

The State Of Chatbots

Pilot Chatbots As Part Of Your App+ Mobile Strategy

by Julie A. Ask, Michael Facemire, and Andrew Hogan
October 20, 2016

Why Read This Report

As smartphone communication shifts from voice to text and images, consumers are adopting messaging at an unprecedented pace. In parallel, they look to extend conversations beyond socializing with friends to customer service and shopping. Enter chatbots: programs with the potential to offer more natural ways for consumers to access services. This report explains why chatbots are not ready to meet customer expectations, but digital business professionals must still begin building the capabilities to serve consumers in conversational mobile moments.

Key Takeaways

Conversations Are The Next Interaction Layer

A confluence of factors — from high consumer adoption of messaging platforms to advancements in AI — has pushed chatbots toward being a viable, though limited, interaction layer between brands and consumers in 2016.

Humans — Not Bots — Fuel Conversations Today

Most bots aren't ready to handle the complexities of conversation and still depend on human intervention to succeed. Successful chatbots depend on core technology such as natural language processing, artificial intelligence, and machine learning — aided by thousands of iterations to drive learning.

Pursue Chatbots Within Your App+ Mobile Strategy

Evaluate whether or not to start your chatbot journey by assessing your broader portfolio of potential mobile moments, including borrowed mobile moments.

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Forrester interviewed the following companies for this report: [24]7, Chyme (Unvired), Conversocial, Facebook, Fandango, Fluid, Google, HealthTap, IBM, Icelandair, InterContinental Hotels Group (IHG), Intuit, Kik Interactive, KLM, Lark, Nexmo, Nuance Communications, Oracle, Salesforce, SkyGiraffe, Small Wins, Snapchat, SoundHound, TeleMessage, and Twilio.

Related Research Documents

[Adopt An App+ Strategy](#)

[Brief: It's Time To Provide Customer Service Through Facebook Messenger](#)

[The Future Of Mobile: From App Silos To Open Ecosystems](#)

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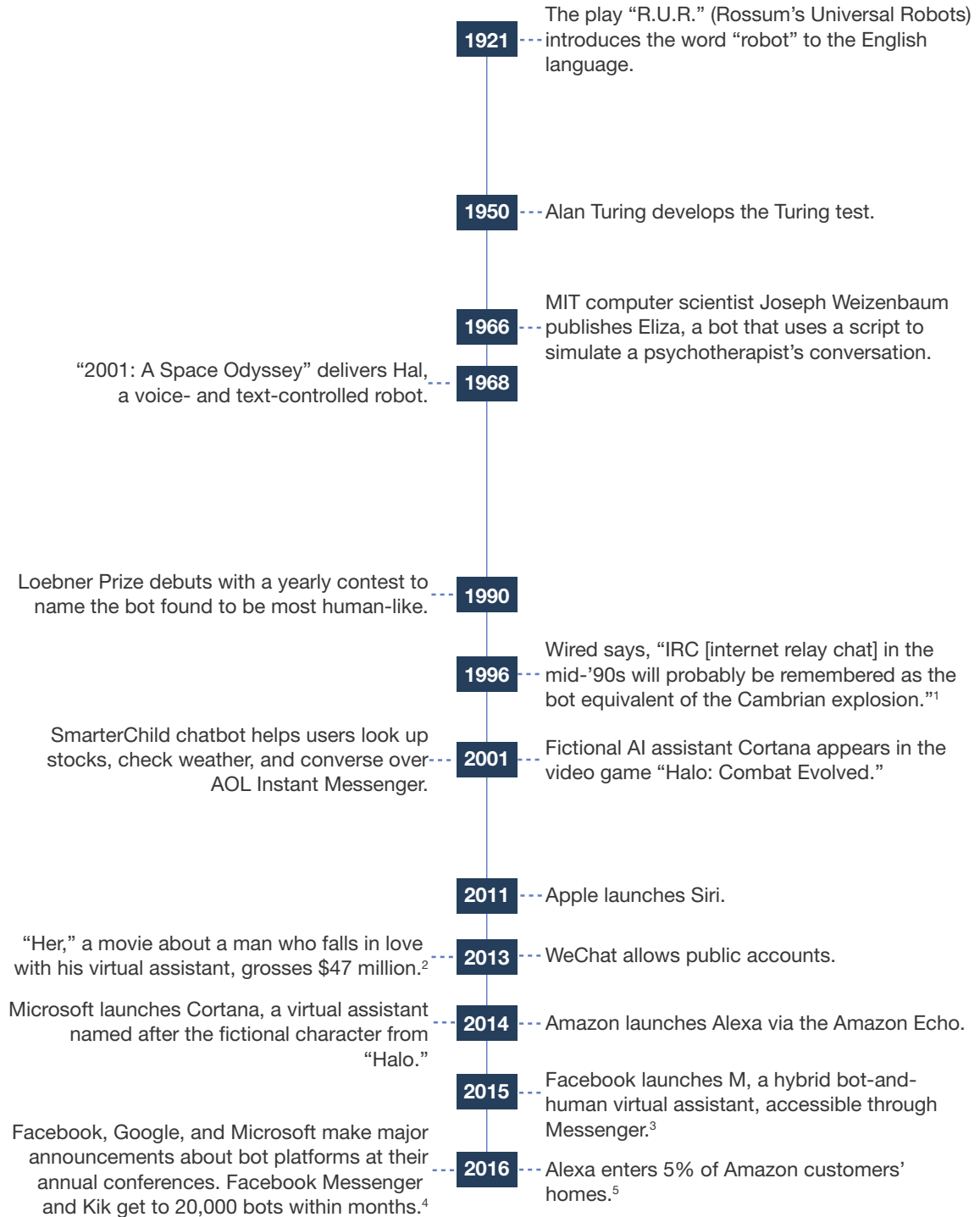
Chatbots Are Here, But They Aren't Ready To Replace Apps Or Humans

