



Trendlines: Conversational AI

Beyond bots, it's how you bring your company to life

Executive summary

What does it really mean to give a voice to your brand?

You want a new way for your customers or employees to interact with your company. Is it a chatbot? A virtual agent? An intelligent application or device? And a higher-level question: What does it really mean to give a voice to your brand?

If you don't have answers to these questions, you've got company. The designers of conversational AI don't have all the answers yet, either, and the technology is maturing. But this report is a place for you to start or continue your journey.

It defines conversational AI and its key elements, identifies the latest developments, and highlights business, security and ethical issues that developers and organizations need to keep in mind when thinking about enabling conversational AI capabilities. It provides principles to guide you on your journey. It's the latest in the [Avanade Trendlines](#) series on emerging trends that impact the design, innovation and technology choices of large organizations.

This time it's different

We're accustomed to the continuing evolution of human/computer interactions. It started with punch cards, then text, then graphical user interfaces. Search-based paradigms became ubiquitous and search engines themselves became smarter; first requiring Boolean commands and later sporting auto-complete and natural language understanding.

But a more recent type of change in human/computer communication is of an entirely different sort: Computers, and intelligent devices of all types, *are talking back*. Moreover, they're not just providing simple, unambiguously factual answers to straightforward questions. They're offering options and suggestions, engaging in conversation, volunteering information and speaking with more human voices.

That's a huge difference from the "seek and find" informational experience provided by most websites and digital tools today. It's more human. It's conversation, based on each party taking a turn, adding new thoughts to the sum of information with each contribution, and moving the conversation forward.

A person, in conversation, has a voice – and that means more than making language audible; a personal voice varies by tone, word choice, pace, inflection and so much more. Conversational AI isn't there yet, but this very different type of interaction, this distinctively human way of connecting and communicating, is the goal.

It's still early, but it's possible that AI could become the new face of your brand. Conversational AI enables an always-on level of support with the potential for an enhanced customer or employee experience. Early adopter [companies like Allianz](#) achieve higher engagement and sales through these new forms of interactions. The result is that these new channels have the potential to create more meaningful experiences.



Computers, and intelligent devices of all types, are finally speaking with more human voices.



Defining conversational AI

But first, some definitions. “Conversational AI” refers to interactions driven by natural language processing and understanding that happen on a variety of platforms and channels. “Voice,” “chat,” “bots,” “assistants,” “agents” – they’re often used interchangeably, although they mean different things and have different implications.

Agent is the broadest term and typically encompasses bots and virtual assistants. Voice is an increasingly popular interface. Amazon recently led Microsoft, Baidu, Spotify and others in [creating an alliance](#) focused on improving interoperability of voice assistants. However, given its audible nature, voice is best used for public applications or hands-free scenarios. A chat UI is more conducive to exchanges that require privacy or that convey relatively complex information.

Another set of definitions surrounds the key types of virtual assistants: generic and specific. A generic assistant, such as Google Assistant or Alexa, easily handles quick questions on a variety of topics. But they needn’t be consumer oriented. At Avanade, we use [an internal, custom-designed bot, AiDA](#), which helps

employees with questions and issues as diverse as finding vacation balances, installing printers and locating experts. AiDA replaces a variety of business unit-specific bots, giving our employees a convenient, single location for information and help.

