

CHATBOTS IN CUSTOMER SERVICE



HOW DID WE GET HERE?

In 2016, we've seen chatbots emerge as one of the hot topics of the year.

Some say bots are “**the new apps**”¹, others call them “**overhyped**”² but chatbots are something that cannot be ignored.

In Customer Service, there is strong and growing interest in chatbots, driven by the promise of intelligent digital assistants always available to resolve customer requests cheaply, quickly and consistently.

In this Digital Customer Service point of view, we share some of our experiences in designing and building customer service chatbots and answer six of the most common questions that Customer Service executives ask about chatbots:

- How important are chatbots for customer service?**
- Do they matter today?**
- What are they good at?**
- In this rapidly changing field, how do I choose the right path?**
- Will I lose control of the customer experience?**
- What results can I realistically expect?**

Firstly, let's define what we mean by a chatbot.



WHAT IS A CHATBOT?

A chatbot is a computer program you can talk to, through messaging apps, chat windows or increasingly by voice. The chatbot replies using the same applications, creating a back-and-forth conversation.

Although chatbots are a current hot topic, they have been around for the past fifty years. Perhaps the earliest example was a program called ELIZA built in 1966, which simulated a therapist by using a script to respond to a user's typed questions with simple pattern matching³. Over the years, other chatbots have incorporated more sophisticated techniques to better understand user questions and provide more relevant and useful responses.

Today, a chatbot can carry out many of the functions of a mobile app or website, all within a messaging conversation, and without a customer needing to download new apps.

The recent interest in chatbots can largely be attributed to **two key developments:**

A. Messaging Services Growth

Messaging technology has spread rapidly over the past few years to become one of the most used smartphone services. To call these platforms ([Facebook Messenger](#), [WhatsApp](#), [WeChat](#) and [LINE](#)) "messaging services" understates what they provide.

They have evolved to include features such as payments, ordering and booking, which otherwise would require a separate app or website. So, rather than downloading a series of separate apps, users can buy goods, book restaurants and ask questions all through their favorite messaging app.

B. Advances in Artificial Intelligence (AI)

Artificial Intelligence has also made significant steps forward in the past few years. Techniques such as machine learning and deep learning take advantage of vast amounts of data and cheap processing power to dramatically improve the quality of understanding and decision making. For example, using techniques such as deep learning, image recognition error rates in the annual ImageNet challenge have fallen over the past six years from around 25% to about 2%, exceeding human performance levels⁸.

The "Big 4" messaging platforms together now have over 3 billion monthly active users⁴



Facebook Messenger and WhatsApp users
send over 60 billion messages per day⁵



LINE users exchange
20 billion messages every day⁶

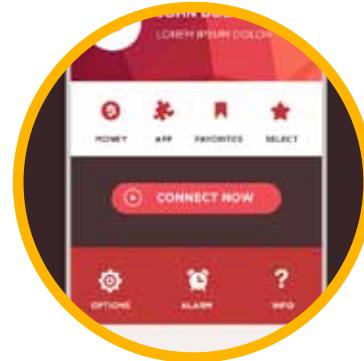


55% of WeChat users spend over
1 hour per day on the service⁷

In a customer service context, we can think of chatbots as the combination of three parts:

1. Interface > “The UI”

This is the interface between the chatbot and the (human) user, through a messaging app or a chat session on a company’s website. Increasingly, the UI uses spoken voice, for example with personal digital assistants such as Siri, Amazon’s Alexa, Google’s Assistant or Microsoft’s Cortana. Natural Language Processing (NLP) is used to understand what the customer is asking, using AI techniques to allow a natural sounding conversation and take previous questions and context into account.



2. Intelligence > “The AI”

The intelligence allows the chatbot to understand and solve customer queries and to learn from each interaction. Today, most of the problem solving in chatbots is through pre-defined rules in a decision tree, rather than using machine learning and similar techniques, although these are starting to be applied. This means that in practice chatbots operate in areas of narrow expertise, where experts have defined the answers to common problems.



3. Integration > “The SI”

This covers the integration with other systems and platforms, including integration with workforce management systems to access human agents. It is through these integrations that the chatbot can access information from multiple sources, complete transactions and escalate more complex customer queries to human agents.



