The Future of Chatbots

Fresh Consulting
freshconsulting.com
Table of Contents

3  The Demand for 24/7 Digital Service
7  Chatbot Key Statistics
11 Chatbot Functions
16 Industry Applications
21 Companies Working on Chatbots
24 Designing Chatbots for Your Business
27 Development Considerations
29 Chatbot Implementation
31 The Future of Chatbots
The Demand for 24/7 Digital Service

As digital experiences become more sophisticated and complex, the expectations for high-quality user support grows. Research shows that 51 percent of consumers say a business needs to be available 24/7. In other words, the majority of users expect that they’ll be able to take advantage of a business’ services at all times. This pressing demand creates a key challenge for businesses that want to provide good customer service while dealing with the reality that it’s difficult for human agents to work effectively 24/7. Quality control is also an issue as no amount of training can guarantee consistent, seamless, and cordial agent-customer interactions.

The Workforce Problem

According to research by INC, 44 percent of online consumers expect live chat service and support during the online purchasing experience. The challenge in offering live chat services lies in finding employees who are willing to work long hours at unconventional times. People need to rest in between work shifts. Additionally, mundane work is becoming an increasingly difficult sell as modern work culture evolves and more fulfilling, dynamic jobs become available.

Despite consumers having a preference for live interactions, these services are unsustainable when human agents are the only ones on the other side of the chat window. There are simply too many customers to interact with for a business to offer reliable, cost-effective, and worker-friendly chat services. The solution to this dilemma needs to meet both the desires of consumers (having a service representative/assistant available at all times) and the needs of the businesses providing these services (a cost-effective solution that can handle an ever-growing base of consumers and users).

In short, companies seeking to differentiate themselves should provide efficient, reliable customer and user support around the clock. It’s a hard demand to meet if your company relies solely on human agents. People are one of the best workplace assets, but they can’t solve this problem alone.
The Technology Solution

A chatbot is a piece of software that can engage in a programmed line of communication with humans. The digital assistant on your phone (Siri or Google Assistant) is a sophisticated chatbot, capable of answering simple questions and requests. In the context of a business, online shop, or customer support center, a chatbot is pre-programmed to detect keywords in a user’s question (like “delete” and “account” in the phrase “How do I delete my account?”) as well as detect intent and sentiment in the user’s statements. It then answers the user’s question based on the information contained in its database, gives the user a link to a solution, or connects the person to a live chat representative when needed (such as to get help with more complex queries, or in cases where the user would like to escalate their concerns or speak with a human instead of a bot).

A basic chatbot can perform 90 percent of the work of a live representative, and it can do it instantly, 24/7, for multiple people at a time. By comparison, the average response time of a person working in live chat is 48 seconds (approximately 48x slower than a chatbot).³ And while chatbots may be built with Artificial Intelligence, the most basic ones intentionally remove the sophistication of AI capabilities, making them easy to design and implement.

Natural Language Processing

Chatbots use Natural Language Processing (NLP) to communicate. NLP software reads a user’s input (“I want a pair of yellow sunglasses”), pulls out the most important keywords or phrases (“I want” + “yellow sunglasses”), and then provides an accurate approximation of what the user wants (“Hi [customer]! Here’s a link to our pairs of yellow sunglasses: [link]”). Sophisticated chatbots can also understand more complex variations and synonyms in speech. Some chatbots also detect frustration (e.g., if the users says, “I want a pair of yellow sunglasses right now!” the bot can skip steps to get a customer past extra dialogs).

Using the scripts companies already provide to their customer support staff, it’s easy to design use cases with NLP to offload the vast majority of your customer service needs from human agents to chatbots.

In this white paper we’ll explore some of the various ways chatbots can be implemented to speed business processes across a variety of industries.
Chatbot Key Statistics

Consumers Want Fast Service

• 70 percent of consumers expect a less than four hour turnaround when sending a direct message to a business through Twitter.\(^4\) Of that contingent, 23 percent want a response within 15 minutes. The same study concluded that 60 percent of consumers expect a response to a Facebook message within four hours, and 17 percent within 15 minutes. Roughly half of consumers (44 percent) expect to hear back within four hours when they send an email to a business.

