

How AI Will Transform Customer Service

The Present And Future Of Artificial Intelligence In Contact Centers

by Kate Leggett

June 16, 2017

Why Read This Report

Artificial intelligence (AI) helps customer service agents complete repetitive, predictable tasks — or takes them over. Instead of replacing agents, AI will enhance their skills and allow them to move beyond routine tasks, like collecting and reporting information, to customer interactions requiring deeper insight and analysis. This report is the first in a series about how enterprises can use human-assisted learning techniques to operationalize AI for customer service; application development and delivery (AD&D) pros supporting customer service operations can use it to understand AI's status and value in customer service today and in the future.

Key Takeaways

AI Is Transforming Customer Service

AI will make traditional customer service organizations more customer-centric and effective. It will transform business models and uncover new revenue streams.

Pragmatic AI Is Not A Single Technology

Pure AI aims to build machines with an overall intellectual ability that is indistinguishable from or even surpasses that of humans — but it's still decades away. Pragmatic AI is comprised of discrete technologies that are advanced enough to add intelligence to customer service. Individually or in combination, they can learn, predict, adapt, and potentially operate autonomously.

Pragmatic AI Delivers Quantifiable Value

Today, pragmatic AI provides measurable value to customer service operations all stages of the customer service journey: prepurchase support, guiding customers to the right product choices, onboarding, and post-purchase support.

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Related Research Documents

[2017 Customer Service Trends: Operations Become Smarter And More Strategic](#)

[The Forrester Wave™: Customer Service Solutions For Enterprise Organizations, Q4 2015](#)

[TechRadar™: Customer Service Intelligence, Q2 2017](#)

[Transform The Contact Center For Customer Service Excellence](#)

How AI Will Transform Customer Service

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AI Will Fundamentally Transform Customer Service

AI is at the core of the digital transformation that is improving the economics and capabilities of all aspects of business, including customer service.¹ AI can help agents complete repetitive, predictable tasks — or take over those tasks completely — and interact with customers autonomously to add value. Four in 10 contact center decision makers are exploring using AI technologies to differentiate their service (see Figure 1). AI won't replace humans entirely; rather, it will enhance agents' skills by taking over routine tasks like collecting and reporting information, letting agents handle customer interactions requiring deeper insight and analysis. Such interactions often take longer to resolve and are opportunities to nurture profitable customer relationships, which are increasingly rare in a digital-first world. AD&D pros supporting contact center technologies are increasingly using AI to:

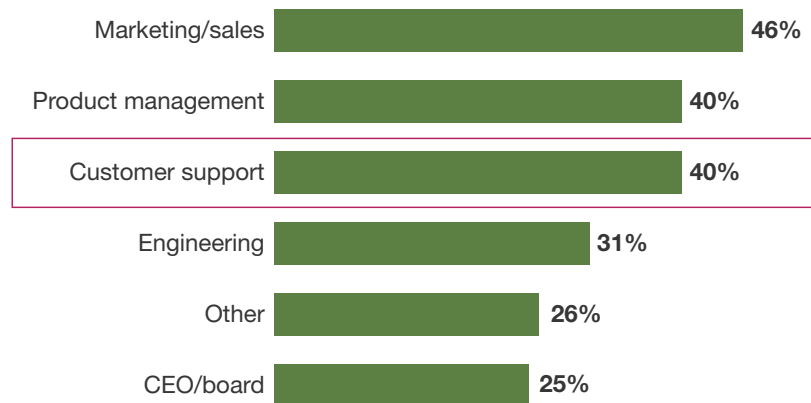
- › **Deliver differentiated customer experiences.** Nearly half of consumers already engage in automated conversations with intelligent assistants like Alexa, Siri, and Cortana. Intelligent agents for customer service range from single-purpose chatbots — like the one KLM uses to communicate booking confirmations — at the low end of the complexity scale to virtual agents that embed deep learning at the high end. AI will delight customers by making these conversations natural and effective, anticipating needs based on context, preferences, and prior queries; delivering advice, resolutions, alerts, and offers; and getting smarter over time.
- › **Make operations smarter.** AI will streamline inquiry capture and resolution to take contact center operations to the next level. It will extract useful information from voice and digital conversations, images, and machine-to-machine communications to quickly surface trends in issues and customer sentiment that may affect customer retention and loyalty. AI will also schedule maintenance appointments, push fixes to connected devices, and make field operations more efficient — for example, by restocking parts based on need or intelligently optimizing field resources to provide on-demand service.
- › **Uncover new revenue streams and reinvent business models.** AI finds patterns in large data sets that reveal new insights that companies can use to create and monetize completely new services for customers. Machine learning algorithms used for business and customer intelligence find answers to questions that humans didn't even know to ask.

