

Are chatbots taking over?

Chatbots in user assistance and multiple languages



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Are the bots taking over user assistance?

Chatbots are emerging as a communication medium between business and users as **Toni Byrd Ressaire** explains.

Whether you like those chatty messenger bots on Facebook or Slack or not, they're here to stay. And they're growing stronger.

The growing trend toward conversational UI represents a paradigm shift in how users access information. Just do a Web search for chatbot and you'll find hundreds of platforms for building your own bot and lists of bots that have thousands and millions of users. Big players such as Microsoft and IBM offer proprietary bot-building platforms, also known as conversation platforms. Companies such as SAP and Amazon have invested untold amounts of money and hours into research and development of conversational artificial intelligence (conversational AI).

The most famous (or infamous) bots serve purposes such as travel assistance, meeting planning, and virtual banking. Amazon's Alexa was designed to help users easily order products from Amazon via a 'Home' device, and now Alexa helps you control home heating, lighting and other functions.

The total number of mobile messaging app users is projected to reach 2.2 billion by 2024 (Global Industry Analysts 2019)

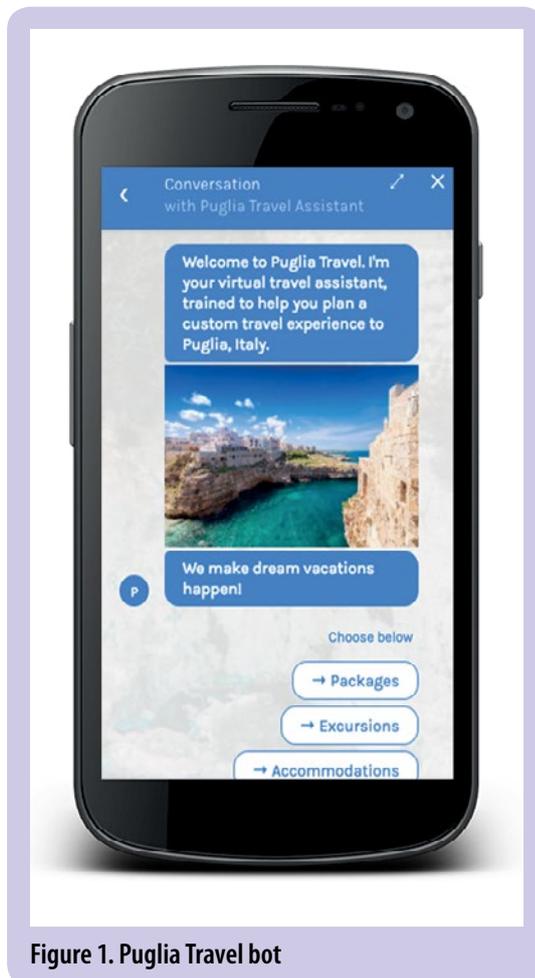


Figure 1. Puglia Travel bot

I played around with Replika.ai, a hugely successful bot that had more than 500k downloads onto Android devices in late 2017 when launched. By January 2018, the bot had more than 2 million downloads. This bot was created to be an AI companion, asking how you feel, what's going on in your life, and offering comfort and advice. I didn't find so much comfort in chatting with a bot about my personal life, but apparently many others do.

Paradigm shift

While early bots appeared to be confined to e-commerce and entertainment, chat and voice bots are rapidly making their way into every corner of the user experience landscape (see Figure 1).

Dutch airline KLM provides flight details, updates and check-in reminders via a Facebook Messenger bot. Users can engage with the bot to select or change seats and update meal preferences.

HP Print Bot on Facebook Messenger enables users to send photos and documents to a printer using a chat interface.

KidsMD is a bot from Boston Children's Hospital in the United States that enables parents to obtain health advice for their children via Amazon Alexa. Parents simply ask Alexa a basic health question and they get a response that comes from the medical expertise of one of that nation's top paediatric hospitals.

The PayPal bot works on Slack and enables users to make personal payments via the chat interface.

The CapitalOne bank bot, Eno, connects to users' bank accounts and answers questions such as account balance, bill due dates, and offers other personalised banking transactions.

More and more, users are moving from touchscreen and dedicated mobile apps to conversing with devices (see Figure 2).

Growth of messenger services

With the growth of messenger services, chat has become embedded into daily life. According to HubSpot research, Facebook Messenger and WhatsApp (now owned by Facebook) each had more than 1 billion users worldwide as of July 2017 (HubSpot 2017).

