AI for CRM: A Field Guide to Everything You Need To Know
What Is Artificial Intelligence?

Technology is evolving faster than ever. Cloud computing, social media, and mobile devices are ubiquitous. Everyone (and everything) is getting connected: 3 billion internet users, 5 billion mobile users, and 6 billion connected devices make up a network of information and interaction never before seen in history. But that’s just the beginning.

Artificial intelligence (AI) is the next major wave of innovation, driven by advances in computing power, the ability to store large volumes of data in the cloud at minimal cost, and easier access to advanced algorithms. And it will be more disruptive and powerful than any previous shift in technology.

AI is often represented by various related terms: machine learning, deep learning, natural language processing, predictive analytics, and so on. All of these terms point to a future in which our platforms and systems are smart enough to learn from our interactions and data, not only to help us with what we ask, but also to anticipate our needs, taking care of mundane and forgotten tasks and reminding us of important ones. AI can connect the various nodes of our lives (home, work, travel) into one experience that moves seamlessly with us from house to car to office. Much of that experience comes through our phones. Within a few years, AI will be infused in everything digital.

As consumers, we are already using AI without even realizing it. Google harnesses AI to autocomplete search queries, predicting what you are searching for with great accuracy and without human involvement. Facebook news feeds and Amazon product recommendations are tailored for you via machine-learning algorithms. Self-driving cars apply various AI techniques to avoid collisions and traffic congestion.

All of these consumer apps have trained consumers to expect more from businesses: The new standard for every customer interaction is a smart, fast, seamless customer experience engagement.
At a high level, AI is both understanding historical data and applying what is learned to current contexts to make predictions. This has the potential to make every business “smarter.”

Today, every company faces an imperative to integrate AI into the fabric of their business in order to succeed. Until now, however, AI has largely been out of reach for businesses. The high cost to implement AI solutions, combined with a shortage of data scientists and incomplete data, has made it challenging for all but a few companies.

That’s where we come in. In 1999, Salesforce launched the first-ever cloud CRM platform, making customer relationship management accessible to businesses large and small. Since then, we’ve grown into a complete Customer Success Platform, with solutions across sales, service, marketing, community, analytics, commerce, IoT, and apps. Now, we’re making our platform even smarter with Salesforce Einstein. Designed to enable companies large and small to be smarter and more predictive about their customers, Salesforce Einstein discovers insights, predicts outcomes, recommends next steps, and automates tasks for business users – all while getting smarter and smarter along the way.
To help you seize the AI opportunity, we’ll explore a few themes in this e-book:

- What AI, machine learning, and deep learning actually mean
- How AI has evolved, and why it’s suddenly a hot topic
- What AI means for business, including key challenges and opportunities
- How AI will impact specific business functions, including:
  - Sales (Chapter 3)
  - Customer Service (Chapter 4)
  - Marketing (Chapter 5)
  - IT (Chapter 6)

Read on to explore how you can take advantage of a smarter future.
Artificial Intelligence (AI) is the concept of having machines “think like humans” – in other words, perform tasks like reasoning, planning, learning, and understanding language. While no one is expecting parity with human intelligence today or in the near future, AI has big implications in how we live our lives. The brains behind artificial intelligence is a technology called machine learning, which is designed to make our jobs easier and more productive.

Machine Learning is the core driver of AI, and involves computers learning from data with minimal programming. Essentially, instead of programming rules for a machine, you program the desired outcome and train the machine to achieve the outcome on its own by feeding it data – for example, personalized recommendations on Amazon and Netflix. (Learn more here.) Machine learning is a broad term that encompasses related AI techniques, including:

- Deep Learning which uses complex algorithms that mimic the brain's neural network to learn a domain with little or no human supervision. Consumer apps like Google Photos use deep learning to power face recognition in photos.

Natural Language Processing (NLP) uses machine learning techniques to find patterns within large data sets in order to recognize natural language. One application of NLP is sentiment analysis, where algorithms might look for patterns in social media posts to understand how customers feel about a specific brand or product.

Big Data is the raw fuel of AI – large amounts of structured or unstructured information that provide the inputs for surfaced patterns and making predictions.

Internet of Things (IoT) is a network of billions of digitally connected devices, from toasters to cars to houses and jet engines, that collect and exchange data and can communicate with one another to better serve users.