HOW IMPORTANT ARE CHATBOTS FOR CUSTOMER SERVICE?

Chatbots matter for three main reasons:

Results:

Although a chatbot cannot handle all customer queries, it can be used to deal with many of the routine queries that typically make up most service requests. For example, at a European telco, a chatbot was used in a pilot program on a set of common customer queries and resolved 82% of interactions by itself, rising to 88% of interactions when combined with live intervention by a human agent⁹. This level of performance was reached after approximately five weeks of training the chatbot.complex customer queries to human agents.

Convenience:

Chatbots make it easy and fast for customers reach you using the same messaging services they use daily. Chat is also an easy medium for most people to use, arguably more so than apps and websites. Many people will be familiar with elderly relatives who wouldn't dream of downloading an app, but who will readily text or message to keep in touch, as it feels a much more natural way to interact.

Future Positioning:

Chatbots provide a tangible way for companies to understand how the rules of digital customer service change as we move into the AI computing era. Digital services are becoming more sophisticated and contextually-aware, making them able to anticipate and respond to individual needs. We use the term "Living Services"¹⁰ to describe these new types of services being created.

New technology lets us challenge old constraints and assumptions, and builds new rules of competition. How might these look? Today, most customer service functions are measured on how well they can reduce the number of customer calls and average handling time (AHT). This, naturally, is to reduce the cost of customer care. Yet for an intelligent chatbot, the marginal cost of handling more conversations and taking more time with customers falls to almost zero.

So, why not encourage customers to get in contact more often and for longer, if that helps them get a higher level of service? In fact, why not encourage your competitors' customers come to you for service?

The telco whose chatbot can help its rival's customers configure their router and smart home setup is going to be very well positioned to tempt that same customer to switch service. New tools create new rules, and those who learn them first will be at a significant advantage.

DO CHATBOTS MATTER TODAY?

Chatbots are becoming part of daily digital life, as they proliferate on messaging platforms and are launched as digital assistants by the largest technology companies. Already, customer service leaders are moving beyond initial chatbot trials into mainstream use.

In September 2016, Facebook Messenger announced it had over **30,000 chatbots** available¹¹, a rapid rise since the launch of its Chatbot API in April. There are a wide range of bots available to help you check the weather, order food, organize travel and even help play Pokémon Go.

In China, WeChat has provided the ability to include chatbots in companies' "official accounts" since 2013. There are over **10 million** such accounts on WeChat, many of which use a mixture of chatbots and human agents to offer customer service in a wide variety of sectors.

Customers today are also getting exposure to chatbots and intelligent assistants on their smartphones and other devices. [Apple](#), [Google](#), [Samsung](#), [Microsoft](#), [Amazon](#) and [Facebook](#) are just some of the companies who are collectively **investing billions** to develop digital assistants on their respective platforms. As customers get used to interacting with these services through a chat or voice interface, they will expect to do so in all their digital interactions.

We use the term "liquid expectations" to describe how customer expectations are fluid between industries,

for example how they compare the experience of booking a broadband installation against their most recent Amazon shopping experience.

The past year has seen many customer service leaders trialling the use of chatbots with customers and internally. The travel, hospitality and financial service industries have been at the forefront, with companies such as American Express and the Dutch airline KLM among the first to launch Messenger chatbots for customer service¹²⁻¹³.

SEB, a leading Swedish bank, piloted a digital agent chatbot in its internal IT function, conducting over **4000 conversations with 700 employees** over three weeks to resolve "the majority of issues"¹⁴. Based on the results, the bank is now working to roll out the same technology to use with retail banking customers.

Capital One customers can talk to Amazon's virtual assistant Alexa to carry out banking transactions such as checking their balance or paying a credit card bill, using an Amazon Echo or other Alexa powered device¹⁵.

WHAT ARE CHATBOTS GOOD AT?

Whilst chatbots are not suited to all customer service scenarios, they work well in certain types of use cases.

Focused scope:

Chatbots are effective where the customer requests are **in a specific area and the solutions are well known and predictable**, such as troubleshooting or customer education cases where scripted answers can be developed. These cases allow decision trees to be developed rather than requiring a more general intelligence. With a well designed bot, resolution rates can be high. For example, at Georgia Tech University, a professor created a chatbot to act as a Teaching Assistant for online queries from students in a computing class. After a three month learning period, the assistant was able to answer questions with 97% accuracy¹⁶.