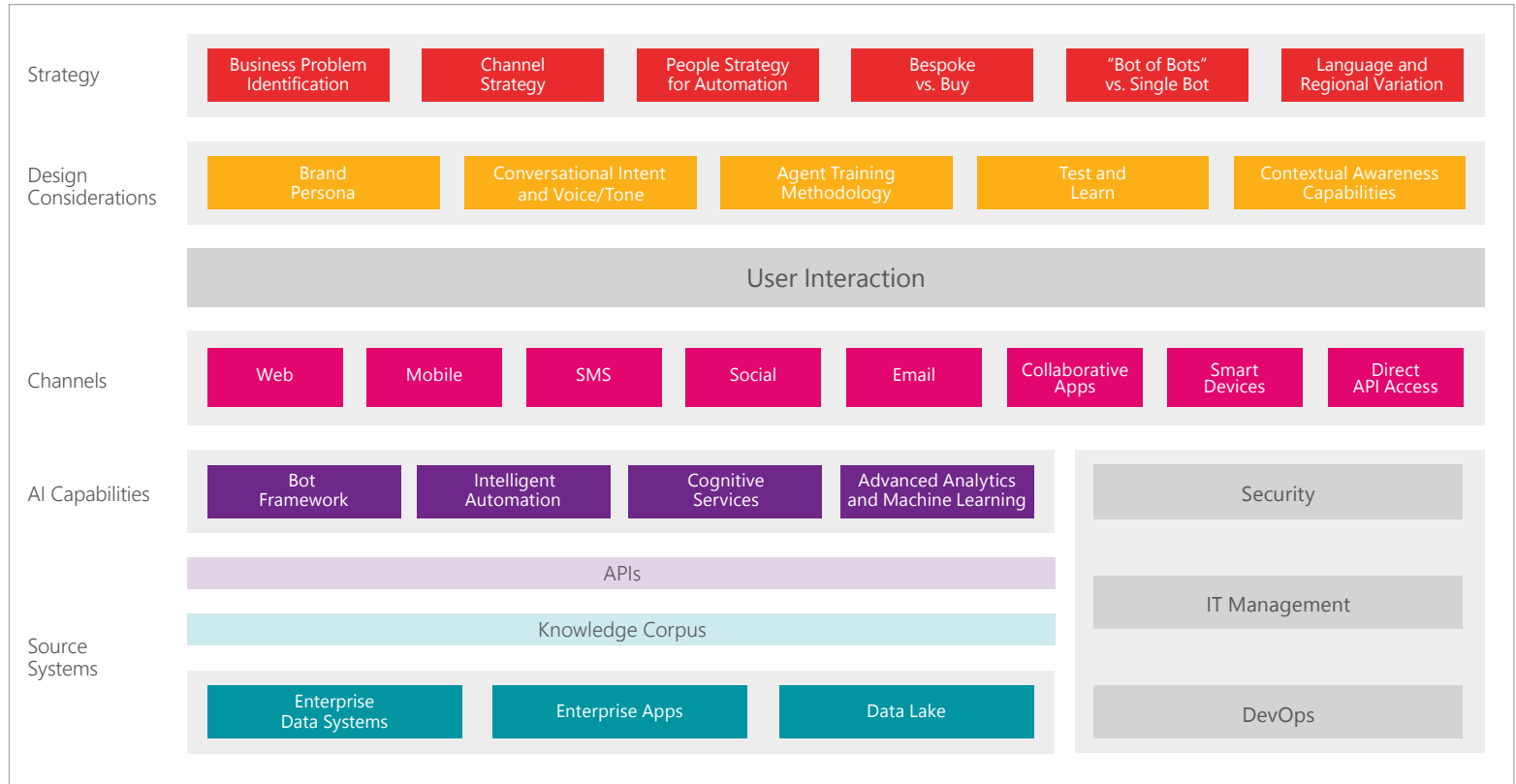
In contrast, some brands look for depth vs. breadth. They have more extensive training on a narrower band of topics – such as medical or financial information. But they don’t have to be serious. The Casper mattress company boosts its brand with the [insomnobot-3000](#), which the company describes as “a friendly, easily distracted bot designed to keep you company when you just can’t fall asleep.”

From the outset, it’s important to note that conversational AI isn’t right for every situation. It can be well suited for simple customer and employee service applications, but not necessarily for more complex requests that may require human attention. In many cases, the integration of humans with data in the process will be the appropriate option. Taking a thoughtful approach that encompasses strategy, design considerations and channels is key (see diagram, next page).

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Components of conversational AI strategy

It's important to ensure that you start with your conversational AI strategy and design considerations. While today the technology may be the focus, there's a lot more that goes into building conversational experiences.



