggestions. However, in ex-U.S. markets sales data may be available only at a brick or nano-brick level as in Europe, or other data sets may not be readily available in all market archetypes, as shown in Exhibit 3. Nevertheless, high-impact suggestions can be still be generated through the use of sales and marketing activity data, and smart design of business rules that integrates with other activities in the customer journey. In some ex-U.S. markets, the sophistication of suggestions and, thereby, field effectiveness can be further enhanced through the integration of additional analytical processes and assets (such as attribution of sales data, estimate customer affinities, etc.).

Exhibit 3. Commercial Data Availability and Granularity Matrix

Suggestion Topics	US	EU	Japan	China
Sales	HCP or Account	Brick/Nano-Brick	Account	Account
Face-to-face Interactions	HCP	HCP	HCP	HCP
Managed Care	HCP			
MCM Engagement	HCP	HCP	HCP	HCP
Patient Statistics	HCP			
Customer Affinity (e.g. ZS's AffinityMonitor®)	HCP	HCP		
Account/ Group Practice Dynamics	Account		Account Listing	Account Listing

*HCP = Health Care Provider*

Source: ZS Associates

The Role of Data Science in Driving Sales Force Effectiveness

Some pharmaceutical companies may choose to take a staggered approach in the implementation of the field suggestion's capability and initially focus on suggestions based on simple business rules and light data science, and then eventually increase the intensity of the program by graduating to more advanced data-science-driven suggestions. Others, who may have already invested in robust data management capabilities, may choose to take advantage of richer data science at the outset. Regardless, as companies mature their field suggestions capability, sophisticated data management and data science techniques will play a critical role in producing high-quality suggestions at scale. Algorithms can be developed and automated to deliver four major types of functionalities:

1. Detecting statistically significant change in individual customer behavior relative to historic trends versus using static business rules and threshold values, as shown in Exhibit 4. This enables predictive and timely identification of opportunities to help reps to develop engagement approaches.

2. Leveraging combined intelligence of multiple related metrics and systematically link an underlying diagnosis that is difficult to derive manually to help reps address the "right" issue.

Exhibit 4. Statistical Test Compared To Peer Group
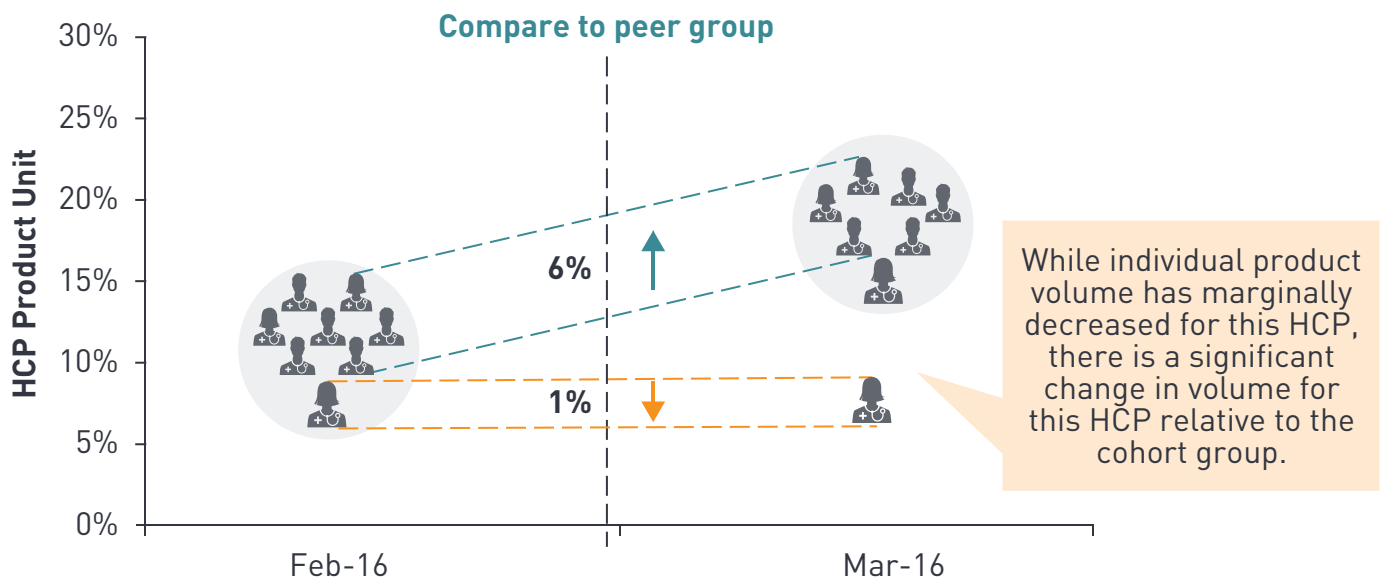
Source: ZS Associates