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FIGURE 1 Customer Service Organizations Are Among Those Leading The Charge To Investigate AI's Potential**“What areas of your organization are leading or evaluating the investment and adoption in AI systems?”**

(Please select the top three)



Base: 418 business and technology professionals

Note: “Don’t know” responses have been omitted.

Source: Forrester’s Q2 2016 Global State Of Artificial Intelligence Online Survey

There’s Lots Of Hype Around AI, But Lots Of Goodness Too

Pure AI aims to build machines whose overall intellectual ability is indistinguishable from or even surpasses that of humans. We often encounter pure AI in the realm of science-fiction movies and doomsday scenarios where machines “may keep us as pets.”² AI will enable machines to learn, reason, solve problems, and perceive and understand language. But despite tremendous excitement and five decades of investment, we’ve only made slow progress on pure AI, which represents an immensely difficult problem. Applied AI, otherwise known as pragmatic AI, is a different story; it:

- › **Aims to produce smart systems that are commercially viable.** Pragmatic AI powers many of today’s consumer experiences, making them simpler, smarter, and more strategic. Amazon and Netflix recommend products based on our history; Yahoo and Facebook tag photos; Waze and Google get us to destinations more effectively; and Lyft and Uber precisely communicate the arrival times of drivers. Consumers are starting to expect intelligent experiences — personalized, contextual, and highly relevant — from all of the companies they do business with.

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- › **Is a superset of technology building blocks.** Pragmatic AI today isn't a single technology. Rather, it is comprised of discrete technologies that — individually or in combination — are advanced enough to add intelligence to applications; they can learn, predict, adapt, and potentially operate autonomously.³ This intelligence produces quantifiable business outcomes that companies can exploit today (see Figure 2).

FIGURE 2 The Building Blocks Of Pragmatic AI

AI building block	Definition
Speech recognition	Converts the audio of spoken words to text that applications like Apple's Siri, Google Now, and Amazon Echo use to take commands from humans, transcribe a conversation, or participate in a conversation.
Text analytics and natural language understanding	Interprets text by classifying words and parts of speech, applying linguistic rules, and analyzing relationships across an entire corpus. Advanced versions understand emotions, sentiment, and, to some degree, intent.
Natural language generation	Expresses information stored and modeled in software in natural language that humans can understand.
Machine learning	Encompasses a set of analytical techniques that use algorithms to detect patterns in data, build segments, and create predictions. Firms can use machine learning to either analyze data offline or continuously build models to supply real-time context.
Robotic process automation	Performs routine business processes and makes simple decisions by mimicking the way agents interact with applications through a user interface. Can automate entire end-to-end processes, with humans typically managing only exceptions.
Image analysis	Identifies and assigns text labels to digital images and videos for identification, classification, and — increasingly — sentiment analysis.

Use AI Pragmatically Throughout The Customer Service Journey

AI will change the nature of work, as well as how humans engage with machines and with each other. Look at the rise of driverless cars and ridesharing — two services that are fueled by AI. Customer service for this kind of engagement will look much different than it does now. AI today is still in its infancy; pragmatic AI applications span discrete capabilities, all of which are complex, specialized, and rapidly evolving. Yet even at this nascent stage, AI has a measurable impact on customer service (see Figure 3).