Massive growth, massive disruption

More than 3,000 chatbots come online each week on the Microsoft Bot Framework alone, [according to Microsoft](#). Most people are familiar with digital assistants on their smartphones, of course, but [more than 20% of U.S. adults already have a smart speaker](#), and that percentage is surging. This growing ubiquity is helping to fuel the massive increase in voice-based shopping, expected to jump in the U.S. from \$2 billion to \$40 billion by 2022, [according to Forrester](#).

With that significant growth, it's no wonder that bots and digital assistants are already driving industry disruption, according to 56% of global CIOs and CTOs [surveyed by Accenture](#). They're not taking it lying down. Our own [Avanade research](#) finds 32% of global executives already implementing conversational AI and 48% planning to do so within three years.

Most of these chatbots will be deployed in fairly common, informational applications. For consumers, they'll suggest and play music and podcasts, get weather forecasts and control other smart devices in and around the home. Basic requests will be the norm for a little while longer, not necessarily because the technology isn't ready, but due to human behavior and improving conversational experiences. For businesses, they'll automate some tasks, access and retrieve information, and augment or supplant customer service provided by people. In addition, some companies are exploring "conversational commerce" by bringing the personal sales experience into the home via private [group text chats](#).

But as systems become more sophisticated, so will their uses. Given the goal of conversational AI systems such as [Replika](#) to create emotional bonds, it's not a stretch to imagine businesses using conversational AI to create such bonds as well.

This potential has tremendous application for brand management, marketing and advertising. If consumers buy sportswear and digital devices in significant part because of a coolness factor, companies will likely want virtual assistants that contribute to that factor. That's why 51% of executives in our Avanade research ranked "ensuring a proper personality" or "ensuring a connection to the brand" as a top priority for their conversational AI. It's getting easier all the time to create conversational AI that truly reflects brand tone and voice. For example, Microsoft just released an open source toolkit, called [Microsoft Icecaps](#), to train conversational AI systems in multiple personas. It's important to note that just because the capability with AI technology exists doesn't mean that it should be used. And working through a digital ethics framework is essential.

Are we taking the wrong approach?

One key to success with conversational AI is to regard the development of a virtual assistant not merely as building another technology system. There are technology factors, to be sure, but the real inspiration for successful conversational AI may come from a very different source: how we already train people – that is, children – to find their personal voices and respond to the voices of others.

Training AI systems on millions of pages of text is the equivalent of throwing an encyclopedia into a crib and expecting a baby to learn, [points out MIT's Boris Katz](#). But of course that's not how we teach children to think and speak. It's not how we teach them common sense – another skill that challenges AI systems.

Children grow up in an environment that includes sights, sounds, touch, smells, abstract ideas and physical objects. Katz suggests that these “redundant and complementary” inputs may be crucial in helping children to both “make sense out of the world and to learn language at the same time.” If so, we may be quite wrong in how we've gone about attempting to teach AI systems the same skills.

To refine the digital voice, organizations are working with voice actors to identify and test myriad nuances in physical voice, and by working with playwrights and screenwriters to create and test personas and personal voices. Currently, which platform a digital assistant runs on gets a lot of attention, although it's really a relatively unimportant factor; conversational AI should speak through multiple channels.

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Caution is warranted

The enthusiasm around conversational AI is real and warranted. But so is the caution. We're not there yet with fully successful solutions and important hurdles must be overcome before we are. Also, as we noted earlier, conversational AI isn't right for every business scenario.

Traditional AI remains largely inquiry based rather than truly conversational. Ask a search engine for an answer and you'll get 100, or 100,000, answers, ranked by likely relevance. Ask a friend, colleague or customer representative and that deluge is the last thing you want; you want one answer or a few options. Ask a voice assistant like Alexa or Siri and a search-engine-type response could send you fleeing in frustration. Even a chatbot, which can present multiple answers in text, generally shouldn't present more than a few or, ideally, more than one. The ways in which we might determine that single best answer are still to be discovered.