3. Prioritizing suggestions that factor in the brand strategy and rep inputs to facilitate stronger linkage between brand strategy and field execution.

4. Learning and adapting to customer behavior and rep preferences, and become smarter over time through machine learning, enabling stronger rep adoption and personalization.

There are three key data science techniques and considerations that become important to enable field suggestions:

1. Suggestion-trigger design: This entails identification of certain triggers, such as change in market share or change in multichannel engagement score. The design must also consider the time period that will be used to trigger the suggestion. The choice of time period can significantly vary based on the brand life cycle to optimize customer coverage.

2. Sensitivity analysis: Statistical sensitivity analysis is conducted to derive appropriate thresholds (confidence interval) for each suggestion trigger (metric) based on historical data as shown in Exhibit 5. Applying human judgment becomes important in this analysis when choosing the optimal confidence interval based on brand maturity.

3. Suggestion validation: This analysis ensures that suggestions generated have good customer

Exhibit 5. Sensitivity Analysis Outcomes

Sensitivity Analysis

Confidence Interval	85%	90%	95%
#of Customers analyzed	9,839	9,839	9,839
# Customers qualifying for one suggestion or more	3,579	3,081	2,720
% Customers qualifying for one suggestion or more	36.4%	31.3%	27.6%

Suggestions generated per customer

Most customers will have 1-3 suggestions

#Customer

—— Customers
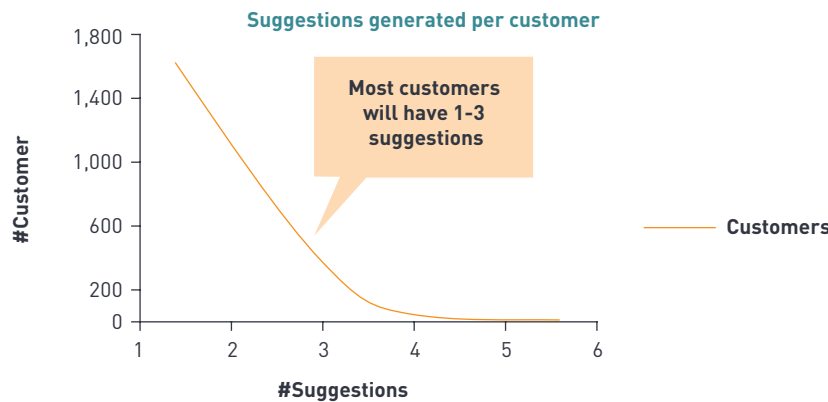
#Suggestions

Source: ZS Associates

coverage and biases are minimized. Data science helps understand how many suggestions that reps will view per brand in a given cycle, if the results are skewed in favor of certain geographies, or if there is a reason for prescriber value bias.

Ensuring Success

The success and organizational adoption of field suggestions will depend on the implementation of five key change levers.