The total number of mobile messaging app users is projected to reach 2.2 billion by 2024, according to Global Industry Analysts, Inc., in a report published in January 2019 (Global Industry Analysts 2019).

According to a survey by Think with Google, SMS texting is the preferred way that teenagers connect with others, followed by messenger apps. While we might be tempted to say that this group will be our target audience in 10 years, they already are. The majority of those surveyed do all of their shopping online (Think with Google 2016).

Chat isn't just for friends and family. Increasingly, consumers are reaching out to businesses via social media and other messaging services.

As early as 2016, a study by the market research firm Vanson Bourne revealed that 9 out of 10 consumers want to talk to businesses via chat messaging, and 85 percent of consumers reported they want to receive information and reply to businesses or engage in a conversation (Twilio with Vanson Bourne 2016).

It's interesting to note that 3 out of 10 responders to the survey said they would give up phone calls to use messaging, 2 out of 10 said they would give up morning coffee over texting, and 1 out of 10 said they would give up sex to keep texting. The top three messaging app choices globally are: native SMS, Facebook Messenger and WhatsApp (the top messenger choices are the same in 2019).

That 2016 study also stated that only 48 percent of businesses were equipped to connect with their customers via messaging.

Chatbot adoption

Fast-forward to 2019. Chat and voice bots have swarmed these same messaging services that just a few years ago were showing high growth rates in surveys and market research reports. SMS, Facebook Messenger, Slack, Kik, and WeChat are just some of the platforms where bots are taking over the conversations.

Gartner predicted that 25 percent of customer service operations will use a virtual customer assistant (VCA) by 2020. Gartner also reports a 70 percent reduction in customer service inquiries after implementing a VCA, increased customer satisfaction, and a 33 percent cost savings on voice engagements (Goasduff 2018).

A 2017 report by Dimension Data, stated that virtual assistants (chatbots) and IoT would be the focus that year. This organisation operates as a consultancy and offers services for business contact centres and releases a benchmark report each year (Dimension Data 2017).

The report goes on to explain that while customers are accessing businesses via many channels, the top five channels that businesses reported they would focus on in 2017 included virtual assistants and instant messaging apps (including Web chat). These were listed in the first and second positions, respectively. For several years, this same organisation has

reported a drop in phone use as a primary point of contact for customer service.

Juniper Research reported that healthcare cost savings could reach \$3.6 billion globally by 2022 (Larner 2018).

The Derval Color Test bot was developed by Professor Diana Derval, who teaches neuromarketing at Donghua University in Shanghai and the Sorbonne Business School in Paris. The bot helps Derval research people's perception of colour nuances and sensitivity to colour contrasts.

According to Snatchbot, the platform used to develop the test, in the first three days, 3 million people took the test with the number rising to 10 million within a year (Krostick 2018).

Derval has reported her findings, based on the bot interactions, at several international conferences on sensory science and in a book published by Springer, *Designing Luxury Brands: The Science of Pleasing Customer's Senses* (Derval 2018).

Conversation as a platform

One of the benefits that appears to be emerging with the increased adoption of chatbots is improved user experience. When one also considers research that shows preference by many users to engage businesses via messaging apps, it's inevitable that virtual assistants, chatbots, VCAs, or whatever you want to call them, will infiltrate technical communications, especially where user experience is concerned.

As user expectations continue to move toward conversational interactions, traditional product support will, out of necessity, need to consider conversational UI as another form of content delivery.

There are still many challenges to moving traditional documentation to conversational platforms. The following questions represent a few concerns:

- How do we leverage existing legacy documentation?

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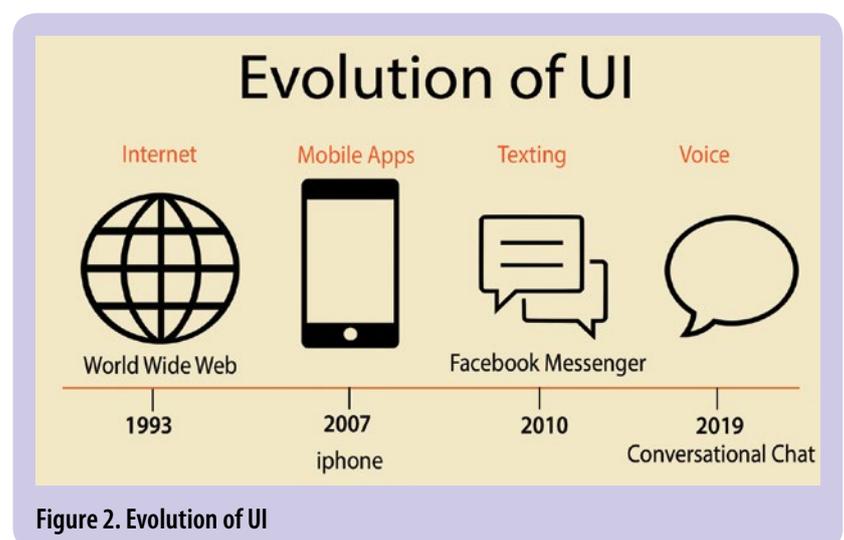