• 75 percent of customers say it takes too long to reach a live agent.\(^5\)

• A 5-minute delay in response time reduces the chance of further contact.\(^6\) Given that chatbots can respond immediately, this risk can be avoided.

Many Customers Prefer Online Chat Over an Agent

• Live chat has a 73 percent satisfaction rate, compared with 61 percent for email and 44 percent for phone.\(^7\)

• 75 percent of survey respondents would rather use live chat than speak with an agent on the phone.\(^8\)

• 82 percent of survey participants would use live chat services on their mobile devices, and 62 percent expect that functionality to be available.\(^9\)

• 41 percent of people starting online chat conversations with businesses are executives, revealing the need for business-to-business chatbots in addition to business-to-consumer chatbots.\(^10\)

---

\(^7\) “Live Chat Tops Customer Service League Table Thanks to High Satisfaction and Low Customer Effort.” Maru/Matchbox, 15 July 2019.
Chat Functionality Drives Conversions

- **62 percent of people** said they are more likely to make a purchase if live chat is available.11
- A chat visitor is worth **4.5 times** as much as a non-chat visitor.12 Chatters make 60 percent larger purchases on average and are 2.8 times more likely to convert.
- **79 percent of businesses** say offering live chat has increased revenue, sales, and customer loyalty.13

Chat Is Effective

- **20 billion messages** are exchanged per month on Facebook messenger.14 People know the chat platform well already, so there’s no need for a new interface as it can be integrated and utilized by businesses.
- Survey respondents associated the **following traits** with customer-to-business chat: easy to use, anywhere and anytime, time-saving, and effective.15
- **Over 4 minutes** are saved per chatbot inquiry compared to traditional call centers in the banking and healthcare sectors.16

Chatbots Carry Significant ROI

- Every year, businesses receive **265 billion** customer support requests and spend $1.3 trillion servicing them.17
- Chatbots can yield **30 to 70 percent savings** in customer service costs.18
- Chatbots helped companies in the United States save **$20 million** in 2017.19
- By 2022, chatbots and Natural Language Processing (NLP) will help save $8 billion annually in customer support costs in industries like retail, eCommerce, banking, and healthcare.20
A virtual agent built by IBM Watson helped Autodesk to cut Tier 1 (address changes, login issues, payment issues, other comment FAQs) inquiry resolution time from 38 hours to only 5.4 minutes.\textsuperscript{21} The solution also reduced costs from $15-$200 (human agents) to $1 (virtual agent).

Amtrak’s chatbot Julie produces 800 percent ROI through simplified rail bookings and resolution of 5 million customer inquiries per year.\textsuperscript{22}

Charter Communication used a chatbot service to handle over 160,000 monthly live chat requests and had a return of 300 percent ROI for its chatbot service within 6 months. \textsuperscript{23}

TreeRing, a digital yearbook company, freed up manpower by using a chatbot service and reported a 15x ROI through a 10 percent increase in its pipeline value.\textsuperscript{24}

**Chatbots Are Versatile**

In the workplace, chatbots and intelligent assistants are being used to support the following tasks: typing with voice dictation (46 percent), team collaboration (26 percent), employee calendar management (24 percent), email management (14 percent), customer service (14 percent), information technology help desk management (13 percent), and data analysis (10 percent).\textsuperscript{25}

A survey of CIOs and CTOs showed that many have already implemented chatbots in a variety of areas: after-sales and customer service (77 percent), customer relationship management (54 percent), sales and marketing (40 percent), audit, finance, and accounts (11 percent), human resources (8 percent), finance (8 percent), supply chain (5 percent), research and development or product development (3 percent), manufacturing (3 percent), and information and communications technology (3 percent).\textsuperscript{26}

\textsuperscript{22} “12 Chatbot Case Studies Prove ROI and Show Success of AI.” BarnRaisers, 24 June 2019.
\textsuperscript{23} “12 Chatbot Case Studies Prove ROI and Show Success of AI.” BarnRaisers, 24 June 2019.
\textsuperscript{24} “12 Chatbot Case Studies Prove ROI and Show Success of AI.” BarnRaisers, 24 June 2019.
\textsuperscript{26} “Chatbots Are Here to Stay. So What Are You Waiting For?” Accenture Digital, 2018.
Chatbots Are Becoming More Widespread

