The Rise of Chatbots!

Identifying Winners in the Next Wave of Human-Technology Interaction

By Jeff Houston, CFA

The chatbot industry, also known as artificial conversational entities and chat robots, is growing faster than mobile apps did in their early release states[1]. Venture investors poured more than $200M[2] into this emerging sector in 2016 and the titans of software are fully vested. For example, Cisco paid $125M on May 11, 2017 for privately-held MindMeld, a conversational AI platform that powers chatbots.

Companies employ many chatbot and messaging platform approaches. These methods vary in their focus (enterprise, consumer, messaging, and voice), breadth of applicability (horizontal or vertical-specific, such as food service), and technology employed. We at Navidar believe that each approach has its merits and describe them in this report. To help technology companies and brands establish and enhance their chatbot strategies, we also identified who we think the winners will be in each category.

For enterprise messaging, while privately-held Slack is in pole position with 180-plus chatbots, we expect that Google and Microsoft will control the most market share long-term due to synergies with their workforce productivity suites (G Suite and Office 365, respectively). On the consumer side, we think that Facebook will maintain its dominant lead—34,000 chatbots have already been created on Messenger. Turning to voice messaging, we expect the winners will be Google given its search supremacy and Amazon, which already has 6,000 “Skills” on Echo/Alexa, due to its ecommerce dominance.

As the preeminent technology investment bank in the middle corridor of the U.S., Navidar pays close attention to eye-catching statistics and trends like these. We are particularly excited about chatbots because of their potential to significantly enhance the billions of dollars enterprises have invested over the years in legacy software and more modern SaaS solutions while tying in messaging and voice technology. We are bullish about what can be accomplished and expect the momentum to continue. In this article, we examine the leading players in enterprise, consumer, messaging, voice, and chatbots. We also explore implications for mobile apps, enabling technologies, and use cases.

Chatbot and Messaging Ecosystem

Chatbot Use Cases

- Enterprise
- Collaborative Commerce
- Customer Service
- Content & Research

Enabling Technology Providers

IBM Watson, Alphabet, CONVERSABLE, api.ai, MindMeld, amazon lex, Maluuba, Microsoft Azure

Leading Messaging Platforms

Enterprise	Consumer	Voice
Slack, Microsoft Teams, Yammer, Hangouts Chat, Atlassian HipChat, Workplace by facebook	Facebook Messenger, snapchat, iMessage, WhatsApp, kik, Google Allo, SMS, Skype, WeChat	amazon alexa, amazon echo, Google Assistant, Google Home, Siri, apple tv

Tectonic Shift – Chatbots Taking Market Share from Mobile Apps

Messaging platforms for consumers (such as Facebook Messenger, Snapchat, and Kik) and enterprises (e.g., Slack, Microsoft Teams, and Cisco Sparks) are key to the mobile experience and we believe they represent the next wave of human-technology interaction. In fact, consumers now spend more time messaging than on social media[3].

Chatbots enable companies to capitalize on these conversational interfaces by intelligently messaging customers, prospects, and employees in the channels where they spend a growing percentage of their plugged-in time. Demonstrating the wide adoption of messaging, four of the top five downloaded apps are messaging platforms[4].

We expect the proliferation of chatbots to gradually reduce the need for standalone mobile apps as consumers are spending more and more time on messaging platforms. They are already beginning to take consumer-interaction market share, much like mobile apps disrupted web offerings.

Tom Hadfield, CEO of Message.io told us that "conversational interfaces will change the way we interact with the world around us, much like the graphical user interface did in the 80's, the web did in the 90's and mobile apps did more recently. Our hypothesis is that this change is happening fastest inside the enterprise, creating what we call the conversational workplace." A primary driving force, in our opinion, is that the mobile-app experience can be cumbersome as it entails downloading, searching, and engaging in multiple "touches". It is easier for users to simply have text or voice conversations with their mobile devices than to use mobile apps.

As demonstrated in the following quotes by technology leaders, we are not alone in our enthusiasm for chatbots.