Figure 2. Evolution of UI

- What are the standardised formats that will enable widespread adoption of conversational content delivery?
- Is the technology mature enough to ensure that users receive correct and precise responses to inquiries?
- How will we manage the large amounts of data needed to train an artificially intelligent bot?

Even toddlers have intuition, while bots have none

Organisations such as the Information 4.0 Consortium (information4zero.org) are helping to place focus on some of these questions and encouraging further research into how information fits into the AI, IoT and chatbot framework, as well as how the role of information developers is evolving.

In the last decade we've witnessed a merger of the previous silos of technical documents, customer service and marketing content. Now, we are experiencing another paradigm shift from docs to conversations that takes into account the previous shift.

When users engage a business bot, they don't care which department originated the content. They have questions and they want answers. Marketing, pre-sales, sales, and customer support content are all part of the conversation.

Pitfalls

Almost every digital market research study since 2017 has included some survey and predictions about chatbots, and the number of businesses employing chatbots has increased exponentially in the last two years. The rise of the chatbots has been fast and furious.

But the wide, and perhaps early, adoption of chatbots has shown that the technology may not be living up to its hype.

In the last five years, we've seen dramatic advances in machine learning and Natural Language Processing (NLP) technologies. Machine learning has allowed some successful applications in areas such as visual recognition (including face and image recognition) and machines performing analytics in various industries. But, language, as it turns out, presents a steep learning curve for machines.

Despite great advances in NLP, bots are still not capable of carrying on completely human conversations. Yes, they can talk about the weather and respond accurately to questions that they have been trained to answer. And the responses do sound quite human. But ask a bot something outside its scope, and you'll not likely get a sensible response (see Figure 3).

Bots work well when scope is limited and when users ask the right questions. But here's the problem: users don't always ask the right questions.

Conversational bots require data to function. If you don't give the bot the answer, or access to a database with the answer, the bot can't conjure up a correct answer.

Bots understand words, not meaning. While NLP has made great strides, the technology still has difficulty accounting for the reality of human language. Humans ask questions and speak in a variety of ways; we use dialect, slang and colloquialisms. We start talking about one subject and suddenly change context. The human brain can manage the complexity of human language. Bots are still like toddlers trying to learn the basics.

Even toddlers have some intuition, while bots have none. Much of our understanding of the meaning of words comes from context and intuition. Bots are good at being computers.