- **25 percent** of customer service and support operations will integrate virtual customer assistant (VCA) or chatbot technology across engagement channels by 2020.²⁷
- Facebook IQ reports that chatbots have seen **5.6x year over year growth**.²⁸ They are becoming ubiquitous, and customers are increasingly comfortable with and reliant on them.
- **Google Trends** data reflects that interest in chatbot technology has been growing over the past 5 years.²⁹
- Gartner predicts that by 2020, **85 percent of customer service interactions** will be conducted via chatbot.³⁰
- 56 percent of surveyed **CTOs** report that chatbots are disrupting their industry, 43 percent say chatbots are already being implemented by their competitors, and 57 percent believe chatbots have a high return on investment.³¹

---

Chatbot Functions

Companies can solve many challenges with chatbots. A bot is online at all times, so if a customer has a question at three in the afternoon or three in the morning, they can get an answer. Answers come almost immediately since there is no queue or hold time for interacting with the bot. Should a live agent be needed, however, a chatbot can be programmed to recognize the limitations of its capabilities and pass the case off to the right person.

Customers can expect a consistent chatbot experience free from inadequate or uncourteous service. And since a chatbot can’t have a bad day, the company and the customer can be sure that no heated exchange will ensue. Furthermore, with the right type of programming, a bot can detect customer frustration and work proactively to resolve potential conflict using predefined parameters. As machine learning becomes even more prevalent in chatbots, they will be able to learn from their experiences and become even more effective without the need for additional programming. This can already be done with some of the more advanced chatbots like IBM Watson and Microsoft LUIS.

While the most clear application for chatbots is customer service, they can also be used to fill a variety of other roles. Their main function is communication, but their usefulness isn’t confined to customer support tickets. In the next few sections, we’ll explore some of the ways chatbots are being used to streamline communication, inside and outside of customer service.
AI, Deep Learning, and Natural Language Processing integrations will continue to make chatbots more robust. With the right tools and the right development team, chatbots can be designed to fill many different roles beyond those they currently fulfill.

**Customer Experience**

More exploration for how chatbots can improve CX (customer experience) is warranted. Many businesses make use of chatbots to provide always-on customer service. Chatbots are especially efficient, with the capability to run 24/7. Chatbots also act in predictable ways, providing added consistency, dependability, and decreased chance for human error. Lastly, chatbots can respond faster than a human operator to common queries. But outside of traditional customer service, there is ample opportunity to integrate chatbots across all of a brand’s various touchpoints.

**Order Processing**

Many businesses (especially restaurants) now streamline the ordering process by providing a chatbot service to order and track deliveries. A good example of this service is the Domino’s pizza ordering chatbot, which allows users to order pizza through a low-level chatbot in Facebook Messenger. Ordering chatbots can answer common questions about the restaurant, such as hours of operation and menu specials. They can also take orders, accept payments, make reservations, and provide real-time updates on order statuses.
Marketing and Online Shopping Personalization

Chatbots play an important role in online shopping. Not only do chatbots provide general customer support, but they can also “learn” about individual shoppers and use those learnings to customize the shopping experience. After answering some basic questions from the chatbot, recommended products are provided based on the shopper’s preferences. As shoppers continue to browse, the chatbot can continue providing additional details about products. The chatbot can later send users recommendations and advertisements via email and other messaging apps based on previous purchasing behavior. Chatbots allow businesses to sell more of their goods and help users find new products, carrying significant ROI for all.

Virtual Assistants

Virtual Assistants (also called AI Assistants) can be asked questions about almost any topic, and then, by querying the internet or a built-in database, they provide a comprehensive answer or perform a task. Virtual Assistants are also connected to smart tech ecosystems and other IoT services, making them relevant for everything from checking bank account balances to running household appliances. Virtual Assistants can be built to address a variety of concerns, and they can have broad or specific purposes.
Inventory Tracking and Management

Inventory and supply chain management is a time-consuming process that chatbots can automate. Chatbots can provide an “interface” (activated via speech, rather than traditional input methods like a keyboard and mouse) that makes manual spreadsheets less of a necessity. Chatbots can answer simple questions, such as how many shipments are due on a particular day or how much of a certain product is stored in a particular warehouse. Additionally, while human error is common when dealing with complex data like inventory barcodes, the chatbot will always provide accurate information. Chatbots work quickly and can be used for time-sensitive tasks, such as making real-time changes to deliveries before they leave the warehouse.