1. Start small, test and learn. Institute an "early experience program" by rolling out the capability to targeted franchises (or markets) initially and then refining suggestions based on test and control group activities, rep surveys, etc. before scaling across

the enterprise. Additionally, some companies may purposefully start with simpler but high-impact suggestions through business rules and light data science. Then move to richer field suggestions through the integration of multiple data sources and use of prioritization algorithms, as well as develop suggestions for marketing to formulate optimal tactic sequences.

2. Establish championship and value proposition. Strong senior management support and clear articulation of how field suggestions can enhance efficiency for high-performing reps and maximize effectiveness of an average rep will be needed to secure leadership support. To enable the transformation, companies will also need new incentives and metrics that motivate employees to buy into the customer-centricity culture.

As sales organizations strive to work smarter than before and use deep customer insights, field suggestions will be a key lever for customizing customer engagements and realizing stronger differentiation.

3. Assess for data readiness. Field suggestions will have quicker time to value if organizations have already started collecting data assets across the enterprise, including those from third-party marketing agencies. Implementing field suggestions capability is also an excellent catalyst for many organizations to accelerate their data procurement and integration plans.

4. Emphasize behavioral training. Training needs to be focused on not just the tools but also upskilling the rep, and educating them on how to leverage insights from the field suggestions to elevate customer engagements. Additionally, training should include first-line managers who need to coach their sales teams on how to capitalize on the suggestions.

5. Set up a cross-functional administration committee and impact metrics. Cross-functional committee comprised of sales ops, marketing, business analytics and IT can help with co-creation and management of suggestions, facilitation of field communications, and maintenance of business rules. In pan-European or other regional implementations, the operating model that may be already established to manage ongoing CRM programs can be extended to support field suggestions. The impact of suggestions must be measured in multiple forms and at multiple time periods to help assess rep adoption, customer engagement and sales impact.

The promotional environment for the pharmaceutical industry is far more complex than in the past, and it's getting more so every day. A positive customer experience will be critical to building strong and enduring relationships in the increasingly crowded and complicated market across therapeutic areas. Given that challenge, companies will win big by using field suggestions to enable sales and marketing integration, and field force effectiveness. Beyond delivering core messages about the product's clinical benefits, sales organizations that can also orchestrate a cohesive customer experience based on integrated insights and field suggestions will drive stronger differentiation, better customer access and higher portfolio sales.

About the Author

Saby Mitra is a principal at ZS in Evanston, Ill., and is a leader in ZS's Customer-Centric Marketing practice. He has more than 16 years of experience in advising and helping clients shape their commercial organizations through CRM and Multichannel solutions in the U.S. and Europe. Saby's expertise includes designing and implementing global transformation programs in several customer-centric transformation initiatives, including sales force automation, multichannel customer engagement and closed-loop marketing solutions in the life sciences industry and other industry verticals.

Saby has a B.E. in electronics and telecommunication engineering from Jadavpur University, India and an Executive MBA from the University of Illinois at Urbana-Champaign.

Top 10 Strategic Technology Trends for 2017: Artificial Intelligence and Advanced Machine Learning

Artificial intelligence and machine learning offer the potential to reinvent business models, ecosystems and customer experiences but can't yet match the breadth of human intelligence. Enterprise architecture and technology innovation leaders who use open innovative approaches will make big gains.

Key Findings

- Enterprise architecture (EA) leaders are recommending machine learning to their organizations. This is because of the explosion of new information sources, the miniaturization of and increases in compute power, the open availability of machine-learning tools, and new and advanced algorithms.

- Leading organizations place strong emphasis on information architecture as a foundational requirement in their artificial intelligence (AI) and machine-learning initiatives to identify and apply algorithms that maximize business outcomes. In parallel, they create plans to avoid pitfalls and limitations.

- Nearly all industries have some machine-learning implementations for enabling business scenarios. These span customer engagement, digital production, smart cities, self-driving cars, risk management, computer vision, and language and speech recognition.

- Throughout 2019, enterprises will consume deep learning mainly through the integration of cloud-based AI and machine-learning business applications, devices or APIs.