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FIGURE 3 The AI-Fueled Customer Service Value Chain

Source: Adapted from Oracle's internet of things value framework

AI-Infused Presales Customer Service Boosts Conversion And Revenue

Presales customer service spans activities to support a customer prior to purchase.⁴ Uncertainty inhibits purchase decisions — especially for online shoppers who buy products that they have never experienced in person. In fact, 53% of customers will abandon an online purchase if they can't find a quick answer to their questions.⁵ AI powers presales service to educate buyers, minimizing purchasing errors and buyer's remorse. US-based retailer Sears uses proactive customer service to engage visitors who show a propensity to purchase products, boosting revenues by 20% and achieving a customer satisfaction rate of 90%.⁶ AI-infused presales customer service can deliver:

- › **Proactive engagement.** Customer service organizations can intervene in the customer journey via an invitation to chat or co-browse at points of struggle or abandonment, such as product pages with high abandonment rates, abandonment points in an application or checkout process, or session inactivity. They also intervene opportunistically at points in the journey best suited for customers to accept a coupon, an offer, or additional advice. They accomplish this via analytics; intent models determine the best outcomes and machine learning refines them over time.

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- › **Personal recommendations.** Customer service agents can recommend cross-sells and upsells that are personalized to a customer's interaction and transaction history to increase revenue and build awareness of the product portfolio. Organizations use predictive models and machine learning to target customers based on buying propensity, demographics, and psychographics. They can then discern buying patterns and anticipate customer needs beforehand and offer pertinent products or services that complement their base purchase.

AI-Infused Onboarding Deepens Customer Engagement

The first experience a customer has with your firm sets the tone for the entire relationship — and loyalty suffers if the first experience is poor. Properly onboarded customers are less likely to churn and more likely to purchase additional products, boosting their average lifetime value. Firms must recognize the economic importance of onboarding activities such as customer education, feature discovery, and in-product guidance, as these activities take the customer through the first critical steps to success. Onboarding should start right after order placement and can continue for months, depending on the complexity of the product or service. Companies apply AI capabilities for onboarding activities such as:

- › **Customer activation.** A critical first step in onboarding is the customer journey between signing up for a service or activating an account and their first use of it. Organizations create tailored programs to educate and incentivize customers; collect anonymized communication data enriched with behavioral and demographic data; and use algorithms to predict when, how, and what to communicate. Scandinavian Airlines used these techniques to successfully reactivate 17% of its passive loyalty program members.⁷
- › **Tracking customer health.** Organizations use customer data and product usage data to create a “health score” that tracks the success of onboarding activities and long-term usage. They track elements such as user activation, product use, and whether customers are using the most differentiated features. Big data analysis surfaces key elements that inhibit adoption and lead to customer churn. Triggers alert organizations to sudden changes in the health score so they can intervene to deepen customer relationships.
- › **Predicting customer satisfaction.** The success of the first interaction sets the tone for the future of the relationship. Organizations are starting to use real-time satisfaction predictors for incoming incidents to identify in-flight issues and customers who need immediate attention. They use algorithms that calculate satisfaction scores from attributes such as wait times, reply times, incident details, and effort metrics and then decide on what escalation actions to take if they receive poor scores.

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AI-Infused Post-Sales Customer Service Builds Trust

Sixty-nine percent of US consumers and 31% of UK consumers shop more with companies that offer consistently high-quality customer service.⁸ Poor customer service causes consumers to abandon intended purchases, which translated to an estimated \$62 billion in lost sales in the US in 2015 — an alarming 51% increase in just two years.⁹ Smart companies turn aftersales service into competitive advantage, applying AI capabilities to:

- › **Search and knowledge discovery.** Customer service agents, especially those from the younger generation, rely heavily on knowledge management solutions for answers. As Rienzi Ramirez, chief delivery officer for the Philippines at [24]7, told us: “Today’s agents don’t directly retain specific content anymore; instead, they focus more on the method to find the content.” Modern knowledge solutions use natural language processing (NLP) and text analytics to extract topics and automatically classify ingested content to understand the intent of queries; they use machine learning to optimize the organization and relevance of search results based on customer profile, history and context.
- › **Automated conversations.** Customers need to ask questions in a conversational manner but also want to sustain a conversation. Emerging intelligent agents for customer service span a range of capabilities, from single-purpose chatbots powered by machine learning to help tune conversational efficacy — like the chatbot KLM uses to communicate booking confirmations — to virtual agents that embed deep learning to make them smarter over time.
- › **Case classification.** Assigning disposition codes to classify cases after a call can take tens of seconds, increasing handle times and operational costs. Firms use speech recognition to transcribe call recordings into text and NLP to identify and understand phrases, grammar, and relationships among words for automatic classification and disposition of cases. Text analytics also provides early warning signs of trending issues. One organization fielding 5 million calls per year in two call centers reported more than \$8 million in savings by using AI to classify cases, saving 10 to 15 seconds of wrap-up time per call.¹⁰
- › **Contact routing.** Rules and analytics-based decisioning to route contacts to the right agent have been around for years. AD&D pros can use AI to take this a step further, using services to build predictive models based not only on agent skills, but also on real-time analysis of behavioral characteristics like performance, personal strengths, and communication style. These characteristics help match customers with the agents best able to handle their needs and communicate with customers based on their style — ultimately improving the customer experience as well as associated business metrics.
- › **Process automation.** Organizations use robotic process automation (RPA) to automate process steps or even entire end-to-end processes such as account onboarding or insurance claims, with humans typically only managing exceptions.¹¹ Cognitive RPA includes NLP and builds active learning into RPA trigger points where bots can reprogram themselves based on feedback.

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One global bank uses cognitive RPA to monitor employee digital communications for indicators of noncompliant activities; performance managers can use it to automatically score agent performance evaluations, leaving more time for coaching.

- › **Schedule optimization.** AI has deep applicability to field service operations. AI-infused field service technologies build models to calculate the time for each technician to complete a job based on skill, personal aptitude, and historical performance. They then optimize scheduling and resource utilization to assign the right field service worker to the right job and ensure that they have the relevant information and appropriate tools when heading into the field.
- › **Proactive action.** Support automation preemptively fixes issues from connected devices. Connected iRobots self-register and order new parts when they fail. Smart home services provider Vivint proactively turns down thermostats when no home activity is detected. Proactive actions require internet of things ecosystem components, machine learning to interpret large data sets, connectors to the contact center, and processes to act on received triggers. Don Freeman, group VP of marketing at Denon, a manufacturer of connected home audio equipment, says: “We’ve done our job when nobody knows.” Proactive service has increased Denon’s Net Promoter Score by 600 basis points and decreased costs by 22%.¹²

Recommendations

The Age Of Pure AI Is Years Away, But Pragmatic AI Is Here Today

Self-detecting, self-healing devices and intelligent contact centers staffed with bots and supporting customers and devices via automated yet personal interactions — the vision of pure AI — are still years away. But pragmatic AI is here today; vendors are starting to offer atomized capabilities that use intelligence to detect, learn, and optimize operations. AD&D pros supporting customer service operations can start to use AI. Specifically, you should:

- › **Assess your AI foundations.** Begin by assessing your organization’s readiness for AI. For example, are its data assets in good shape? To what degree do decision-makers leverage data and analytics? If you’re not already an insights-driven organization or well on the way to becoming one, an AI project is likely to be a waste of time and resources at best.
- › **Investigate what vendors have productized.** Don’t try assembling the building blocks of AI; that will turn into a science project. We are in the early days of AI-infused customer service solutions, and vendors are starting to incorporate these scenarios with varying degrees of success. Salesforce offers Service Cloud Einstein to surface trending issues and intelligently route and classify cases; Microsoft Service Cloud identifies trending content and offers intelligent knowledge recommendations; and Oracle Field Service Cloud creates a real-time performance profile for each technician to optimize schedules. Products adjacent to core customer service solutions, such

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as IBM Watson and Wipro Holmes, already offer broader intelligence but require more overhead. Customer service vendors are looking at partnerships and integrations with these more advanced solutions that you should also investigate.