> You and I will be talking to brands and companies over Facebook Messenger, WhatsApp, Telegram, Slack and elsewhere before year's end, and will find it normal. **Chris Messina of Uber**

> Bots are the new apps....people-to-people conversations, people-to-digital assistants, people- to-bots and even digital assistants-to-bots. That's the world you're going to see in the years to come. **Microsoft CEO Satya Nadella**

> I don't know anyone who likes calling a business. And no one wants to have to install a new app for every business or service that they interact with. We think you should be able to message a business, in the same way you would message a friend. **Facebook CEO Mark Zuckerberg**

> Apps are dying because intelligent conversation is the ultimate interface, and bots are the best delivery vehicle for conversation. As with all technology trends, though, remember to look behind the curtain. Without conversational intelligence on the backend powering these experiences, even the slickest looking bot is as worthless to users as the app it replaced. **Conversable CEO Ben Lamm**

Enterprise Messaging Platforms

Enterprise messaging platforms, also referred to as team collaboration applications, seek to drive organizational intelligence and enhance workplace productivity. They integrate text, voice, video, and document creation/sharing with consumer messaging features, such as emojis. Below we summarize the leading enterprise messaging platforms and their chatbot endeavors.

Slack gained success by modeling consumer messaging apps, encouraging the use of GIFS, stickers, and emojis. In just a few years, it has amassed about 5M total users, 1.5M paying, and about $200M in annual recurring revenue as well as a $3.8B valuation during its last venture round[5]. Slack enjoys first-mover advantage and a growing partnership with IBM for its Watson language and machine-learning functionality. The company earmarked $80M to fund the development of bots and more than 180 chatbots are available on Slack's app directory.

Microsoft Teams became generally available in March 2017. Microsoft is rumored to have considered acquiring Slack for $8B[6] in March 2016 but instead launched a competitive solution. We suspect the deal was aborted because of the difficulties experienced with Sharepoint and Yammer. Teams' primary advantage, in our opinion, is native integration with Microsoft's workforce productivity suite Office365 and video-conferencing solution Skype. It also has an emerging chatbot marketplace.

Cisco Spark was launched in January 2017. Spark's advantages include native integration with its 63MM+ IP phone and WebEX video endpoints.

Google Hangouts Chat was launched in March 2017. Similar to Microsoft, an advantage includes integration with its productivity suite, GSuite.

Atlassian Hipchat was acquired by Atlassian in 2012. Hipchat has experienced success with Atlassian's core software developer client base, but has yet to achieve broad adoption beyond IT departments.

Facebook Workplace was launched in October 2016. It has 1K company users and 100K groups. Workplace's advantages include shared features with the core Facebook app, such as News Feed, Groups, Live, Reactions, Search, and What's Trending posts.

Consumer Messaging Platforms

Consumers engage in conversations across multiple messaging platforms. The leading domestic players are Facebook Messenger and SnapChat, but there are several other notable players. These platforms vary in their stage of evolution and monetization paths. Before diving into chatbots, in our opinion, platforms need to achieve scale, create compelling user experiences, and generate organic interactions between consumers and businesses.

Facebook Messenger gained scale with 1B monthly active users by leveraging Facebook's large user base. Facebook is looking for chatbots to further monetize its user base by attracting businesses and advertisers. While some 34k chatbots have been built since April 2016 and user experiences are improving, the supporting technology is still nascent due in part to difficulties in understanding human requests. Demonstrating this point, Messenger chatbots are rumored to be able to answer only 30% of users' questions without assistance from human agents[7].

Snapchat gained traction by enabling friends to message without worrying about their conversations being saved. With 301M monthly active users, it has yet to open its platform for chatbots. Still, it launched Snapcash, a virtual wallet, which allows users to store their debit card on Snapchat and send money with a simple message.

WhatsApp was acquired by Facebook in October 2017 for $19B[8]. It currently has about 1.2B monthly active users. Compared with Messenger, WhatsApp is still focused on building user engagement and has less of an emphasis on providing users with multiple ways to engage. It has not yet opened its platform to Chatbot developers.