Predictive Analytics is a branch of advanced analytics that is used to make predictions about unknown future events, based on patterns in historical data. You might see this in marketing offers that become more relevant to you each time you take action (or don’t) on an email offer.
The Path to a Smarter World

Computing has always been about data. It’s written into the Oxford Dictionary’s definition of a computer: “an electronic device for storing and processing data.” From the beginning, computers were designed to fill in gaps in human intelligence by storing, classifying, retrieving, and applying huge amounts of data to help us solve problems faster.
In the beginning, these were very simple problems. One of the earliest computing prototypes, sketched out by Belgian thinker Paul Otlet in 1934, “would allow people to search and browse through millions of interlinked documents, images, audio and video files,” according to The New York Times. It was an early vision of the internet with a poetic name: the “Mundaneum,” a means of storing and processing huge amounts of “mundane” data. The premise of computing is to do what the human mind is designed not to do: remember every little detail, storing it so that every data point can be easily accessed when it’s needed. (The human brain, by contrast, is designed to focus its processing power on what’s important, as Nobel Prize-winning economist Daniel Kahneman explains in his book Thinking, Fast and Slow.)

“Many, many companies now find themselves with huge amounts of data. What are we going to do with it?”

Ascander Dost
Senior Software Engineer & Linguist, Salesforce
From the beginning, though, we dreamed of computers that could do more than the mundane. In 1956, Prof. John McCarthy coined the term “artificial intelligence,” describing a world in which machines could “solve the kinds of problems now reserved for humans.”

But in order to move from simple computing to true AI, computers needed three things:

- **Data models** to intelligently classify, process, and analyze data
- **Raw data** to feed the models so they can keep improving
- **Processing power** to drive fast, efficient computing

This is why, while the idea isn’t new, true AI is only now becoming a reality. The data models came first, with simple if-this-then-that logic evolving into increasingly complex problem-solving algorithms. The idea of machine learning is simple:

- start with a data model,
- feed it tons of data,
- and let it learn.

The more data the machine processes, and the more computing power it has, the faster and smarter it gets.
Here’s a classic example. Let’s say you want to train a machine to recognize pictures of cats.

So you feed it two data points:

- = cat  
  [Image of a grumpy cat]
  JStone / Shutterstock.com

- = cat  
  [Image of a kitten]
  = cat  
  catwalker / Shutterstock.com

It might conclude that a cat is a furry thing with pointy ears, almond-shaped eyes, whiskers, and paws. But what happens when it comes across this image?

[Image of Garfield]

Or what about this one?

[Image of a wet cat]

catwalker / Shutterstock.com

This is a cat, but without the telltale pointy ears or paws.

Using only two images to “teach” a machine how to identify a cat probably wouldn’t equip that machine to accurately classify Garfield as such. However, feeding it billions of different images of cats – in nearly every color, size, and position possible – would make it much more likely to correctly classify an image like this:
Early data models lacked the volume of clean data required to perfect their data models and effectively “learn.” Only recently, with the surge of data readily available via the internet, do the models have access to the data they need to get smarter. In 2009, Stanford University computer scientist Andrew Ng and Google Fellow Jeff Dean led a Google research team to create a massive “neural network” modeled after the human brain, comprising thousands of processors and more than 1 billion connections. Then, they fed the machine random images of cats, pulled from millions of online videos. By identifying commonalities and filtering the images through its brainlike neural network, the machine essentially taught itself how to identify an image of a cat. It was an astounding achievement for AI – and one that wouldn’t have been possible just a few years earlier, without easy access to those millions of thumbnail images.

But there was another limiting factor: processing power. In the earliest days of computing, machines filled entire rooms in university buildings. Improved ability to put more transistors on integrated circuits meant processing capacity doubled every two years (thank Gordon Moore and his handy law for that observation), which packed more power into smaller boxes, taking computers out of universities and businesses and putting them in consumers’ hands.

“Feed enough cat photos into a neural net, and it can learn to identify a cat. Feed it enough photos of a cloud, and it can learn to identify a cloud.”