Recommendations

EA and technology innovation leaders using EA to master emerging and strategic trends:

- Work with business and HR leaders to create or integrate a machine-learning-focused competency-driven strategy that can attract and retain top AI talent to stay competitive.

- Use EA to devise five to 10 viable business scenarios during the next six months inspired by AI and machine learning.

- Address the cultural, social and ethical challenges that will arise as a direct result of machine learning by developing social and ethical roadmaps as impact analysis tools. These challenges will include the changing relationship between technology and human beings, the displacement of knowledge workers, and tests of existing compliance laws.

Strategic Planning Assumption

Throughout 2019, enterprises will consume deep learning mainly through the integration of cloud-based AI and machine-learning business applications, devices or APIs.

Analysis

Why Artificial Intelligence and Advanced Machine Learning Is a Top 10 Trend

AI and advanced machine learning are much-talked-about emerging technologies that could revolutionize businesses and even entire industries. They have the ability to drastically reduce labor costs, generate new and unexpected insights, discover new patterns, and create predictive models from raw data.

We've chosen AI and advanced machine learning as one of our top 10 strategic technology trends because leading organizations are using them to drive next-generation solutions.

The five key market forces driving adoption of AI and advanced machine learning in 2017 and beyond are:

1. **Overwhelming demand.** The volume of inquiry calls from Gartner clients about AI, advanced machine learning and related topics increased by 200% between 2015 and 2016. This shows strong demand for information on AI, advanced machine learning, and topics such as smart machines and bots. Clients want to know what is possible with technology adoption.

2. **Smart everything.** In 2016, we saw unprecedented progress with AI and advanced machine learning. This covered real-world applications, including healthcare diagnoses, predictive maintenance, legal applications, customer service, digital oil fields, automated data centers, self-driving cars and smart homes.

3. **Heated competitive landscape.** AI will be the main battleground for cloud providers through 2020. In 2016, many companies — such as Amazon, Google, Microsoft, Oracle, SAP and Salesforce — declared AI as their top strategy. In the next few years, almost every service provider will be introducing AI and advanced machine learning into their core strategy.

4. **Harnessing of Internet of Things (IoT) data.** The volume and velocity of data from IoT sources will drive the need to automate development of actionable insight using tools such as AI and advanced machine learning. By 2020, 20% of enterprises will employ dedicated people to monitor and guide machine learning (such as neural networks).[1] The notion of training rather than programming systems will become increasingly important.

5. **Ability to talk back.** Natural-language processing algorithms are continuously advancing. AI is becoming more proficient at understanding spoken language and at facial recognition, enabling it to provide a much more useful and conversation-based solution. These algorithms are progressing in unexpected ways, as Google found when Google Translate invented its own language to help it translate more effectively.[2]

Although some of the advancements in advanced machine learning are the result of the use of machine-learning algorithms, many of the key drivers (see Figure 1) are the result of these enabling technologies, information, connectivity and raw compute power.

The following key drivers make AI and advanced machine learning a top 10 strategic technology trend:

- **Information explosion:** The number of sources of information to which machine-learning technology has access is growing all the time. These sources include sensors and other edge computing devices. This means that machine-learning technology can now access the essential data to fuel its algorithms.

- **Increases in, and miniaturization of, compute power:** Advanced system architectures, in-memory storage, and more powerful and efficient chipsets in a highly scalable cloud-based architecture are now available. This has removed many of the infrastructure implementation inhibitors for organizations, making machine-learning solutions vastly more powerful and affordable.

## Figure 1. Key Drivers of Advanced Machine Learning

- **Availability and ubiquity:** Software development tools were once prohibitively expensive and complex, but have become relatively inexpensive or even free, and researchers now have the opportunity to work with them.

- **Advanced algorithms:** Machine-learning algorithms consist of a set of many technologies, including deep learning, ensemble techniques, simulations and optimization techniques, and natural-language processing. Hundreds of thousands of data scientists apply these techniques daily to solve business problems and a further 100,000 students are working in data science and related disciplines.