Coming up with the right, best response is only part of the challenge facing conversational AI systems. Understanding the people with whom they're in conversation is another. Ten people can say the same thing in different ways – using different tones, accents and speeds – even when they're using the same words; conversational AI needs to understand them all.

This is more than a matter of parsing accents. Computers understand text; people understand subtext, that is, what's left *unsaid* in a conversation – and conversational AI needs that skill too. It needs to understand understatement, overstatement, irony and sarcasm. It needs to know when people mean the precise opposite of what they say. It needs to be able to distinguish between an answer and an explanation – and to give an intelligent answer to the follow-up question, “why?” [Such deep-learning systems are under development](#), but aren't yet commercialized.

In short, it's complicated. For the company now developing, or planning to develop, its own conversational AI solution, there are immediate and practical concerns. Businesses need to be aware of the effort that's required for training such solutions and be transparent about their practices. Will it always be listening? And then it's a question of where your agents will be; an agent inadvertently hidden on an FAQ page won't get much use. At Avanade, our AiDA bot is accessible on our intranet, as an app on our laptops and as a bot on Microsoft Teams.

Another challenge is discoverability: how to let users know all the actions and responses possible with the AI system. Listing them all in a chat window would be overwhelming; reciting them via voice isn't conceivable. The relevant skills and actions have to be naturally discoverable as the user engages with the system.

You also need to consider the potential for disintermediation: Putting your brand on a third-party assistant means that your customers have to interact with that agent before they can interact with your brand – and that first interaction is one you won't control.

Security, privacy and ethical concerns

Additional areas of concern include security, privacy and ethics. Perhaps that's inevitable given the fundamental way conversational AI changes human/computer interaction. The answers to these issues are unclear. Worse, some of those engaged with these developments may not be asking – or even thinking about – the right questions.

For example, digital assistants provide answers based on the data on which they're trained. Change the data, change the algorithms, and you change the answers. What data and algorithms are we using to produce these answers – and what biases might they contain, and perpetuate? For example, [Microsoft's Xiaoice](#) AI that learned from its Twitter interactions in China "delight[ed] with its stories and conversations." But the company had to quickly retract the U.S. version, Tay, after a similar setup turned negative.

Also: Today's digital assistants are reactive or passive rather than proactive. That is, they require a wake word or phrase before they activate. But they're always awake to the extent that they're listening for the

requisite phrase. What do they do – and what do we want them to do – with what they hear? How do we balance the tradeoff between usefulness and privacy?

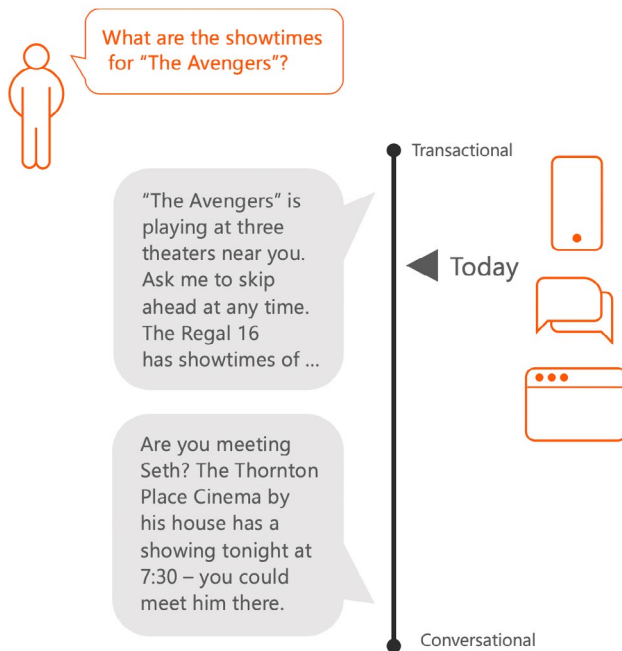
As conversational AI improves, systems will increasingly come to pass the Turing Test, that is, people may not know that they're talking with a machine rather than with a human. Is that OK or a deception and what should we do about it? Here's a related question: What happens when we give digital assistants accents and genders – and what biases do those choices reinforce? And is that how you want them representing your brand?