Human Resources

Chatbots are being integrated into HR departments as well. In particular, chatbots provide a powerful tool to streamline the onboarding and integration process for new and temporary employees. A chatbot can serve as an “interactive FAQ” for new employees, giving them a tool for getting quick answers to basic questions about the company and its policies. These chatbots not only reduce barriers between new employees and productive workflows, but they also free up HR employees for more complex tasks. Once integrated into the workforce, chatbots also provide an automated means of checking in on new employees to gauge their level of engagement and job satisfaction.
Travel Planning

Creating travel plans and making logistical arrangements is a complicated process that can be simplified greatly using chatbots. Chatbots work akin to a travel agent and provide a valuable tool from start to finish in planning personal or business travel. Users can interact with the chatbot to make decisions on where to travel by answering simple questions about what they want to do on their trip. The chatbot can then make suggestions about flights, lodging, and other accommodations. Once the chatbot guides users through planning a travel itinerary, the chatbot can actually book flights, hotels, and rental cars. The chatbot can also schedule the trip’s events and offer the traveler package deals or coupons.

Financial Management

Chatbots can be used for financial services, such as providing accurate and immediate information about a user’s financial assets. A chatbot can also be used to make deposits, withdrawals, and transfers between a user’s various accounts. Using AI and Deep Learning, financial management chatbots can also provide more advanced services to aid in decision making. For example, a chatbot could provide information on a stock’s value over time and make predictions about its future worth. Chatbots can also be used to predict the future balance of a savings account based on the current balance and APR. Additionally, chatbots can track information on a user’s spending habits and make recommendations for saving.
Industry Applications

Any point of contact between a business and a customer opens the door for chatbot solutions to be used. What follows is an overview of instances where chatbots are being used to streamline customer experience.

General Consumer Experience

- IBM’s Watson Assistant can reduce customer service wait times up to 99 percent, saving your customers a substantial amount of time. It comes in several different variations to match a business’s unique needs.32
- Hipmunk’s “Hello Hipmunk” chatbot service can reduce a traveler’s online searches (an average of 20 per customer) into a single chatbot conversation.33
- German company Tec inStore used chatbots to answer consumers’ frequently asked questions.34 After one month of usage, the success rate was 80 percent, and one in ten messages the company received was a thank you.
- eBay launched its ShopBot personal shopping assistant application in late 2016. It’s based on the Facebook Messenger bot and leverages AI components plus eBay user data to provide shopping options in a conversational style. The bot helped triple their engagement and retention level, as customers were likely to ask questions about the product more frequently than those only using the website content for information. 35

---

Insurance

- **Nienke** is the “virtual host” of Nationale-Nederlanden, one of the leading insurers in the Netherlands.\(^{36}\) First deployed in 2011, Nienke answers user questions and provides links to other common questions based on the original query.

- **GEICO’s “Kate”** was launched in early 2017.\(^{37}\) Kate is a smartphone app that can converse with users through text or voice recognition. She can answer customer questions about balances and payment dates and retrieve documents.

- Lemonade’s online chatbot, Maya, interacts with customers who want to take out a policy or make a claim. With the assistance of Maya, it takes around **90 seconds** for the customer to get insured and about 3 minutes to pay a claim.\(^{38}\)

Finance

- **Cleo** is a personal finance chatbot that allows users to make inquiries about their personal budgets, account transactions, and more.\(^{39}\) The company wants to make it easier for the everyday person to be in control of their finances and meet financial goals.

- The **Erica** chatbot, which is available inside the Bank of America app, is designed to streamline use of the bank’s features.\(^{40}\) Erica can send personalized advice and offers to customers, help them complete simple banking transactions via chat, and provide information about the customer’s credit score and account balances.