Where Artificial Intelligence and Advanced Machine Learning Fits in the Top 10

This trend is part of the intelligent theme (see Figure 2), along with intelligent apps and intelligent things. The intelligent theme builds on the way in which data science and programming approaches are evolving to include AI and advanced machine learning. This is enabling the creation of intelligent physical and software-based systems that are programmed to learn and adapt, rather than programmed only for a finite set of prescribed actions. AI and machine-learning capabilities are seeping into almost every technology, and represent a major battleground for technology providers over the next five years.

Figure 2. Where Artificial Intelligence and Advanced Machine Learning Fits in the Top 10 List of Strategic Technology Trends

Source: Gartner (March 2017)
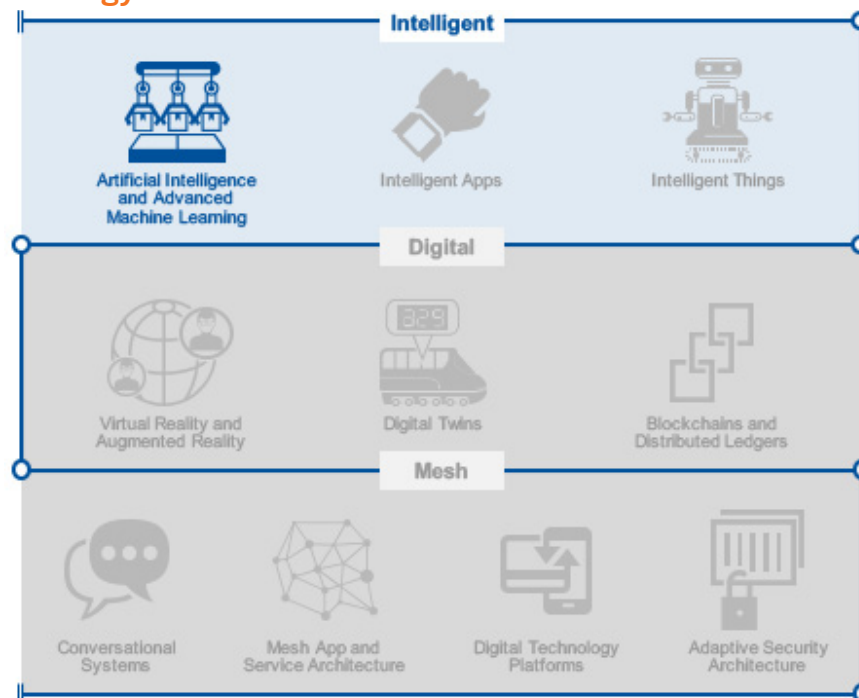
AI and Advanced Machine Learning Focus on Well-Scoped Purposes

AI and advanced machine learning offer exciting possibilities, but can't yet match the human brain's breadth of intelligence and are still a long way from offering general-purpose intelligence. Instead, they focus on well-scoped purposes.

AI and advanced machine learning excel at dealing with high degrees of complexity, forms, and volumes of data to understand, learn, predict and then adapt, enabling them to act in ways that weren't explicitly programmed. They mark a shift from an explicit programming model to a more implicit programming model with feedback loops. This enables them to start acting autonomously. Data science is evolving, moving into predictive analytics and these new learning systems.

These narrow AI or well-scoped machine-learning technologies bring transformative capabilities, enabling organizations to be successful in the future. The following cross-industry business scenarios highlight the many possibilities of machine learning :

- **Retail product recommendations:** Machine learning can pull disparate information sets from online purchase histories, product likes and dislikes. It can use everything from eye-gazing technologies in retail stores to sensory data from smartphones. It can use these to create propensity-to-buy models that predict which product a customer is most likely to buy.