— Wired, January 2016: “Artificial Intelligence Finally Entered Our Everyday World”
The personal computing era opened up a market for consumer and business software, games, gadgets, and upgrades. When the Internet followed the computer out of the university and government buildings, we saw that market explode. Instant connection changed everything at an interpersonal level all the way up to an international one. Cloud computing meant companies didn’t have to worry about physical infrastructure to scale. The rise of mobile built on the success of Apple’s iPhone and then Google Android, expanding the market of software and games (and giving the world “the app”). Mobile also freed us from those computing nodes at home and office and, essentially, created a virtual world of communication and commerce on top of the physical one.

Today, we have reached the intersection of the three ingredients needed to create true artificial intelligence: smarter data models, easy access to virtually unlimited amounts of data, and cheap and powerful cloud computing. As mentioned previously, AI is present in our daily lives when we search Google, ride in an Uber, or buy products on Amazon.

$16.5 billion expected market for AI in 2019

– International Data Corp
What AI Means for Business

Remember how computers have gotten smaller and smarter? They’ve also gotten cheaper, resulting in a surge of smart devices that are generating a growing body of business data that, in turn, can power machine learning. The Internet of Things encompasses an entire world of digitally connected devices – toaster, toothbrushes, thermostats, lightbulbs, cars, and much more – that are now being networked, talking to each other, and businesses, and consumers. We’re talking about a lot of connected things: 6 billion of them that, says Gartner, will be requesting support by 2018. Those billions of connected things mean huge volumes of customer data – indeed, 90 percent of the world’s data was created in the last 12 months alone.
Businesses need to be smart about the way they gather, digest, and apply that data, which is the lifeblood of IoT — provided it can be properly used.

But the impact of AI doesn’t stop there. Behind each of those devices, of course, is a real customer — and the next generation of customers expects a cohesive, intelligent experience every time they interact with a business. When a delivery order is delayed, they expect to be contacted with an updated ETA and a make-good offer — such as a $5 credit or free shipping on their next order — without having to pick up the phone and talk to a service agent. AI makes it possible to create an entire universe of business apps to deliver smarter customer experiences across sales, service, and marketing interactions.

For many businesses, however, AI has been largely out of reach. Historically, companies have faced four key challenges when it comes to adopting AI for business:

- **Data**
- **Expertise**
- **Infrastructure**
- **Context**
Below, we'll explore how companies can address each of these challenges in new ways.

Env The Data Challenge
For businesses, it's not just the volume of data that matters – it's also how all of those critical data points are organized. Business data often resides within a hodgepodge of internal and external sources that rely on a mix of cloud and on-premise systems. Often, these systems don't talk to each other, leading to siloed datasets and inconsistent data quality. Cloud-based CRM solutions like Salesforce are designed to connect all of that data to create a single view of each individual customer – and this connected approach to data is essential to taking advantage of the AI opportunity.

Env The Expertise Challenge
Beyond the data, companies must have the tools and expertise to analyze and act on it. This is difficult considering two common problems: siloed data storage and a scarcity of data scientists. According to a McKinsey Global Institute report, there’s a shortage of 190 thousand data scientists. Today, advances in AI tools are making it possible for businesses to work smarter without a legion of data scientists.

Env The Infrastructure Challenge
Just as discrete and siloed data sources limit companies' ability to properly leverage their data, so too do fragmented infrastructure systems. The high cost of on-premise hardware and computing systems that have the power to run machine-learning algorithms has prevented many companies from jumping in. Now, however, cloud computing has made AI more accessible and affordable.

Env The Context Challenge
For many businesses, AI may seem not only out of reach, but also irrelevant. Popular culture has imagined AI in the image of R2D2 and C3PO, rather than an essential component of modern business processes. Read on to learn more about our vision for how AI will transform sales, service, marketing, and IT by automating mundane tasks and empowering every human employee to add more value.
The result of un-analyzed, underleveraged data isn’t just missed opportunity. It’s a significant failure to connect with modern consumers in the way they expect (and demand). Currently, half of all business decisions are made with incomplete information, which disconnects the business from the product and, therefore, from the customer. For all the data customers are creating, less than 1% is analyzed, such that 77% of customers say they are not engaged with businesses.

Now, however, companies have the opportunity to change this – to close the gap between business intelligence and customer experience. New tools reveal useful insights about the customer. These tools illustrate how AI exists along a spectrum: the most basic tools require you to “pull” information out of them, while the most intelligent tools “push” information to you, anticipating what you’re going to want to know. With machine learning, computer systems can take all this customer data and build on it, operating not just on what’s been programmed but also adapting to changes. Algorithms adapt to data, developing behaviors not programmed in advance. Learning to read and recognize context means a digital assistant could scan emails and extract what it knows you’ll want to know. Inherent in this learning is the ability to make predictions about future behavior, to know the customer more intimately, and to be proactive rather than reactive.