- **Many banks**, including Capital One, Wells Fargo, USAA, and Chase, have developed their own chatbots to help customers manage their financial assets, complete banking transactions without speaking to a representative, and easily locate the bank’s online and in-person banking resources.\(^{41}\)

---


\(^{37}\) “GEICO’s Virtual Assistant Kate Intuitively Answers Your Insurance Questions.” GEICO, 2017.

\(^{38}\) “Lemonade - Maya.” Welcome.AI, 2019.

\(^{39}\) “Meet Cleo: the AI Assistant That Helps You Take Control of Your Money.” Cleo, 2019.


Automotive

- As vehicles becoming increasingly intertwined with smart technology, they’re performing more and more driving tasks for their owners. In autonomous vehicles, chatbots like IBM’s Watson can be used as a way for passengers to interact hands free.42
- Through Facebook Messenger, YourMechanic launched the first chatbot in the auto repair industry.43 The chatbot can be used to schedule appointments, receive quotes, and even offer advice to customers on mechanical issues.
- Purchasing a car in a dealership can come with pressure that a customer might not want to face while still collecting information about their purchase. Through conversations with a chatbot before an in-store visit, customers can get the information they want before having a sales pitch.44

Logistics

- By combining your UPS account with your smart assistant of choice, you can check the status of a shipment, provide delivery instructions, and find UPS locations using voice commands.45
- With Amazon Alexa, DHL customers can check the status of their packages using voice commands or by typing to the digital assistant.46
- Chatbots can be connected with IoT data, allowing a warehouse manager to be informed as soon as an item is out of stock or an important order has been delivered.47

46 “Effective Immediately, Amazon’s Smart Speaker ‘Alexa’ Can Update DHL Customers on Their Parcel Shipment.” DHL, 8 Mar. 2017.
Restaurants and Retail

- Using a Twitter-integrated chatbot, Pizza Hut customers can place orders through Pizza Hut’s account.\(^4\) If customers link their Pizza Hut account and their Twitter account, the chatbot can provide information on past orders.
- The Wingstop chatbot allows customers to order food, view Wingstop’s menu, and pay.\(^4\) Customers can interact with the chatbot via Twitter, Facebook Messenger, and Amazon Alexa.
- For teams and offices that share shopping responsibilities at the workplace, there’s Kip. Kip is a chatbot that makes managing a group shopping list convenient.\(^4\)

Healthcare

- Medwhat users can interact with a chatbot 24/7 to ask about symptoms, conditions, and general health concerns.\(^5\)
- In 2017, UCLA scientists created a chatbot for clinicians that provides users with the insights of interventional radiologists.\(^6\) Rather than asking a live radiologist, the chatbot can answer clinicians’ questions to the best of its ability, then refer them to a live radiologist if needed.
- SafedrugBot is a chatbot that helps healthcare professionals make safe decisions for women that are breastfeeding.\(^5\) The chat interface cuts the complexity that medical staff have to face when making these important healthcare choices.
- Northwell Health launched its AI patient engagement chatbot, called Northwell Health Chat, in 2018.\(^6\) It allows patients to stay connected to their care navigator throughout their recovery. The chatbot has increased patient engagement and satisfaction by up to 97 percent and reduced post-acute care expenses across its hospitals.

---

Construction & Energy

- **hizliYOL Technology** is working to implement the combination of IoT and chatbot solutions (BIOT) on construction sites to monitor progress and machinery distribution.56

- **Oil & Gas equipment companies in Europe** are integrating chatbots to save time and money answering customer service queries, reallocating that time to more productive tasks.57

- In the future, chatbots will be able to use **sentiment analysis** on daily reports to ensure that communication between management and workers is smooth, and even identify good future candidates for management.58

---

Companies Working on Chatbots

Technology companies have spent serious resources to bring chatbot solutions to customers. They range from single-service companies to the current tech giants. Some are creating custom-tailored bots for company-specific needs, while others are leveraging AI platforms like Watson and Azure for broader insights. Together, these services provide a wide range of chatbot solutions that are ready to be built into any application, from apps and websites to voice assistants. With this technology, customer experience can be vastly improved.