- **Dynamic insurance pricing:** Insurance organizations can create prediction models based on the conditions of a specific market,

such as housing bubbles, historical sales, natural disasters, a surge of burglaries, or opted-in sharing of the consumer's data. These models can dynamically adjust insurance rates.[3]

- **Online risk mitigation in hospitality:** As new business ecosystems emerge and redefine industries, such as hospitality, the defrauding of those ecosystems and their communities becomes an increasing risk. Companies such as Airbnb use machine learning to create risk models to protect their customers.[4]

- **Optimized lending:** Machine-learning solutions can map a loan applicant's details (such as demographics, as well as credit and payment history) to predict the likelihood that the applicant will default on a loan.[5]

- **Retail banking fraud detection:** Algorithms can be created to assess and model current real-time transactions, as well as predictive models of transactions based on their likelihood of being fraudulent.

- **Real-time decisioning by city utilities:** Machine learning can create probabilistic models from, for example, wind turbines, solar panels and soil actuators to predict when failures will occur. This enables utilities to dynamically redirect power or water, decrease maintenance costs and minimize downtime.[6]

- **Medical diagnostics:** Machine learning can provide doctors with a more accurate classification of a patient's medical condition, including recommendations for therapy or treatment. It does this by assembling data from sources, including

current vital signs, symptoms, home lab tests, or historical vital signs from algorithmic medical devices (for example, Eko Core).

- **Creation of safe working conditions:** Organizations with workers in potentially unsafe environments can use machine learning to detect early warning signs that may predict the likelihood of accidents. In this use, machine learning examines sensor data from the measurement of air quality, equipment performance, employee productivity and even atypical behavior.

- **Automated customer service:** People calling customer support are greeted with a virtual assistant that uses cognitive abilities to listen to customers (speech recognition) and maps to a guided training set and knowledge base, as shown by USAA.[7]

- **Enhancement of the student experience:** Deakin University in Australia is using IBM Watson to help students find information easily.[8]

What AI and Advanced Machine Learning Makes Possible

AI and advanced machine learning are model- and data-driven systems and suggest a trial-and-error approach. This marks a departure from the traditional rule-based method of developing that gives explicit directions in ever-finer detail and tells the system what to do. With AI and machine-learning systems, you hypothesize a model designed to meet a particular purpose and then let the model be adapted to the specific situations, as described by the data. Instead of explicitly defining the software logic, it will be synthesized from the data using a computationally intensive search process.

This is a new way of thinking about systems. You need to consider whether you have people who understand that. You also need to think about how you'll train these systems. Sometimes these systems will make mistakes because they haven't yet learned the correct response to certain information they're receiving. These systems will go through feedback loops and learning cycles. You will build deep neural networks and inference engines and drive this to more of a context- and event-driven model. That's a fundamental shift.

The field of AI and machine learning has continually evolved since it began in 1943.[9] It encompasses many different models, approaches, and implementations, sparking a high degree of interest but also a high degree of confusion. AI and machine learning refers to systems that change behaviors without being explicitly programmed, based on data collected, usage analysis and other observations. We encourage clients to scrutinize the use of AI, focusing on exactly how a system "learns" without reprogramming.

AI technologies can ingest more data and detect (and predict) patterns more accurately than people can (at least in some cases). They don't rely on solely growing insights through alterations in code or manually developed rules.

Not every organization will have teams writing models and doing deep neural network programming. Many organizations will buy these systems as packaged products that will embed AI, or as services such as Google Prediction API or IBM Watson that will package some of these algorithms, capabilities and

frameworks. Often these services will be delivered only as cloud services.

AI and machine learning enable organizations to extend their applications and create new ones. They don't replace all the programming that organizations have already done.