- › **Look for small wins.** It's impossible to make all processes more intelligent at the same time. Instead of falling victim to endless analysis, identify a set of key processes that matter to your customers or to your business. For example, using AI to eliminate the overhead of case disposition and wrap-up notes can quickly add up to significant cost savings. Use these improved processes as proof points and ensure that you can measure the results.
- › **Staff up your data science team.** To support usage scenarios beyond what is available from customer service vendors, you will have to use your own data scientists to produce insights. Make sure that you have the skills to help determine usage scenarios that will fit from AI, prepare the data, maintain models, and set a long-term road map for your AI efforts.

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Supplemental Material

Companies Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

[24]7	Microsoft
Astute Software	Oracle
Clarabridge	Salesforce
ClickSoftware	Vivint
Denon	Wiraya

Endnotes

- ¹ For more information, see the Forrester report [“Digital Rewrites The Rules Of Business.”](#)
- ² Source: Jack Copeland, “What is Artificial Intelligence?” AlanTuring.net, May 2000 (http://www.alanturing.net/turing_archive/pages/reference%20articles/What_is_AI/What%20is%20AI02.html).
- ³ Sentient systems capable of true cognition remain a dream for the future, but many AI techniques and building blocks are available today. See the Forrester report [“Artificial Intelligence: A CIO’s Guide To AI’s Promises And Perils.”](#)
- ⁴ It’s shortsighted to think of customer service merely as issue resolution after the purchase of physical goods. Customer experience pros face the challenge of embedding value with customer service at key intersections of the customer life cycle — including phases that are traditionally the domain of marketing and sales teams, such as discover, explore, and buy.
- ⁵ Source: Forrester Data Consumer Technographics® North American Retail And Travel Customer Life Cycle Survey, Q1 2017 (US).
- ⁶ US retailer Sears uses the predictive analytics that are part of [24]7’s chat solution to engage visitors who show a propensity for purchasing products. Sears reported a 20% lift in revenue by using predictive chat and has 90% customer satisfaction. See the Forrester report [“Market Overview: Chat Solutions For Customer Service.”](#)
- ⁷ Source: Wiraya (<https://www.wiraya.com/en/success-stories/sas/>).
- ⁸ Forrester data shows that, in markets such the US, customer service greatly influences consumers’ choice of products and services. Companies with poor customer service push customers away and motivate them to take their business elsewhere. For example, 63% of US consumers have stopped doing business with a brand due to poor customer service. Source: Forrester Data Consumer Technographics North American Retail And Travel Online Benchmark Recontact Survey 1, Q3 2016 (US) and Forrester Data Consumer Technographics European Retail And Travel Survey, H1 2016.
- ⁹ Companies with poor customer service push customers away and motivate them to take their business elsewhere. For example, 63% of US consumers have stopped doing business with a brand due to poor customer service. See the Forrester report [“Elevate Your Customer Experience With End-To-End Customer Service.”](#)

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¹⁰This US-based insurance company provides life, health, property, casualty, and auto insurance, as well as commercial insurance, homeowners' coverage, and investment and retirement-planning products. It used Clarabridge solutions to reduce wrap-up time, understand customer pain points, and surface actionable insights.

¹¹RPA use cases can span the front and back offices. See the Forrester report "[Digitization Leaders Share Robotic Process Automation Best Practices](#)."

¹²Source: Scott Strickland, "Customer Experience is the new Battleground: A Customer Panel on Business Transformation," Oracle's Modern Customer Experience 2017 conference.

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