Digital business professionals should be aware that the combination of media and vendor boasts of “world-changing technology” has propelled chatbots toward the peak of inflated expectations. Ironically, the idea of chatbots is decades old, but it exploded this year when Facebook opened its Messenger platform to third-party developers (see Figure 1).¹ Need proof? Facebook Messenger had zero bots in February 2016 and over 18,000 by July 2016.² It took Apple more than seven months to reach that mark with apps.³ Kik Interactive has more than 20,000 chatbots.⁴ In the first seven months that Kik Interactive allowed Promoted Chats, its 200 million registered users exchanged 350 million messages with bots.⁵

What's a chatbot? A chatbot is a conversational interface — voice, images, or text — that streamlines tasks by allowing users to engage naturally through language.⁶ Amazon, Apple, Google, Microsoft, and Slack support chatbots and conversational interfaces.⁷ A confluence of factors propels chatbots toward being viable, though limited, interaction layers between brands and consumers in 2016.

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FIGURE 1 Chatbots Have A Long History

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FIGURE 1 Chatbots Have A Long History (Cont.)

Source:

¹ Andrew Leonard, "Bots Are Hot!" Wired, April 1, 1996 (<http://www.wired.com/1996/04/netbots/>).² "Her," IMDb.com, 2013 (<http://www.imdb.com/title/tt1798709/>).³ Jessi Hempel, "Facebook Launches M, Its Bold Answer to Siri and Cortana," Wired, August 26, 2015 (<http://www.wired.com/2015/08/facebook-launches-m-new-kind-virtual-assistant/>).⁴ Khari Johnson, "Kik has stockpiled more than 20,000 bots in the chat platform 'arms race,'" VentureBeat, August 3, 2016 (<http://venturebeat.com/2016/08/03/kik-19000-bots-chat-platform-arms-race/>).⁵ Mary Meeker, "2016 Internet Trends Report," KPCB, June 1, 2016 (<http://www.kpcb.com/blog/2016-internet-trends-report>).**Chatbots Are Poised To Fill A Need Today**

Early results from conversational interfaces show promise. Global brands ranging from Fandango to IHG, KLM, and Sephora have piloted or launched chatbots (see Figure 2). KLM delivered 50,000 boarding passes via Facebook Messenger in its first three weeks of offering the option, and it states that since March 30, 2016, it has logged more than 1 million messages, including booking confirmations, check-in notifications, boarding passes, and flight status updates. KLM's Senior Vice President of Digital, Tjalling Smit, told us that qualitative feedback also indicates that customers appreciate the experience. Chatbots are so appealing now because:

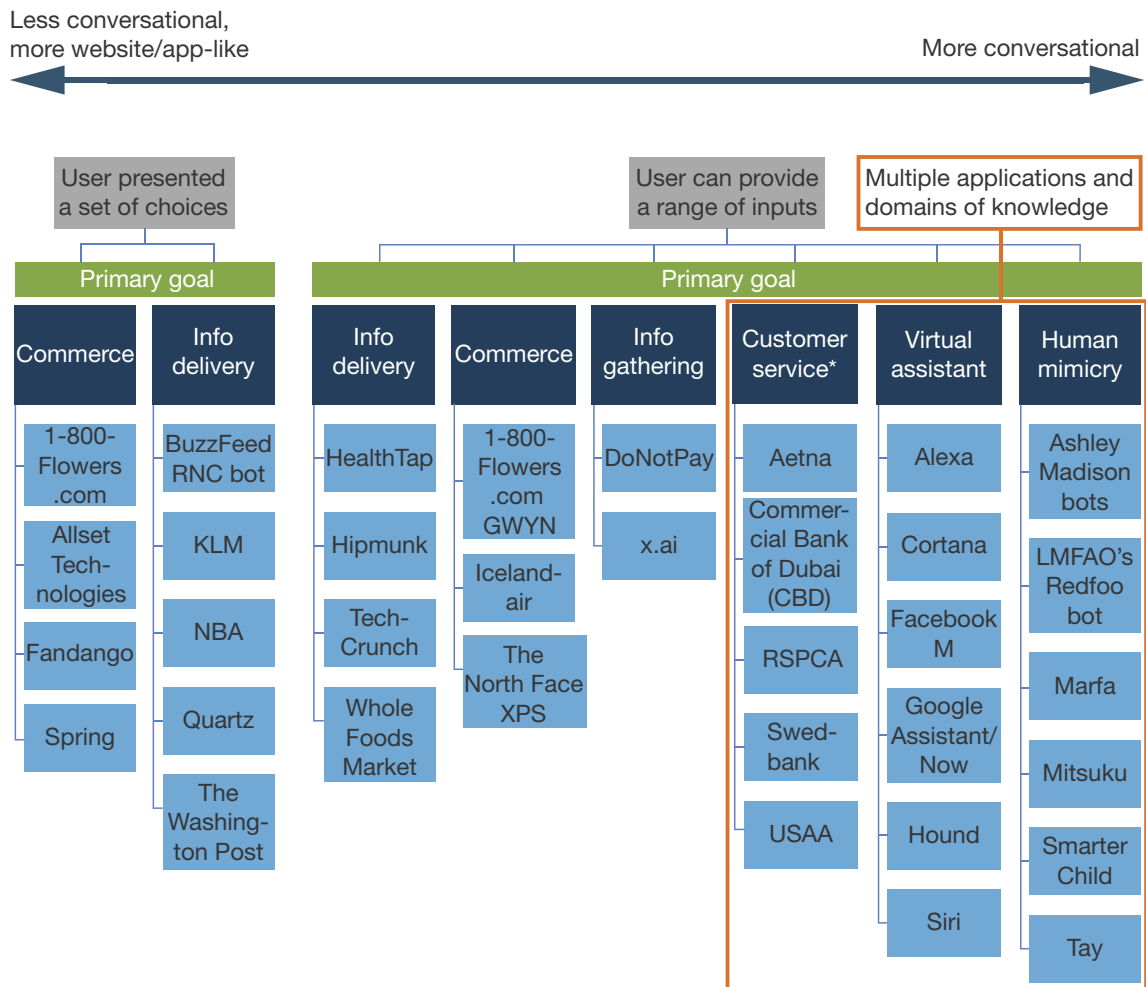
- › **Mobile moment ownership is plateauing for enterprises.** Mobile is the first screen for consumers; however, consumers use only 25 to 30 apps on average each month and spend 88% of their time in just five downloaded apps.⁸ Today, mobile moments are highly consolidated, with about 12 app categories owning 85% of mobile moments.⁹ Enterprises must borrow mobile moments from third-party platforms like WeChat to serve more customers on mobile and serve all customers more conveniently.
- › **Billions of consumers are heavy users of instant messaging platforms.** Consumers spend 78% of their time on smartphones within apps.¹⁰ The median usage of instant messaging apps is 21.47 minutes per day among users of those apps.¹¹ And the pace of adoption is accelerating. We are in an era of hyperadoption.¹² WhatsApp needed seven years to reach 1 billion monthly active users.¹³ Facebook Messenger reached the same milestone in five years.¹⁴
- › **Chatbots promise a more convenient and natural user interface.** Apps are forced. Brands and app store owners taught consumers to discover, download, and install apps from their favorite brands. Then, app makers provided efficient touch input interfaces to help consumers get things done. The experience isn't natural, but it is effective. Conversations are more natural — consumers even prefer voice to apps or web for some activities, such as getting answers to quick questions (31%) and directions (15%) (see Figure 3).