AI and Machine-Learning Algorithms

The following categories of algorithms have an extremely popular implementation base:

- **Supervised learning:** A set of pattern-seeking algorithms trained using methods such as classification, regression, prediction and gradient-boosting prediction. Algorithms in this category include:

    - Linear and logistic regression

    - Ensemble techniques (including random forests)

    - Deep or shallow neural nets

    - Decision trees or support vector machines

- **Unsupervised learning:** A set of algorithms that infers a conclusion or hidden structure used within unlabeled (unstructured) data with an unknown or yet-to-be-identified conclusion. Algorithms in this category include:

    - Hierarchical clustering

    - K-means clustering

- **Reinforcement learning:** A set of trial-and-error-based algorithms that discovers which actions yield the highest return. Algorithms in this category include:

    - Temporal difference learning

    - Q-learning

    - Learning automata

Actions

EA and technology innovation leaders:

- **Use the machine-learning industry's body of knowledge:** Over the next 12 months, create five possible business scenarios in which your organization might use machine learning to achieve its future-state business outcomes. Consider experimenting with one or two of these scenarios. Seek inspiration from publicly available machine intelligence technologies by Microsoft,[10] Google,[11] Facebook[12] or IBM[13] to understand the competitive advantages your organization will gain if it adopts early.

- **Protect your intellectual capital:** Partner with risk experts inside and outside your organization to understand the impacts of machine learning on your organization's intellectual property.

- **Identify the data suitable for machine learning:** Not all data contains insights that will solve your problems. Suitable data could be a history of breakdowns or claims, or medical images that show tumors. Suitable data contains unique insights for your business, other businesses and partners.

- **Address social and ethical challenges:** Create social and ethical roadmaps as impact analysis tools to understand the cultural, social and ethical challenges that will arise as a direct result of machine learning. These challenges will include the changing relationship between technology and human beings, the displacement of knowledge workers, and tests of existing compliance laws.

- **Devise a sustainable talent management strategy:** Create or integrate a competency-driven strategy to nurture and foster machine learning. This is vital to stay competitive and retain top talent in a rapidly changing and competitive algorithmic-based economy.

- **Examine your choices:** Consuming AI and advanced machine-learning solutions via APIs, SaaS or packaged applications will probably be sufficient. Usually there is no need to develop such solutions yourself.

- **Upskill yourself:** Machine learning and data science are not incredibly difficult. Take advantage of the available courses (such as those from Coursera and Udacity), experiment with open-source projects and use the many Gartner resources (for example, see "Doing Machine Learning Without Hiring Data Scientists").

Appendix: The Other Top Strategic Technology Trends for 2017

For information on the other top strategic technology trends for 2017, see:

"Top 10 Strategic Technology Trends for 2017: Intelligent Apps"

"Top 10 Strategic Technology Trends for 2017: Intelligent Things"

"Top 10 Strategic Technology Trends for 2017: Virtual Reality and Augmented Reality"

"Top 10 Strategic Technology Trends for 2017: Digital Twins"

"Top 10 Strategic Technology Trends for 2017: Blockchains and Distributed Ledgers"

"Top 10 Strategic Technology Trends for 2017: Conversational Systems"

"Top 10 Strategic Technology Trends for 2017: Mesh App and Service Architecture"

"Top 10 Strategic Technology Trends for 2017: Digital Technology Platforms"

"Top 10 Strategic Technology Trends for 2017: Adaptive Security Architecture"

Evidence

[1] "Predicts 2017: Artificial Intelligence"

[2] "Zero-Shot Translation With Google's Multilingual Neural Machine Translation System," Google Research Blog.

[3] "Very Personal Finance," The Economist.

[4] "Architecting a Machine Learning System for Risk," Airbnb Code.

[5] "Consumer Credit-Risk Models Via Machine-Learning Algorithms," Journal of Banking and Finance.

[6] "Algorithms, Big Data and the Importance of Smart Cities," StateTech.

[7] "USAA Taps IBM's Watson as Military Veterans Advisor," eWeek.

[8] "IBM Watson Helps Deakin Drive the Digital Frontier," Deakin University.

[9] Many trace the start of AI to Warren McCulloch and Walter Pitts' 1943 design for an artificial neuron in "A Logical Calculus of the Ideas Imminent in Nervous Activity," published in the Bulletin of Mathematical Biophysics.