Big Business Customer Service

ZenDesk is a company that specializes in a range of customer experience solutions.59 A business can use ZenDesk’s suite of products to tackle anything from analytics and reporting to customer support and guidance – everything you need to understand and communicate with your customers effectively. One of their marquee products is ZenDesk chat. With this tool, common questions from customers can be easily fielded, making information readily available and reducing friction between a page visit and a purchase. The beauty of ZenDesk chat is that it’s available across platforms, so whether the user visits by native app or website, they can get the answers and customer support they need.
DigitalGenius provides a tool that integrates well with platforms like ZenDesk and Salesforce to automate customer service to a greater degree.\textsuperscript{60} This is achieved by using Conversational Process Automation to identify patterns in customer service interactions and learn from them. When ‘autopilot’ mode is on, DigitalGenius can handle tasks like refund requests, billing, and order status on its own. If a case is more complicated, it can be handled in ‘co-pilot’ mode, where a human representative takes over. But DigitalGenius pays attention to how the problem is resolved so that similar issues in the future can be handled automatically.

**Messaging Apps**

ItsAlive provides chatbot solutions for Facebook Messenger.\textsuperscript{61} ItsAlive’s bot builder service allows you to tailor the bot to your particular needs. You can make an intricate decision tree by dragging and dropping conditions and choosing exact responses. This user-friendly design tool makes it easy for anyone to build a complex chatbot.

Chatbots are also available on WhatsApp, the world’s most popular messaging app. Pandorabots provides chatbots for a range of messengers and can tackle customer service, entertainment, marketing, voice interface, or B2C messaging.\textsuperscript{62} Similar to ItsAlive, Pandorabots allows for fine-tuned responses by writing AIML (AI Markup Language). This means you can provide detailed instructions dictating a bot’s behavior by writing guidelines, not code.

\textsuperscript{61} “Chatbot Solutions for Facebook Messenger.” Itsalive.io, 2019.
Custom Chatbots

Beyond specific eCommerce or messaging platforms, ‘Big Tech’ has created adaptable chatbot solutions that can be built into anything. Google’s Dialogflow uses powerful Machine Learning technology on the Google Cloud to provide rich conversational experiences on most messaging platforms. A bot can be designed easily, without any coding experience, and is optimized for use with Google Assistant, which is present on over 400 million devices.

Watson is IBM’s monolithic AI project that includes Watson Assistant. This enterprise-level chatbot can also be built into a range of different platforms and allows for a more complex user experience, including visual aids to help a user find, for example, a CVC number on a credit card. Once the chatbot is built and fitted to the user’s needs, it can be deployed to various platforms.

Finally, Microsoft provides its Bot Framework for use with its Azure cloud computing service. To integrate the bot fully, familiarity with Azure and programming in JavaScript and C# is required. The bot can be fed data from FAQ forms and other structured documents to quickly learn how best to respond to users. Microsoft LUIS can be used to add natural language processing capabilities to the bot. Additionally, computer vision technology can be used to recognize faces, moderate content, or index images. Once built, the chatbot can be deployed to any device that supports Azure services.

64 “IBM Watson.” IBM, 2019.
Designing Chatbots for Your Business

So far, we’ve seen many examples of companies using chatbots for massive ROI. However, chatbots can only perform well if they are designed well. There are many points to consider when choosing or designing your chatbot. Consider these key design approaches.

1. Learn: With AI capabilities and deep learning, chatbots can teach themselves and adapt to situations they haven’t been programmed for. Every time a customer uses your bot, their decisions and behaviors yield valuable data that can be used to further improve the chatbot’s capabilities. As this aspect of chatbot technology develops, the gap between human-quality support and automated cost-effectiveness will close. Considering the resources being put into AI technology across industries – from Big Tech to small shops – improvements in deep learning are sure to be made, and they will be felt in chatbot technologies.

2. Personalize: Bots allow your brand to deliver personalization at scale; they can identify what the customer is looking for and provide them just that. Greater personalization gives the user a sense of importance and comfort as they continue to use the service. According to Statista, 32 percent of consumers who interacted with a chatbot found the experience to be somehow unsatisfactory, be it confusion, clunkiness, or unhelpfulness. The addition of a personality that follows the brand’s image could help to make more chatbot interactions positive. Chatbot personalization also lets the customer know that, even if there isn’t a person on the other side of the chat, people did put time into making the experience positive by expanding on the standard chatbot interaction. A touch of humor and personality can go a long way in a customer interaction.