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- › **Artificial intelligence tools are widely available to developers and ready for use.** The promise of ultimate convenience from chatbots depends heavily on quickly understanding a consumer’s intent. If you thought converting text to speech was hard, considering the dialects spoken in the US alone, interpreting intent is orders of magnitude harder. AI is finally getting to the point where it can understand what is in an image or what a consumer means when she says, “I need to get to the airport.” Platforms like IBM Watson make this intelligence easily accessible to developers via open web APIs.

FIGURE 2 There Is A Wide Range Of Chatbot Applications

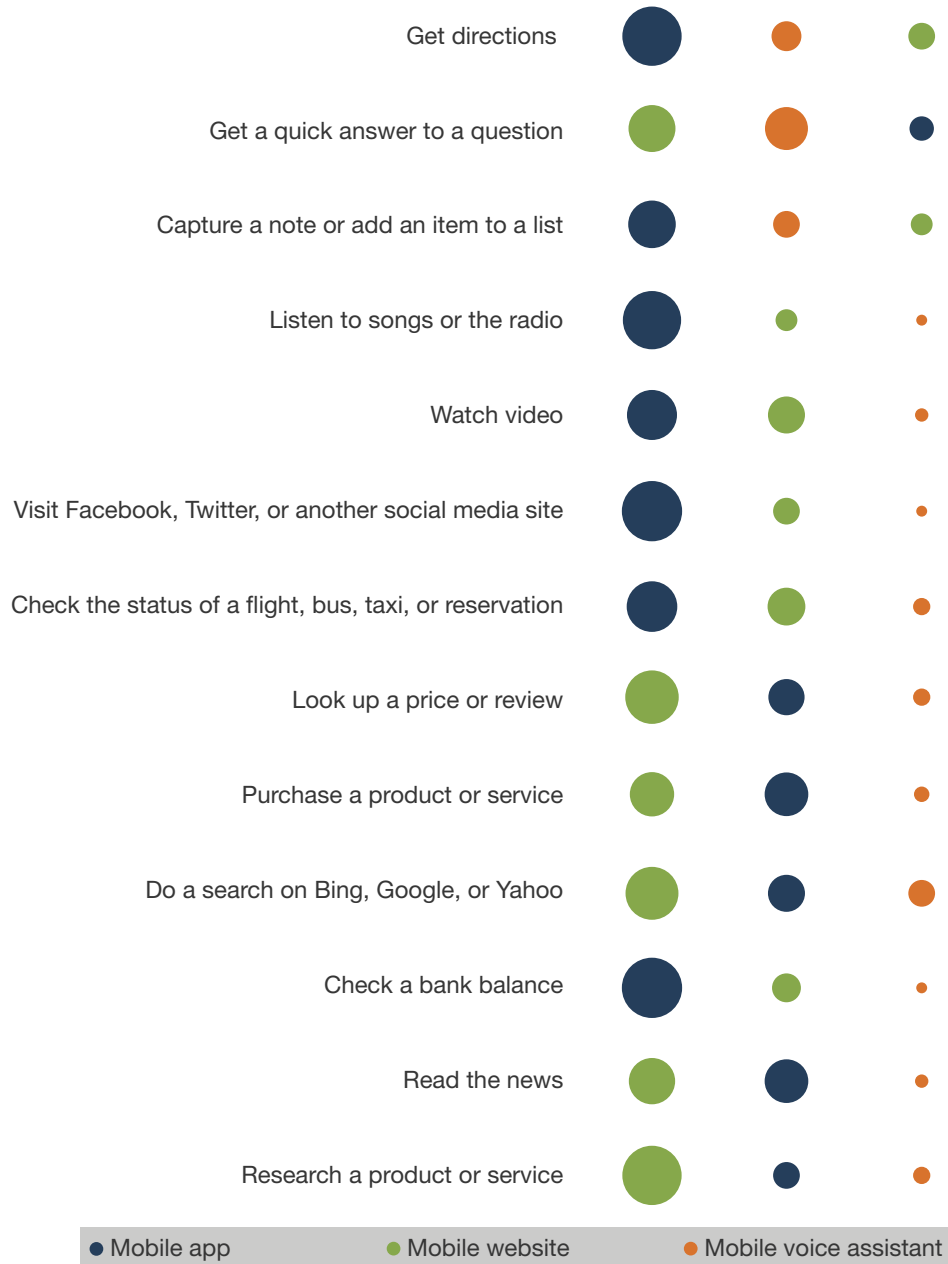


Note: These are representative examples for each category and do not include all chatbots; these are not rankings.