Multiple steps or input parameters:

In very simple use cases, such as “what’s my bank balance?” a chatbot offers few advantages beyond convenience over other channels such as an IVR or tapping in an app. Where there are multiple parameters, however, a chatbot can use natural language processing to understand a customer’s request faster than selecting multiple options e.g. “can you rebook my flight to Madrid to the following Monday after 3pm and get me a window seat?”.

High volume of requests:

Chatbots are well suited to frequent use cases where the responses are often similar and the high volume creates a business case to automate the response and free up human agents to deal with more complex issues.

Customers are not likely to be already stressed:

In cases where customers are already stressed, such as when making a complaint, trained **human agents are better** able to express the necessary empathy to help deal with the situation. For example, customers often use social media channels to escalate an issue and want a human response not an automated one. Well designed systems can use Natural Language Processing to identify these cases and divert them to human agents.



HOW DO I CHOOSE THE RIGHT PATH, GIVEN THE RAPID PACE OF CHANGE?

Almost every week there is news of new developments in chatbots and AI, from companies being acquired to new performance benchmarks being achieved. Indeed, in many of our chatbot projects, we are asked midway to evaluate a new technology that the client has just seen or heard about.

Even with so much change and fluidity, there are steps you can take to help choose the right path.

Firstly, make sure that within your team and partners you have a good knowledge of the main available solutions and their roadmaps. Ensure your partners are immersed in the field and have experience across multiple solutions, as each has relative advantages.

Secondly, develop a flexible and modular architecture that allows you change key parts should the need arise. For example, there are many AI engines available and each is evolving rapidly, so it is very hard to be definitive and say that any particular one is the “best” option in all cases.

Thirdly, where possible, work with messaging services and user interfaces that provide a set of standard APIs, to minimize effort on developing bespoke interfaces which may require rework.

Finally, don’t obsess about the need to build a pure “conversation” with the customer. In practice, a mix of chat and graphical interface often works best. For example, in renewing a health insurance plan, rather than asking lots of questions via chat, the chatbot can display the options to the customer and ask them to select between them. It’s the difference between being able to see a list of options on a website versus having a contact center agent read them all out and wait for a reply.



WILL I LOSE CONTROL OF THE CUSTOMER EXPERIENCE?

There is an understandable fear that putting customer conversations in the hands of a machine can lead to customers receiving a second-class service or at worst a “rogue” chatbot which damages your brand.

Using chatbots does open up your brand more than many other technology deployments, however as long as you recognize this and employ careful design and management, the risks can be minimized.

Firstly, run a pilot so you can closely monitor service levels and results, and make adjustments as required. Pick a small set of use cases to keep the pilot focused and manageable. Consider an internal customer for the pilot, such as in-house tech support.

Secondly, as noted above, avoid using chatbots in cases where the customer is already likely to be sensitive or irritated, such as when dealing with complaints.

Thirdly, take a “hybrid” approach, with human agents closely supervising and training the chatbots and able to intervene in conversations when required.

Fourthly, use a team with skills across engineering, UX and Marketing to build the chatbot. Design the interactions to be consistent with your branding and have a natural flow. Just as you train human service agents to represent your brand, so you need to design chatbot conversations with the same care and attention.

Finally, don’t over-promise what chatbots can do. First impressions last, so surprise and delight customers by starting with a core set of relatively simple use cases and deliver those well before expanding.



WHAT CAN I REALISTICALLY EXPECT?

With good design and implementation, we have repeatedly seen more than 80% of chat sessions resolved by a chatbot, which would have otherwise been handled by a human agent in a chat session or call.

By using machine learning diagnostic tools, **it is possible to predict the likely benefits** of a customer service chatbot before a single line of code is written. Accenture has developed a patent pending Diagnostic Tool which can be used to assess the percentage of chat sessions a chatbot could be expected to resolve.