6 billion connected things will proactively request support by 2018
– Gartner
Companies that embrace the AI opportunity will be able to create the modern experiences their customers expect, connecting with them on all their devices, analyzing their data to get to know them better, and being able to anticipate and predict in order to better serve them.

What does AI for CRM look like? Imagine being able to capture real-time signals, wherever they occur – from a customer’s support request to a prospect’s tweet. Then imagine being able to analyze every data point, pulling together data from Salesforce, external sources, and the Internet of Things to create a complete view of every customer. This, in turn, enables us to predict the best next sales, marketing, or service interaction for each customer, and then automate everything from routine tasks to real-time customer engagement. It’s a whole new way of connecting to your customers and prospects, with intelligence powering a new era of customer success.
AI has implications for every line of business. **Sales** will be able to anticipate opportunities and focus on the best leads. **Customer service** teams will deliver the next generation of proactive service, preventing machine failure or addressing FAQs in a customer community before they have a chance to become service cases. **Marketing** can build predictive journeys for every customer, personalizing experiences like never before. **IT** can embed intelligence everywhere, creating smarter apps for employees and customers. Read on to learn what AI means for your business.

61% of employees expect artificial intelligence that automates or assists in work-related activities to have a major or moderate impact on their daily work lives

— Salesforce Research
Smarter Sales

Imagine you’re a sales rep named James. Every morning when you wake up, the first thing on your mind is all of your upcoming sales calls. However, you don’t have to think too hard because you wake up in a connected world. You check your smartphone and your CRM automatically displays an itinerary of your day. All of your key customer meetings are organized in priority of opportunity value. Your smartphone also displays each customer’s three primary pain points, along with directions to reach the customer’s site on time, already pre-programmed into your car’s GPS. A quick cup of coffee, and you’re ready to start your day.
But just as you’re about to reach your first client, your smartphone sends you an important notification: a news update that your client has just acquired a data analytics company. Your sales assistant surfaces a summary of key findings from top trending news articles, along with product recommendations that integrate with your client’s recent acquisition to help you move the deal forward. Within seconds, you have full context of your deal, in-context market updates, and a conversation starter — all of which are surfaced automatically and embedded within your CRM experience.

After you finish talking to your client, your smartwatch vibrates, “Great job, James! Sounds like your client liked your product recommendation. We suggest you move this deal to stage 5. Would you like me to move forward?” With a single tap, you move the opportunity from “Deal Qualified” to “Discuss Pricing.” When you return to the office, you receive a push notification reminding you, “Your meeting notes have been uploaded successfully. The system has automatically extracted the following action items, and suggests this follow-up email. Would you like to send an email to the customer now?” In one click, you’ve successfully sent an email to secure your next meeting, without manually logging customer data or key action items into your CRM.

AI for CRM: Everything You Need to Know
Salespeople will benefit from AI in three ways:

- Data is automatically captured, enabling reps to discover best next steps and closest connections.
- Predictive sales helps reps prioritize leads and respond faster to high-value opportunities.
- Digital assistants will help maintain the relationship once it’s established by scheduling calls and issuing reminders.

The move toward making business applications and sales tools more accessible and relevant to our digital lifestyles will continue to expand, especially as smartwatches and other wearable devices are further integrated into our daily operations and interactions. User-interaction time will shorten from minutes to seconds as contextually aware push notifications bring speed and intelligence to every sales experience.

“You could say to your phone, ‘Show me leads I’m supposed to talk to today,’ and it does those operations for you: analyzes which ones are at which stage, finds the hot leads, and gives you a ranking of which ones you should talk to first, a probability of converting, and the expected monetary value when converted.”