*Customer service solutions such as [24]7 IntelliResponse, Amelia (IPsoft), Creative Virtual, Inbenta Technologies, and Nina (Nuance Communications) offer the ability to extend customer service to messaging platforms.

FIGURE 3 Consumers Already Use Voice Or Conversations For A Wide Range Of Tasks

“What are you most likely to use when doing the following?”



Base: 825 US online adults

Source: Forrester’s Mobile Audience Online Survey, Q4 2015 (US)

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Messaging Works Today; Chatbots Not So Much

Messaging platforms today allow brands to borrow mobile moments or extend their mobile presence beyond their own apps by using conversations to engage customers on their platforms. Too many pundits use the terms “messaging” and “bots” interchangeably. The reality, though, is that chatbots are an evolution of messaging. Our collective journey toward building and utilizing chatbots that surpass the convenience of mobile apps; texting; and simple, old-fashioned phone calls is in its earliest stages. Most of these interactions today are between two humans — not a human and a machine. Humans do the heavy lifting behind the scenes, even with Facebook’s M concierge service or KLM’s Facebook Messenger customer service.¹⁵ However, today:

- › **Simple chatbots work well.** Chatbots with a narrow set of potential responses and commands succeed today. For example, DoNotPay, a chatbot that contests London parking tickets, has provided guidance to users in 250,000 cases with a 64% success rate.¹⁶
- › **Most chatbots disappoint.** Outside of narrow applications, current chatbots are hard to use and frustrate customers with outright usability failures like not setting expectations or acting in unexpected ways. These problems are severe enough that customers must work harder to use a chatbot than an app or website to complete a task. For example, 1-800-Flowers.com forgets users’ information if they try to return to their task the next day — despite displaying the previously entered data earlier in the Messenger conversation. The Spring chatbot redirects users to type “Go Shopping,” rather than the more natural language that customers use, like “shop” or “I want a shirt” (see Figure 4).
- › **AI is not magic — it depends on consumers to teach it.** AI is not ready to work miracles or generate magical experiences for customers on its own. AI-based chatbots are like seeds. You plant them, but then you need to feed them with high volumes of consumer interaction so they grow. Chat developers and designers are the gardeners: They have to tend to the chatbots and coach their growth through continuous, yet gentle, correction. These designers must also beg, coerce, and incent customers to put up with subpar experiences during the process: The learning is really slow. In an experiment called “The Characters Challenge,” a computer needed a training set of 60,000 characters to recognize handwritten characters, while a human needed just one.¹⁷

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FIGURE 4 Chatbots Still Require A Heavy Cognitive Load From Users

Most chatbots aren't great

The figure displays four screenshots of mobile chatbot conversations, each with a callout box highlighting a specific user frustration:

- Shop Spring:** A user sends "I want to buy something". The chatbot replies "We got your note. We'll be with you shortly." and "Hi there! You can type 'Go Shopping' to shop right here on Messenger!".
Callout: Spring chatbot requires specific terms.
- 1-800-Flowers.com:** A user asks for a recipient's name. The chatbot asks for the name. The user provides "Susan". The chatbot asks for the delivery address.
Callout: 1-800-Flowers loses customer context.
- Sephora:** A user asks for a tip. The chatbot asks for more details. The user provides "Dennis gross skin care". The chatbot asks for more details. The user provides "Face". The chatbot asks for more details. The user provides "Skin". The chatbot provides a tip.
Callout: Sephora relies on users for course correction.
- Sephora Virtual Artist:** A user asks for a tip. The chatbot asks for more details. The user provides "Mac pink". The chatbot asks for more details.
Callout: Sephora's Virtual Artist requires the user to learn its language.

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Pursue Chatbots As Part Of Your App+ Mobile Portfolio Strategy

Chatbots have the potential to improve information distribution, customer care, commerce, and marketing over time by making them more natural. However, multifeatured chatbots that surpass apps in convenience will be complex and depend heavily on artificial intelligence to interpret consumer intent and reduce consumer burden. We aren't there yet. Moreover, chatbots will never be a standalone solution to business challenges. They will be a part of a company's larger portfolio of digital touchpoints.