3. **Authenticity:** It is important that the chatbot can engage in conversation in a way that a human would. Sounding and looking like a human gives chatbots more credibility in conversation and improves overall value. Conversations should feel natural and not scripted. **LivingActor** stresses the importance of authentic interactions with automated systems.69 As mentioned above, this can partly be achieved through personalization of the chatbot. Some effort ought to be spent on tailoring the chatbot to the brand and its values. Recent research has shown Millennials **choose brands based on values.**70 Making sure those values are felt across all points of contact with the customer – through marketing, support, and in-store interactions – is essential to maintaining a brand’s values.

4. **Trust:** Focus on how conversations can help you learn even more about your customers, build trust, and develop a relationship with your brand. Customers will be more inclined to return to businesses they feel they can trust. Providing users with good customer service is an easy way to build that trust. An initial study into building trust has shown that preexisting trust in a brand spills over into interactions with that brand’s chatbot.71 But it is important for the chatbot to maintain that initial customer trust and continue to grow the relationship. Maintaining a record of the problems previously handled with a particular user, and therefore knowing which issues have been resolved before and what might be a recurring problem, could be one way of building trust. It could also be reflected in something as simple as addressing the user by name in the chat.

5. **Aesthetics and Design:** While graphical user interfaces have been around as long as personal computers, chatbot interfaces are much newer. To design an effective chatbot solution, however, you don’t have to reinvent the wheel. Take inspiration from chat interfaces users are already familiar with – iMessage, Facebook Messenger, and similar platforms. Design elements like alternating colors, profile images, and emojis are all a part of the modern chat interface. Also, predictive text, autocorrect, and proposed responses can be useful for chatbots, just as they are in person-to-person conversations. Some chatbot solutions already exist within common chat platforms like WhatsApp and Facebook Messenger, making the transition to chatbot interaction very easy.

6. Intelligence: While authenticity and trust are important aspects of any interaction, so too is intelligent behavior. It doesn’t matter how authentic or trustworthy a chatbot is if the customer’s needs can’t be met. These considerations are the mechanics that allow for chatbots to take on tasks humans would normally have to perform themselves. Natural language processing is the first pass at understanding the user, where information is interpreted and user intent is detected. One area where progress is being made is the ability to detect double intent, such as when a user says they want to see the return policy and shipping FAQs in the same message. Speaking with a chatbot – like you can with Siri, Alexa, and Google Assistant – could be an effective way of engaging with users. Also, being able to send an image to the chatbot as a way of resolving a problem could in some cases be more effective than describing the issue at length.

When designing a chatbot, all of these are important options to consider. For a chatbot to really work its magic, it needs to be genial as well as capable, slick as well as intuitive. Balancing these features is a key part of effective chatbot design and implementation.

# Development Considerations

The development of chatbots is just as important as the design. Many companies provide off-the-shelf chatbots that can be customized for specific use cases, while others provide user-friendly tools to create chatbots from scratch. For projects that are particularly unique, a good approach is to start with a framework that has done most of the heavy-lifting on the AI aspect, and then build on top of it to create a scalable and flexible solution.

**Utterances:** Any statement or question that the user asks is considered an utterance. For example, if a user says “Tell me about today’s weather,” the entire sentence is the utterance. Recognizing an utterance is the first step a chatbot takes. By identifying the entire sentence or statement, the chatbot can then attempt to understand the statement and begin processing how to respond.
**Intents:** Chatbots can understand what they are told by identifying the intent of any given utterance. An intent is made up of a verb and a noun. The chatbot always looks for these parts of speech to understand the statement. For example, if the utterance is “Tell me about today’s weather,” the user’s intent, derived from the verb “tell” and the noun “weather,” is to get information about the weather. The chatbot understands and sees this intent as “tellWeather.” As mentioned previously, one active area of development is to be able to recognize and handle double intent. A chatbot would be able to respond correctly to a statement like: “Tell me about the weather in New York and Los Angeles.” In this more complex case, there is one statement of intent – “tellWeather” – but it should still trigger two distinct responses.