[10] "Artificial Intelligence," Microsoft Research.

[11] "Machine Intelligence," Research at Google.

[12] "Applied Machine Learning," Facebook Research.

[13] "Machine-Learning Applications," IBM Research.

Using Customer Engagement Journeys to Orchestrate Customer Outreach

By Pete Mehr

In an attempt to optimize the customer experience, many life sciences companies today have developed tactics and content to engage their customers through a variety of channels, like email, telesales, mobile alerts, videos, etc. Typically, these tactics are deployed to market as soon as the medical and legal teams approve them. The objective is to capture the ROI from each tactic as quickly as possible. This approach often leads to tactics being deployed to customers in an uncoordinated fashion, producing a sub-optimal customer experience. Sound familiar?

There's hope. By taking the same promotion tactics and content that exist today but learning how to deploy these tactics in a more integrated, coordinated way tailored to customer preferences, it's possible to significantly improve the customer experience and, correspondingly, the impact of promotion. According to ZS's 2015 Oncology Customer Experience Tracker study, pharmaceutical companies that raise their Net Promoter Score (a proxy metric for measuring improved customer experience) by 10 to 20 percentage points could achieve an additional $50 to $75 million in sales for every billion dollars in current sales. Clearly, delivering a better customer experience is in your company's best interest, but how do you do that?

There are three steps to optimize the customer experience:

1. **Understand your customers' preferences.** Start by using data analytics to generate insights into what makes your customers tick, what their preferences are, the kind of content they like to consume and the channels they engage with.

The output is typically a micro-segmentation driven by customer preferences. This is the foundation for optimizing the customer experience.

2. **Build the customer engagement journey.** Align existing tactics and content to each micro-segment based upon that micro-segment's preferences. Develop a longitudinal—over time—promotion plan that is connected where the customer's interaction with one tactic "triggers" the next. As more data and insight are captured about the customers in each micro-segment, the customer engagement journey can be refined and further optimized.

3. **Deploy the customer engagement journey.** Deployment of the customer engagement journey can be done via marketing automation tools. The value of marketing automation tools is that they enable marketers to automate the deployment of customer engagement journeys, which greatly increases the efficiency and effectiveness of marketing promotion. Think of it this way: Instead of manually pulling target lists for each tactic across each micro-segment, the entire customer engagement journey can be coded into the marketing automation tool (including triggers) and be automatically deployed. In short, we can now engage customers when and how they want to engage.

Note that this approach becomes very dynamic; as we learn more about our customers, we can continue to optimize the customer engagement journey. Many companies across the industry are quickly moving down this path—setting up marketing automation tools, redesigning the brand planning and marketing operations functions, capturing the customer insights—to unlock the value of optimizing the customer experience. Where are you in the journey?

About the Author

Pete Mehr, Ph.D. is a ZS principal based in Princeton, NJ and is the global leader of the firm's Customer-Centric Marketing (CCM) solution area. Pete has worked with leading companies across multiple geographies and industries in developing and deploying end-to-end CCM solutions. His areas of expertise include customer engagement strategy, marketing performance measurement and optimization, marketing operations, sales and marketing technology implementation, and organizational change management. Pete has a Ph.D. in economics from Rutgers University.

Source: ZS Associates

About us

ZS is the world's largest firm focused exclusively on helping companies improve overall performance and grow revenue and market share, through end-to-end sales and marketing solutions – from customer insights and strategy to analytics, operations and technology. More than 4,500 ZS professionals in 22 offices worldwide draw on deep industry and domain expertise to deliver impact for clients across multiple industries, including consumer products, energy, high-tech, insurance, medical products and services, and pharmaceuticals.

ZS's Customer-Centric Technology consulting services and solutions are led by Saby Mitra a principal in Evanston, Illinois. Together with his team, Saby helps clients design and implement global transformation programs in several customer-centric initiatives including commercial orchestration programs leveraging ZS's Suggestion Engine.

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