First, Create A Strategy To Deploy Chatbot Mobile Moments

Don't leap straight to cutting code. You will need a strategy first. Regardless of channel, there isn't new, magical chatbot technology. You need to know what you want to do and where before you choose technology. Start with your app+ mobile strategy, and consider how chatbots fit into your overall portfolio of experiences — both new and existing.¹⁸ Keep in mind that offering consistency of experience across customer touchpoints may demand offering chatbots in multiple channels. Decide if you will:

- › **Port an existing experience to a smaller screen.** Assess your existing assets. You may already have an online virtual assistant platform through your customer service solution, which would allow you to simply place the customer interface (e.g., chat) in a new channel, such as your app.¹⁹ If you do, then build on your existing knowledge base. Many solutions such as [24]7, Nexmo, and Nuance Communications even allow you to port the chat experience to a third-party platform. Chatbots within mobile messaging platforms may offer different context, or consumers may have different needs on the go compared with online, but at least you don't have to start from scratch.
- › **Offer access to your services through a third-party chatbot or conversational interface.** Evaluate whether simply building a skill for Amazon Echo or becoming a Google partner is good enough. Early forays into conversational interfaces involve simply permitting access to your content or services via these virtual assistants or chatbots — if you are lucky enough to be shortlisted for early integration with a well-known virtual assistant like Amazon Alexa or Google Assistant. Google, for example, named GrubHub, Spotify, and Uber, among others, as early partners. These options provide easy entry, but limited direct customer interaction, offering wide distribution at the cost of distance from your customers.²⁰
- › **Borrow mobile moments for a standalone chatbot experience.** If you want to own the conversation with your customers, you must build your own chatbot, even if you borrow the mobile moments or audience experience by placing it on a third-party platform as part of your broader app+ mobile strategy. TechCrunch, for example, pushes out five news articles daily on Facebook Messenger. Consumers can read the articles in Messenger or launch the browser for a more in-depth experience. Most, if not all, of these near-term opportunities will be on messaging platforms — either instant messaging or SMS.

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Recommendations

Back Your Chatbot Experiment With Human Intervention

Consumers may be consolidating where they spend their time on smartphones, but you can't. You need to be where your customers are. Your portfolio of mobile endpoint experiences is proliferating and will continue to do so. Conversational interfaces and chatbots will be part of that portfolio. Digital business professionals should:

- › **Either “watch and wait” or pilot chatbots.** Evaluate whether or not to start your chatbot journey by assessing your broader portfolio of potential mobile moments, including borrowed mobile moments. Few consumers use chatbots today, and the technology is extremely immature. Pilot if you have the patience, budget, and bandwidth to roll up your sleeves and experiment on platforms that will only marginally improve your customer experience within very narrow use cases. Even Facebook's Mark Zuckerberg tried to set expectations, saying, “We are on the front end of a 10-year journey.” If you do move forward, time spent today is not wasted. Conversational interfaces will happen.
- › **Choose strategic distribution partners carefully.** Platform options range from apps with a few thousand consumers — who are trialing a service from an unknown company with a URL you can't spell — to Facebook Messenger, Kik Interactive, and Slack. Prioritize your efforts based on where your target audience spends time and is likely to adopt chatbots (think Millennials). Facebook and Google own some of the richest context and information about your customers as well as their smartphone minutes. And they just so happen to have some of the best AI chops among consumer-facing brands.
- › **Focus on narrow use cases without AI early on, and expand from there.** Don't try to reinvent your business (or even a part of your business) with bots today. Instead, experiment with noncritical business processes on chat platforms. Start simple or narrow, expand from there, and be ready to learn. Don't depend on AI early on. Build or code your bots through an iterative process as you learn what works, what consumers want, how they ask questions, and how they respond.
- › **Take a progressive approach to technology.** Progressively evolve from messaging to chatbots. Start with existing messaging or conversational processes and investments like customer service or marketing solutions, including SMS, like Radisson Blu and Trim have done.²¹ Use this as a baseline chat experience.²² Analyze engagement analytics to see how people interact with chatbots. Then use a messaging platform to engage consumers. Listen and learn. Then turn on chatbots with their corresponding AI, and develop the experience even further. Icelandair took it all on at the same time, resulting in an accelerated Facebook Messenger effort to tune both chatbot- and human-powered customer service efforts.