Kik has 275M monthly active users. It is one of the most popular messaging apps among teens as 40% of its users are age 13-24. In April 2016, Kik launched a chatbot store with 16 partners and tens of thousands of chatbots have been created[9].

Apple iMessage has 750M users. Its advantage is Apple's base of 660M iPhone users. iMessage Apps were launched in September 2016 and thousands have been created.

Google Allo was launched in September 2016. Its advantages include search, voice through Siri, and artificial intelligence through Google Assistant.

SMS has by far the largest user base as the service comes natively on smartphones. Its advantage is ubiquity as more than 6B people use text messaging globally. Compared with modern messaging platforms, the experience is subpar as it is based on 20-year old technology, limited to texting and basic images, mixed delivery speeds, and many mobile plans charge fees for SMS texts. Still, chatbot strategies need to incorporate SMS.

WeChat (Tencent) is the top player in Asia with 846M monthly active users. While it does not have much of a domestic presence, WeChat is worth mentioning because domestic messaging players are trying to replicate its chatbot strategies. WeChat has been successfully running Chatbots for four years, boasting thousands of chatbots.

Other noteworthy players include **Telegram** and **Line**.

Voice-Focused Platforms

Chatbots that incorporate voice require more technology than those built for just text messaging. Additional functionality necessary for voice includes speech recognition and voice synthesis. The leading players in this sector are described below.

Amazon is focused on voice through ***Echo***, which has about 20M installed units, powered by ***Alexa.*** It is building out a chatbot ecosystem, called Skills, and more than 3,000 have been created. Amazon sponsored a $100M Alexa fund to fuel voice technology innovation.

Google Home is Google's answer to Amazon Echo. It has sold about 500K Home units, which are powered by ***Google Assistant***. We view Home's advantages to be similar to Google Allo's.

Apple Siri is Apple's voice enabled digital assistant. Apple originally had a multi-year head start in voice with its acquisition of Siri in April 2010 for more than $200M. However, Amazon and Google have more than caught up. It is rumored to be working on an Amazon ECHO and Google Home rival. We suspect that AppleTV could play a role in its competitive offering.

Chatbot Technology

There are four primary technologies running behind the scenes that power chatbots.

1 Human-Like Conversations

Natural-language processing (NLP) makes sense of what users type and say while imitating human conversations and influencing user decisions. Technicians design the conversation flow of chatbots, input likely phrases and sentences, and implement systems to continually optimize.

2 Machine Learning

Applying pattern analysis to improve and modify results based on user behaviors.

3 Knowledge Access

Application program interface, API, integrations with backend systems (such as ERP, customer support, marketing, and salesforce automation) and consumer apps drive seamless access to information.

4 Messaging Channel Agnosticism

Interacting where users are (messaging apps, stand-alone apps, websites, and corporate intranets) and where they are going (e.g., Amazon Alexa). Third-party software providers, such as Message.io, have created solutions that enable Chatbots to work on any channel.

Some of the leading players powering these chatbot technologies are described below.

Conversable. The company's AI platform builds conversational flows through messaging and voice channels. It guides users to desired outcomes using a combination of machine learning and direct human involvement. The platform also features instant automated responses to deliver the next generation customer service.

MindMeld was acquired by **Cisco** for $125M on May 11, 2017. MindMeld's platform adds voice interfaces, including question-answering and language-understanding capabilities, to applications and devices.

Microsoft Azure Bot Service enables scalable AI chatbots to be added to customer-focused apps and Azure's ***Machine Learning service*** empowers developers to build predictive analytics solutions to aid decision-making. On January 13, 2017, Microsoft acquired **Maluuba**, which provides artificial intelligence startup based in Montreal, in its quest to build better, smarter artificial intelligence that can be used in the workplace

IBM Watson technology has been made available for developers building chatbots in Slack and other messaging platforms. Functionality includes NLP and machine learning. Examples include sentiment analysis, which parses speech to infer emotion, and speech plug-ins, which translate text to spoken language.