Chalenge Masekera
Data Scientist, Salesforce
Smarter Service

Here’s a vision from the present: Maria orders a gift online and pays for two-day delivery to get it to her brother in time for his birthday. When she calls him on his birthday, however, she learns that the package hasn’t arrived. She calls the vendor, but has to meander through an endless series of push-button options to find the department she needs. Eventually, she ends up speaking to an agent. It’s as if none of the options she selected were recorded: She has to tell the story from the beginning. That agent transfers her to another agent, who asks her to tell him what happened – from the beginning – then puts her on hold. Ultimately, she hangs up in frustration.
But with AI, service can actually anticipate a customer’s needs, rather than simply reacting to them. Long before Maria calls her brother, an AI-driven CRM would have been monitoring her package’s progress, and notified a service agent the moment it was delayed. That agent, in turn, could have reached out to Maria proactively, letting her know when the package would arrive and offering her free same-day shipping on her next order.

This is possible because the interaction doesn’t start when the customer picks up the phone, but rather happens on a constant, ongoing basis. The conversation between customer and business is an interaction joined by the data the customer is producing on every digital channel (from smartphone to connected devices to social media), and the solutions the company finds based on that data. This solution may come before a problem even arises – and the customer doesn’t have to make a call because service is right there already.

25% of customer service leaders were using predictive analytics or best-next-action functionality in 2015

– Salesforce Research
The AI-driven interaction will automatically recommend the right content to the agent at the right time, including suggested solutions, relevant cases, and best next actions. The agent can introduce these actions to the customer in an organic way, rather than bombarding her with offers she doesn’t need. Once the issue is resolved, the agent could put a note in the customer record instructing the system to reconnect with the customer on a regular basis and suggest relevant upsell and cross-sell offers when appropriate. The continuous flow of customer data translates into a greater understanding of the customer and a superior experience that builds brand loyalty. Smarter service also allows a company to identify customer churn risks and thereby prevent customer attrition. Predictive intelligence can identify customers who are at risk for churn, so that reps can renew or upsell with personalized offers. Feeling neglected or ignored by a company, or forced to wade through inefficient systems, is a sure way to alienate customers. Companies that fail to apply AI to CRM will seem hopelessly mired in the past.

“Eventually, helpful AI features will be on the phone, in chat, email, and any other type of communication people use. These kinds of things will become commodities, and if you have highly accurate and helpful AI, people will love your services.”

Richard Socher
Chief Scientist, Salesforce
Smarter Marketing

A new level of precision and personalization, brought about by smarter machines using data more intelligently, applies to marketing as well. An AI-enabled marketer can reach every customer at the right time, knows the best audience for every campaign, and delivers the perfect content for every customer.
Today’s marketers have a wealth of data and insight at their disposal – but that doesn’t always translate into intelligent customer and prospect interactions. Traditionally, marketers have lumped audiences into broad groups based on attributes like location or industry. Often, that’s because marketers don’t know enough about each person – or even if they do, it’s too labor-intensive to engage people individually with the perfect message, content, or offer.

74% of marketers leveraging dynamic content (powered by predictive intelligence), rated it as absolutely critical or very important in helping them create cohesive customer journeys.

– Salesforce Research
The AI-enabled marketer will be able to:

- Leverage smart scoring to predict each customer's likelihood to convert
- Use predictive intelligence to segment and build audiences based on likely future actions
- Automatically adapt the journey for each individual customer
- Deliver the best next product, content, or offer – every time
- Send messages at the right time, when a customer is most likely to engage

“Market research” once relied on taking the temperature of broad chunks of society. AI enables marketers to focus at a granular, individual level. This depth of audience insight will allow marketers to create and test campaigns virtually, ensuring the ability to target and convert audiences more effectively by surfacing the right offer to the right person at the right time.

“Let’s say you are a marketer and you send out specific emails at specific times, and you don’t want to go through the same repetitive steps over and over again. A bot could do that for you.”

Chalenge Masekera
Data Scientist, Salesforce
We are entering what Salesforce CIO Ross Meyercord calls “the continuum of code”: an era in which low-code and no-code platforms are becoming more robust and ubiquitous, enabling business users to be developers. This isn’t the end of code, but it does mark the democratization of app-building – an important development as apps become increasingly central to every business function.
Business apps, in particular, are held to ever higher standards. Consumer apps are setting the bar for intuitive user interfaces, seamless integrations, and intelligent interactions. Business apps must be just as smart, just as fast, and just as simple to use. Collaborating with a partner or updating a sales quote should be just as easy as hailing an Uber. So the question for IT becomes: How do we enable a new generation of developers – and non-developers – to build more intelligent apps, faster?