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- › **Use humans as a backup to meet service-level agreements.** The state of chatbots today resembles a new pet owner attempting to train a puppy to sit or fetch a ball more than it does a conversation between two adults.²³ A library of content and programmed responses (think “if-then” statements) may support some consumer requests, but humans must be in place to quickly take over chats within the context of the conversation or previous customer engagements. Both Icelandair and KLM targeted response times within hours — not seconds or minutes — and had to adjust quickly because customers expected much faster responses while chatting about last-minute details for departing flights.

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Supplemental Material

Survey Methodology

The behavioral data in this report comes from Forrester's Mobile Audience Data, our ongoing smartphone and tablet behavioral tracking panels in the US. Forrester uses Research Now's passive meter tracking technology on an ongoing basis to capture and record all smartphone behaviors and, for a subset of the panel, tablet behaviors. The behavioral tracking panel in the US is weighted to be representative of online smartphone owners. Each of the panelists downloaded an application that runs a passive metering technology to measure what people do in their daily lives on their smartphones and tablets. Panelists are monetarily incentivized on a monthly basis for their participation in Forrester's behavioral tracking study. We track behavior on Android- and iOS-supported devices for apps that communicate with web servers, with the exception of preinstalled (native) email and messaging apps. We collect URL website data from native web browsers that come preinstalled on a user's smartphone/tablet at the truncated URL level. For non-native (downloaded) web browser apps, we do not collect URL behavior.

We apply data cleaning rules to eliminate outliers, including individual session cleaning, extremely heavy user sessions, minimum usage sessions, and extreme user daily aggregated single-app usage and total app usage. We remove certain native applications that are part of the back-end process. We calculate all behavioral metrics per month and average equally across months for the date range.

Additionally, for Forrester's Mobile Audience Online Survey, Q4 2015 (US), a subset of 825 panelists answered survey questions about their app and mobile web behaviors, preferences, and attitudes. All data displayed has a sample size of more than 30 participants. We do not deem any data with a sample size of fewer than 30 as statistically representative of a general population. For more information on how the behavioral tracking data is cleaned and processed, please contact data@forrester.com.

Companies Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

[24]7	Google
Chyme (Unvired)	HealthTap
Conversocial	IBM
Facebook	Icelandair
Fandango	InterContinental Hotels Group (IHG)
Fluid	Intuit

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Kik Interactive	SkyGiraffe
KLM	Small Wins
Lark	Snapchat
Nexmo	SoundHound
Nuance Communications	TeleMessage
Oracle	Twilio
Salesforce	

Endnotes

- ¹ Source: Tom Huddleston, Jr., "Facebook debuts Messenger Platform, will support third-party apps," Fortune, March 25, 2015 (<http://fortune.com/2015/03/25/facebook-messenger-platform/>).
- ² Reports show that both Facebook and Kik Interactive have surpassed 20,000 bots on their platforms.
Source: Steve Dent, "Facebook opens up Messenger to ad bots," Engadget, August 17, 2016 (<https://www.engadget.com/2016/08/17/facebook-opens-up-messenger-to-ad-bots/>).
Source: Khari Johnson, "Kik has stockpiled more than 20,000 bots in the chat platform 'arms race,'" VentureBeat, August 3, 2016 (<http://venturebeat.com/2016/08/03/kik-19000-bots-chat-platform-arms-race/>).
- ³ Source: Jim Dalrymple, "App Store tally: 20,000 apps in seven months," Macworld, February 10, 2009 (<http://www.macworld.com/article/1138753/appstore.html>).
- ⁴ Source: Khari Johnson, "Kik has stockpiled more than 20,000 bots in the chat platform 'arms race,'" VentureBeat, August 3, 2016 (<http://venturebeat.com/2016/08/03/kik-19000-bots-chat-platform-arms-race/>).
- ⁵ Source: Josh Robert Nay, "Kik Bots: More than 350 million Promoted Chat messages have been sent and received," TruTower, May 29, 2015 (<http://www.trutower.com/2015/05/29/kik-bot-promoted-chat-accounts-38210/>).
- ⁶ As Phil Libin, managing director at General Catalyst and co-founder of Evernote, said, "The new generation of conversational products is going to be much more natural and frictionless than the apps they replace. Ideally, there won't be a need for onboarding, or training, or support, outside of the product itself. Learning how to use a product won't be a separate step from just using it. Nothing will feel like filling out a form . . . Conversational products will be made to fit neatly into the ways our brains naturally want to think and work and play and be productive."
Source: Phil Libin, "A Charge of Bots — The Tech World As We Know It Is About To Be Rewritten," Medium, April 8, 2016 (<https://medium.com/@plibin/a-charge-of-bots-9ee33bb3b868#.uyzde4pch>).
- ⁷ Source: Matthew Lynley, "Google unveils Google Assistant, a virtual assistant that's a big upgrade to Google Now," TechCrunch, May 18, 2016 (<https://techcrunch.com/2016/05/18/google-unveils-google-assistant-a-big-upgrade-to-google-now/>).
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Source: Jordan Novet, "Apple's response to the chatbot craze doesn't involve any chatbots," VentureBeat, June 13, 2016 (<http://venturebeat.com/2016/06/13/apple-chatbots-imessage-apps/>).