**Entities:** An entity is anything that modifies the intent of the statement. In the utterance, “Tell me about today’s weather,” the entity is “today.” The chatbot labels this entity as “dateTime,” using that information to decipher that information about the weather should be drawn from “today” rather than “yesterday” or “tomorrow.” Entities are important for understanding the context of the question, but even without them, the chatbot can answer the user’s query by providing general information about the weather or other subjects.

On the most basic level, using utterances, intents, and entities, the chatbot understands and answers a user’s question. In our example, the chatbot identified the utterance, “Tell me about today’s weather,” as a user query. It then identified the intent as finding information about weather, which is stored as “tellWeather.” Finally, it identified the entity “today,” which is stored as “dateTime.” Piecing all this together, the chatbot knows that it should produce information about “tellWeather + dateTime = today.” Querying the internet or a designated database, the chatbot answers the question.

---

Chatbot Implementation

Once a chatbot has been designed and developed, the work is not yet over. The chatbot needs to be built into the ecosystem that it will operate in, be it a website, app, or other interface. Its performance has to be evaluated so that adjustments can be made to its behavior in order to foster optimal user interaction. Here are some of the crucial phases of implementing a chatbot:

1. Plug it in: How the chatbot is made live depends largely on the platform it is a part of. Some of the implementations we have covered, such as popular messaging platforms, are simply a matter of pressing a button. Other customer-facing platforms might be a simple addition to website source code, or perhaps a more complex intervention. For the most flexible and universally available chatbot solutions, some technical knowledge is needed for switching the bot on.

2. Structure the team: While technology is making chatbots increasingly capable and robust, sometimes a person needs to take the wheel on a particularly tough problem. If a chatbot is customer-facing, it will need to seamlessly pass an issue off to a human customer service representative. The details, again, are a question of which platform the bot lives on, but essential elements include notifications to the staff and a queueing system for customer service tickets. If the issue arises outside of service hours, the bot should try its best to refer to online sources of relevant information or provide a time estimate for when the issue can be handled by a human staff member.
3. Supervise and Evaluate: Once everything is up and running, it is still important to keep an eye on the chatbot’s performance. One way to do this is to ask for customer feedback after an interaction with a chatbot. For example, a one to five star rating could help a team collect invaluable performance data. Another method could be to use ‘affect detection’ to flag instances of customer frustration or anger, and then to index these moments for further evaluation. Similarly, keeping a record of an unproductive interaction (one in which the customer’s need was not met) is useful for further building out the functionality of the bot. Once a chatbot exists, it has to be able to improve over time, either through human intervention in the form of feature building or through machine learning processes.

Having a chatbot take the burden off human employees is not as simple as buying an answering machine and plugging it in. After careful design and development considerations, it has to be activated or built into the platform it will exist on. Then, if it works alongside a human support team, the right protocols for passing an issue off need to be established. Finally, once all this is in place, a chatbot should be supervised through key performance indicators and improved depending on the results found. While it takes time to incorporate all of these considerations, ultimately, having a well-implemented chatbot will save many hours of mundane human labor and provide users with the instant problem-solving and service they expect.
Providing your customers and users with good support is one of the best ways to gain their trust. In a study done by Kayako, researchers concluded that 52 percent of consumers are more likely to repurchase from a company that offers chat support. Giving customers the support they need – when they need it – will increase their desire to return to your business and make use of your products and services.

Beyond customer service, we must also think of the possible benefits in other domains. How can chatbots streamline people’s personal lives? How can they make the jobs of employees easier? Since chatbots are still primarily confined to customer service, those thinking outside of the box have the opportunity to innovate.

Finally, chatbots will be successful only if they are well-designed. It’s important to think about all of the factors that go into good chatbot design as well as to think carefully about the design challenges that will come up in new applications of chatbot technology.

If you’re inspired to do a deeper dive into the subject, let’s chat. We are happy to lend our expertise in discussing the possible applications for your company.
Authors and Collaborators

Johnny Rodriguez
DIRECTOR OF STRATEGIC INNOVATION
Johnny has over 12 years of experience in UX design and development using cutting-edge web technologies.

Ben Spencer
DIGITAL CONTENT STRATEGIST
Ben is a Digital Content Strategist with a passion for blending design and writing into a cohesive product narrative.