The answer lies in the platform. Just as Heroku enables developers to quickly build open-ended apps in modern languages, so too should AI platforms enable developers to build predictive apps with minimal coding and no IT hassle. With the power of AI, citizen data scientists can embrace low-code solutions and build any predictive app they dream up, even CRM-driven apps like fraud detection or risk scoring.

In order to enable developers – and non-developers – to build predictive apps, the best platforms must be:

- **Data-Ready**
  Platforms like Salesforce offer native data prep, saving time and resources by eliminating the need for ETL. This means your CRM data is ready to go whenever your app is.

- **Modeling-Ready**
  Machine learning should be built into the fabric of your platform, rather than being something you have to add on later. With Salesforce’s trusted multi-tenant cloud, automated machine learning is already built in.

- **Production-Ready**
  Eliminate the need for dev ops with smart model management and monitoring tools, so IT can focus on building the best apps and deliver immediate results.

With an AI-first platform like Salesforce, companies can build intelligent apps across the entire continuum of code – and rest assured that intelligent data modeling, tracking, and monitoring are built into every app.
Customer-Focused AI: Salesforce Einstein

AI for everyone.

At Salesforce, we’ve focused on creating a set of AI platform services and solving customer problems across sales, service, marketing, and IT in a whole new way.

With Salesforce Einstein, we are solving for these kinds of questions:

- Are you selling the right product to the right customer at the right time?
- Are you servicing customers on the right channel by the right agent?
- Are you marketing on the right channel at the right time with the best content?
- Are you building apps that leverage the predictive power of AI?

Conclusion

“The beauty of Salesforce is that it has tons of different applications across various verticals and lines of business: marketing, sales, service, IoT, healthcare, and so on. Salesforce touches on so many different areas and has a general platform. Hence when we solve a problem once in a principled way the solution can be applied to so many different companies, improving their processes and helping them focus on what’s actually important and exciting. For example, a customer service expert can focus on helping you with tough questions specific to your org – and not on how to recover a forgotten password for the 50th time.”

Richard Socher
Chief Scientist, Salesforce
AI Has the Power to Transform CRM

Sales
- Spends time visiting customers, not entering data
- Predicts the best next step for every customer
- Understands what customers need and when they need it

Service
- Recommends a solution before a customer asks
- Offers cross-sells and upsells at the right time
- Predicts when things will break, before they do

Marketing
- Can reach every customer at the right time
- Knows the best audience for every campaign
- Delivers the perfect content for every customer

IT
- Can build predictive, smarter apps – faster
- Leverages the power of open-source frameworks
- Empowers everyone to build with AI, faster

AI for CRM: Everything You Need to Know
Salesforce Einstein enables everyone to discover new insights; predicts likely outcomes to power smarter decision-making; recommends best next steps; and automates workflows so you can focus on building meaningful relationships with every customer. It’s not bolted onto Salesforce – it’s an integral part of our platform. Salesforce Einstein enables every business user to:

**Discover.** With AI inside of Salesforce, sales reps, service agents, and marketers will discover new insights about customers, faster and more easily.

**Predict.** Knowing the likely outcome of a series of interactions gives you an AI-powered competitive advantage.

**Recommend.** What’s the next best step in a sales process, a customer service case, or a marketing nurture journey? AI offers it up so you can focus on the relationship.

**Automate.** When certain processes are repeated over and over with the same solution, often that task can be automated. AI learns from past actions and automates those tasks.

Salesforce Einstein is the first comprehensive AI for CRM, designed to help every business be smarter and more predictive about their customers. Einstein is powered by machine learning, deep learning, predictive analytics, natural language processing, and data mining.

Given our scalability and deep understanding of CRM, Salesforce is uniquely positioned to deliver AI that transforms the customer experience. Einstein makes AI available to the rest of us by:

1) Democratizing AI so every business user can get smarter and more predictive

2) Bringing intelligence to all Salesforce apps and making the Customer Success Platform smarter

3) Allowing developers to embed intelligence in every app

Customers will now experience the pervasive benefits of automated workflows, timely and relevant suggestions, and adaptive applications throughout every customer touchpoint across Sales, Service, Marketing, and IT to redefine customer success as we know it today – so that it looks more like tomorrow.

Visit [Einstein.com](http://Einstein.com) to learn more.