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Source: Klint Finley, “Slack is investing \$80 million in Slack bot startups,” Wired, December 15, 2015 (<https://www.wired.com/2015/12/slack-is-investing-80-million-in-slack-bot-startups/>).

⁸ For more information on consumers’ use of non-native mobile applications, see the “[Your Customers Will Not Download Your App](#)” Forrester report.

⁹ Shopping, travel, and banking apps own only 7% to 8% of consumers’ 200 average daily mobile moments in the US. For more information, see the “[Your Customers Will Not Download Your App](#)” Forrester report.

For more information on how and where consumers spend their time on smartphones, see the “[Your Customers Will Not Download Your App](#)” Forrester report.

¹⁰ For more information, see the “[Your Customers Will Not Download Your App](#)” Forrester report.

¹¹ For more information, see the “[Your Customers Will Not Download Your App](#)” Forrester report.

¹² For more information, see the “[Brief: Measuring Hyperadoption](#)” Forrester report.

¹³ WhatsApp launched in January 2010. Source: Ken Yeung, “WhatsApp passes 1 billion monthly active users,” VentureBeat, February 1, 2016 (<http://venturebeat.com/2016/02/01/whatsapp-passes-1-billion-monthly-active-users/>).

¹⁴ Source: Josh Constine, “How Facebook Messenger clawed its way to 1 billion users,” TechCrunch, July 20, 2016 (<https://techcrunch.com/2016/07/20/one-billion-messengers/>).

¹⁵ For more information, see the “[Brief: It’s Time To Provide Customer Service Through Facebook Messenger](#)” Forrester report.

¹⁶ Source: Khari Johnson, “The DoNotPay bot has beaten 160,000 traffic tickets — and counting,” VentureBeat, June 27, 2016 (<http://venturebeat.com/2016/06/27/donotpay-traffic-lawyer-bot/>).

¹⁷ Source: Brenden M. Lake, Tomer D. Ullman, Joshua B. Tenenbaum, and Samuel J. Gershman, “Building Machines That Learn and Think Like People,” Cornell University Library, May 7, 2016 (<https://arxiv.org/pdf/1604.00289v2.pdf>).

¹⁸ For more information on how to move beyond apps to win, serve, and retain your customers, see the “[Adopt An App+ Strategy](#)” Forrester report.

¹⁹ Existing customer service solutions such as [24]7, Aspect Software, Creative Virtual, IPsoft, and Nuance Communications offer the ability to deliver answers from a knowledge base using a chatbot format. For more information, see the “[Brief: It’s Time To Provide Customer Service Through Facebook Messenger](#)” Forrester report.

²⁰ For more on intelligent agents, see the “[The Rise Of Intelligent Agents](#)” Forrester report.

²¹ Trim provides budget advice and subscription cancellation recommendations through SMS and Facebook Messenger that have saved its users more than \$6 million. Aspect Software built a chatbot that could be accessed through SMS or a range of other channels for the Radisson Blu Edwardian in London.

Source: Khari Johnson, “Personal finance bot Trim says it’s saved users \$6 million — and counting,” VentureBeat, July 31, 2016 (<http://venturebeat.com/2016/07/31/personal-finance-bot-trim-says-its-saved-users-6-million-and-counting/> amp/).

Source: Tobias Goebel, “How we Built Edward, an Artificially Intelligent, SMS Virtual Host for Radisson Blu Edwardian,” Aspect Software blog, April 7, 2016 (<http://blogs.aspect.com/how-we-built-edward-an-artificially-intelligent-sms-virtual-host-for-radisson-blu-edwardian/>).

²² Already interact with your customers over SMS or native push notifications? Leverage this investment — reuse the logic that dictates who, when, and what content you message with early bots.

²³ For more information, see the “[Brief: It’s Time To Provide Customer Service Through Facebook Messenger](#)” Forrester report.

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