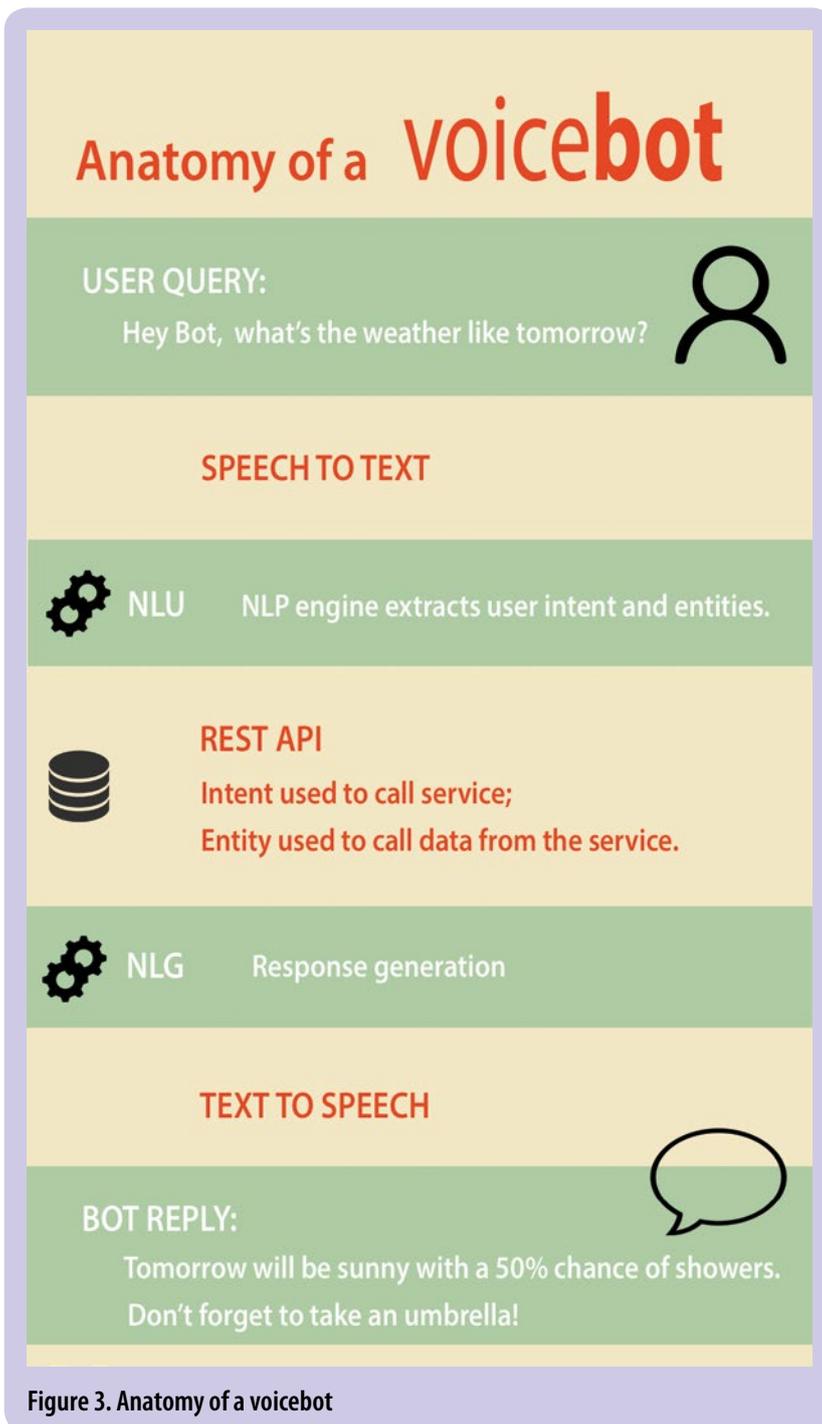


Figure 3. Anatomy of a voicebot

Bots can respond to simple commands. Bots are not good at being human.

Forrester, one of those market research companies that has made predictions about the rise of bots, took a step back in its 2019 predictions, noting that this year we may see a backlash against chatbots and AI in general. The article notes that the backlash will result from the ineffectiveness of chatbots, including poor escalation paths to reach a live agent (Kaneshige and Hong 2018).

Glossary

AI (artificial intelligence). AI is the simulation of human intelligence processes by machines, especially computer systems. <https://searchenterpriseai.techtarget.com/definition/AI-Artificial-Intelligence> (definition retrieved 28 January 2019)

Amazon Alexa. Alexa is a virtual digital assistant developed by Amazon for its Amazon Echo and Echo Dot line of computing devices. www.webopedia.com/TERM/A/alexa.html (definition retrieved 28 January 2019)

Bot. A bot (short for “robot”) is an automated program that runs over the Internet. Chatbots were one of the first types of automated programs to be called “bots” and became popular in the 1990s, with the rise of online chatrooms. <https://techterms.com/definition/bot> (definition retrieved 29 January 2019)

Chatbots. A computer program designed to simulate conversation with human users, especially over the Internet.

Information 4.0. The characteristics are:

- Molecular – no documents, just information molecules
- Dynamic – continuously updated
- Offered rather than delivered
- Ubiquitous, online, searchable and findable
- Spontaneous – triggered by contexts
- Profiled automatically.

Instant messaging (IM). An instant message is a real-time, text-based communication similar to chat. IM uses a shared software client between or among two or more people using personal computers, iPhones or other devices. www.techopedia.com/definition/402/instant-message-im (definition retrieved 29 January 2019)

IoT. The Internet of things is the network of devices such as vehicles, and home appliances that contain electronics, software, actuators, and connectivity that allows these things to connect, interact and exchange data. https://en.wikipedia.org/wiki/Internet_of_things (definition retrieved 29 January 2019)

Kik. Kik is a mobile messaging application that can be used on both android and iPhone. www.kik.com/about (accessed 29 January 2019)

Machine learning. Machine Learning is the science of getting computers to learn and act like humans do, and improve their learning over time in autonomous

The way forward

So what does all of this mean for technical communication professionals? To bot, or not to bot?