The tool analyzes existing chat histories using Natural Language Processing to identify customer problem types and how they were resolved. By comparing these chat histories with similar prior cases that chatbots successfully resolved, the Diagnostic can predict the percentage of problems a chatbot could handle. This analysis can be used to identify where to trial a chatbot and assess the likely potential benefits.

This gives a low cost, low risk approach to assess the potential benefit of a customer service chatbot before writing any code or testing with customers. The business case can therefore be built with more confidence and a trial launched based on predictive analysis rather than pure intuition.

Beyond cost reduction, business benefits can also include improvements in NPS and Customer Satisfaction by reducing response times, increasing customer convenience and increasing first time resolution.

There is also a positive impact to the brand, helping positioning as an innovator which in turn can help address new market segments and defend against competition.



GETTING STARTED

Understand what's going on

Get familiar with how chatbots are being used today, not just in your industry, but also in other places where your customers are likely to encounter them. There are many examples in travel and food ordering which are quick to use and show how different styles of chat interfaces work. Learn how your customers use messaging applications, not just to communicate with your company but as part of their digital lives.

Assess the potential in your organisation

If you already use chat or messaging in your customer service organization, run a diagnostic assessment on the chat histories to determine the likely number and type of customer problems you could address with a chatbot. If you do not already use chat or messaging, carry out other analyses, for example on call logs, social forums or email histories, to determine what sort of issues could be resolved via chatbots.

Plan and run a pilot

Pick a set of use cases to trial with a chatbot. Run the pilot with experienced human agents alongside the chatbot, to train it and handle more complicated scenarios. Use the pilot to learn what type of interactions work best with your customers, for example do they respond better to pure conversational “chats” or more directed conversations with buttons to guide responses. Use the pilot to learn how effective the chatbot is at reducing call volumes and what sort of use cases it is best suited to.



CLOSING THOUGHTS

It is true that 2016 has seen the hype around chatbots reach new heights. Even so, chatbots are becoming an increasingly important part of the digital customer service mix.

Chatbots should form a part of your digital customer service strategy, both to help you better serve customers today and to position you for the future.

The cost to pilot and learn is relatively low compared with many other initiatives, and the potential benefits are significant.

Footnotes

1. Microsoft CEO keynote speech, March 2016 <http://www.wired.co.uk/article/microsoft-build-bots-ai-cortana-keynote-conference>
2. Financial Times, September 2016 "Overhyped bots not quite ready for service"
3. <http://venturebeat.com/2016/08/15/a-short-history-of-chatbots-and-artificial-intelligence/>
4. Facebook Messenger over 1 billion Monthly Active Users (MAU) (Sept 2016): <https://newsroom.fb.com/news/2016/07/thank-you-messenger;>
WhatsApp over 1 billion MAU (Feb 2016): <https://www.facebook.com/photo.php?fbid=10153874647095011&set=a.1015073199> ;
WeChat 806 million MAU (Aug 2016) Tencent Q2 results <http://www.tencent.com/en-us/content/ir/news/2016/attachments/20160817.pdf>;
LINE 218 million MAU (Apr 2016) LINE SEC Filing 2016
5. <https://techcrunch.com/2016/04/12/facebook-messenger-and-whatsapp-combined-see-3-times-more-messages-than-sms/>
6. LINE SEC Filing, June 2016
7. Tencent Q2 Results, August 2016
8. <https://devblogs.nvidia.com/parallelforall/mocha-ji-deep-learning-julia/>
9. Accenture Digital Assistant client experience,
https://www.accenture.com/_acnmedia/Accenture/ConversionAssets/DotCom/Documents/Global/PDF/Digital_1/Accenture-Digital-Assistant-Brochure.pdf
10. The Rise of Living Services, Fjord Design and Innovation from Accenture Interactive, <https://livingservices.fjordnet.com>
11. <https://techcrunch.com/2016/09/12/messenger-bot-payments/>
12. <http://about.americanexpress.com/news/pr/2016/amex-previews-amex-bot.aspx>, 14 <https://messenger.klm.com>
14. <http://sebgroup.com/press/news/amelia-to-join-sebs-customer-service>
15. <https://www.capitalone.com/applications/alexa/>
16. <http://www.news.gatech.edu/2016/05/09/artificial-intelligence-course-creates-ai-teaching-assistant>

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