Increasingly human-like conversation is likely to create emotional, not merely informational, bonds with users. That's one of the goals behind [Replika](#). Its designers see it serving as a companion for the lonely and a sort of living memorial for the bereaved, among other uses that are more emotional than informational. Question: Under what circumstances is it right to encourage conversation with a machine rather than with another human?

We need answers to these new questions swirling around conversational AI. But consumers aren't optimistic about the answers. Many consumers are skeptical of chatbots and their ability to provide as great an interaction as live representatives. A slight majority of consumers (54%) expect interactions with customer service chatbots to negatively affect their quality of life, [according to Forrester](#). And [73% of Americans wouldn't go back to a chatbot after a bad experience](#).

How to get it right

Conversational AI maturity



For companies developing conversational AI interfaces, here are guiding principles to keep in mind:

Assemble the right team. Your team members should include content strategists, UX designers, data analysts and copywriters. Bring them together from the beginning so they can maximize their contributions. Everyone on the team needs to apply an [ethics lens](#), especially on what solution is being built and the data that surrounds it.

Understand your objective. It's important to define your goal clearly and specifically, because this will determine whether you use voice or chat, a specific or generic agent, and so on. Are you trying to support customer service, boost productivity or achieve another goal? For example, Spanish insurance company [Linea Directa Aseguradora turned to Avanade for a digital assistant](#) that anticipates customer needs and operates in a multichannel way to assist customers as they navigate across various services.

Understand your users. Who are your users? What's their intent, their goal? Understanding the data means knowing not just who's coming to your call center (for example) but why and with what questions. How will they discover your agent, how will they use it and how will they – and you – judge the result of the interaction?

Understand your data sources, pipeline and ethical considerations. You need to understand exactly what data is available to you, as well as the ethical considerations of using that data. As you build your conversational AI, you don't want to build in bias. Yet, that's exactly what could creep in based on the data sources you use to create conversations. Your team needs to understand and guard against this possibility. One way forward: An internally facing bot can provide a safer way to pressure test your data sources. You can probably begin with an existing knowledge base to train the agent, and for the agent to use in conversation.

Reflect your brand. Keep in mind that conversational AI is very much an exercise in brand development. The digital voice you develop – including tone, gender and persona – must be consistent with, and reinforce, your brand.

Ensure accessibility. Your audience is diverse and your interface, whether voice or chat, needs to be broadly accessible. That's a more obvious issue for voice, where pitch, accents, slang, regionalisms and other variables can make the interface more or less intelligible to your audience. But it's also an issue in chat, where the degree of formality/informality and use of jargon are accessibility factors.

Start with your employees. Even if your chatbot or voice assistant is public facing, your pilots should be with internal audiences. You want to fine-tune your agent internally before you try it out in public, to prevent negative customer impressions and media reports.

Test and repeat. You're almost certain to be surprised by some of what you learn while developing your interface. We know too little about conversational AI to get it right all the way through without experimentation. "Test and repeat" should be your watchwords as you develop your conversations. You'll likely learn something new each time you go through a test cycle.

Plan for the long haul. On the other hand, "quick and cheap" should be banished from your vocabulary as you think about conversational AI. You have decisions to make about whether to build or buy, with their traditional tradeoffs, but neither choice leads to a fast, inexpensive solution. Top brands such as Mercedes, BMW, Capital One and Bank of America have built their own voice assistants. [BoA's Erica, unveiled in 2016 and now serving 6 million customers](#), may have cost \$60 million to date. And beyond technology development, be sure to budget for other expenses, such as ongoing training and operations support.

Don't let the potential investment deter you. As conversational AI gains ground, the opportunity it provides to bring your company to life can offer a significant payoff in the long run.

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Stay informed

[Contact us](#) to learn how to start or continue along your own conversational AI journey. For more information about conversational AI and other trends that will affect you and your business over the next 12 to 18 months, visit us at [Avanade Trendlines](#).



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