The technologies that support conversational UI will continue to advance rapidly. We’re starting to figure out when and where conversational bots will work, and when it’s best to use another type of customer engagement.

Bots will continue to infiltrate our industry, and we should come prepared. It’s not just

fashion, by feeding them data and information in the form of observations and real-world interactions. Definition from <https://emerj.com/ai-glossary-terms/what-is-machine-learning> (definition retrieved January 2019)

Natural Language Processing (NLP). Natural Language Processing is broadly defined as the automatic manipulation of natural language, like speech and text, by software. <https://machinelearningmastery.com/natural-language-processing> (definition retrieved 28 January 2019)

Slack. Slack is a collaboration hub for work, no matter what work you do. <https://slack.com> (definition retrieved 28 January 2019)

User experience (UX). The overall experience of a person using a product such as a website or computer application, especially in terms of how easy or pleasing it is to use.

User interface (UI). The means by which the user and a computer system interact, in particular the use of input devices and software.

Virtual customer assistant (VCA). A virtual customer assistant (VCA) is a business application that simulates a conversation in order to deliver information and, if advanced, takes action on behalf of the customer to perform transactions. www.gartner.com/reviews/market/virtual-customer-assistants (definition retrieved 29 January 2019)

Virtual assistant. A virtual assistant is a conversational, computer-generated character that simulates a conversation to deliver voice- or text-based information to a user via a Web, kiosk or mobile interface. A VA incorporates natural-language processing, dialogue control, domain knowledge and a visual appearance (such as photos or animation) that changes according to the content and context of the dialogue. The primary interaction methods are text-to-text, text-to-speech, speech-to-text and speech-to-speech. www.gartner.com/it-glossary/virtual-assistant-va (definition retrieved 29 January 2019)

WeChat. WeChat (Chinese: 微信; pinyin; literally: “micro-message”) is a Chinese multi-purpose messaging, social media and mobile payment app developed by Tencent. <https://en.wikipedia.org/wiki/WeChat> (definition retrieved 29 January 2019)

about learning how to design a chatbot; it's about learning how to effectively design a good user experience. And that's where many of today's bots have failed.

Developing a content strategy for a conversational chatbot requires a completely different methodology from developing a strategy for long-form documentation or online help. Consider how many different ways a conversation could branch, depending on the user's context. Conversational content strategy is multidimensional.

One of the great benefits of conversational interactions with users is the feedback loop. Training a bot with new and relevant information is necessary for better functionality, and it offers information designers the opportunity to review user questions and update the data with relevant answers, ultimately offering a richer user experience.

Developing and designing content for conversational UI requires that content professionals learn a new set of terminologies,

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understand some new technologies, and undergo a mindset shift to a new type of user engagement.

When working with chatbots, for example, it's important to understand the difference between decision-based and conversational AI frameworks. It's helpful to have a basic understanding of NLP and the role context plays in conversation.

There are as many variations in platform functionalities as there are chatbot platforms. But a basic understanding of how chatbot technology works is a good foundation for using any one of these platforms to develop conversational bots. For example, most conversational platforms include the use of *intents* and *entities* to help the bot decipher user inputs and find an appropriate response.

Universities, tasked with training the next generation of technical communication experts, will need to include new learning objectives alongside traditional documentation education. Some have already accepted the challenge. The University of Strasbourg in France (UNISTRA) has an Information 4.0 module as part of the Technical Communication and Localization master's programme. At the Cork Institute of Technology in Ireland (CIT), I teach a module in the Master of Science and Information Design and Development programme that includes traditional as well as conversational information design and development.

Chatbots need skilled information designers in order to function. While there are some bots that are creating their own responses, writing poetry and lyrics for songs, most bots retrieve predefined responses. And, of course, there is still the need for data maintenance.

So, while the bots are not going away and they do require new skill sets, technical communication professionals are, in my opinion, still best equipped to meet the challenges of this new information development age that includes these chatty little bots. **C**



Toni Byrd Ressaire is a technical communicator, trainer and consultant, specialising in software. Toni has some rather non-traditional uses for traditional technical communication tools. She's currently working with a team developing innovative tools and methodologies to answer the need for information applied to existing and new technologies (VR, AI, chatbots, etc.).

Toni is a founding member of the Information 4.0 Consortium and Tech Writers Without Borders. She is president of Info4Design, an information technology company based in France.

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