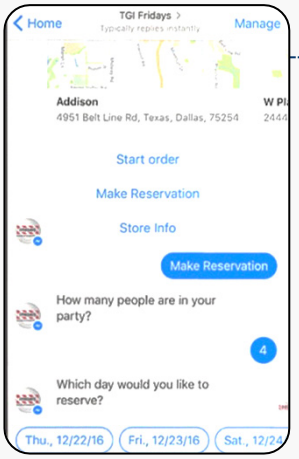
Amazon Lex launched in November 2016 and is based on AWS Artificial Intelligence (AI) services. Lex is a bot framework for developers to create chatbot Skills. These skills are able to understand natural language, turn text into speech, have conversations using voice or text, analyze images and recognize faces, objects, and scenes.

Alphabet acquired **Api.ai** in September 2016. Api.ai provides tools for developers to create chatbots.

Use Cases

Thousands of developers are creating chatbots as well as enablement tools and creative services around chatbots. We bucket chatbot use cases into four general categories: collaborative commerce, customer service, content & research, and enterprise. The first two are consumer facing applications that integrate with enterprises' backend systems. The third use case, content & research, can be applied in either an enterprise or consumer platform. The last category is enterprise/internal focused and is where VCs have directed most of their startup investments. Companies and brands either create chatbots with in-house developers or engage innovative conversational AI platform companies, such as Conversable.

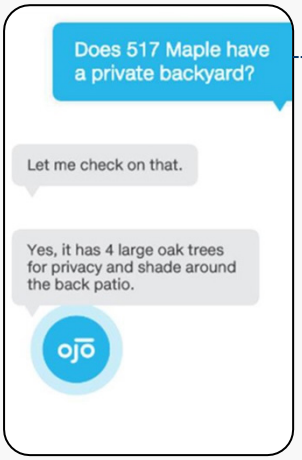
The CEO of OJO Labs, John Berkowitz, told us that "particularly in industries with long sales cycles, high consideration purchases, and fragmented groups of professionals servicing consumers, you will see bots and AI assistants emerge as solutions to create revolutionary better consumer experiences. The combination of personalization, simplicity, and deep data insights will enable these technologies to help consumers make better decisions." And the CEO of Statsbot.com, Artyom Keydunov, said, "communication over text or messengers is intuitive, but still, requires guidance for more complex tasks. That's why bots built inside messengers need to be not just textual, but more interactive. In the case of analytical bots, for example, before working with any data, the team first needs to find out which metrics are most important and how best to access them." Below is more information on these uses cases and examples of successful chatbots.



Collaborative Commerce

Sending messages to brands and retailers about what you are looking for, then selecting and buying via simplified customer journeys.

TGI Friday's chatbot, for example, facilitates reservations, orders, and FAQs via various messaging channels. (Created by Conversable)



Customer Service

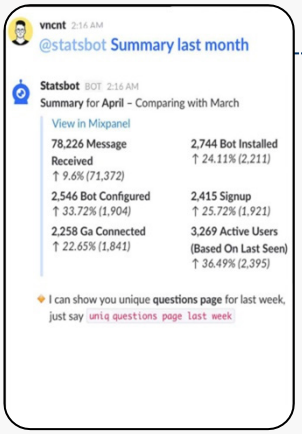
Instant response, 24/7 self-service, quick answers or routing to appropriate live agents for more complex questions, and reducing costs ($0.25 per interaction, vs $6-20 for live agents[4]).

The ojo home bot serves home buyers, enabling real-estate agents to provide 24/7 customer service. (Created by OJO Labs)

Content & Research

Personalized news alerts, weather and traffic updates, and unique content.

Alertsy provides smart news monitoring. (Messaging-platform agnosticism created by message.io)



Enterprise

More quickly access business knowledge and workflows to drive intelligent decisions.

Statsbot resides on Slack and enables operational insights, such as marketing and sales analytics. (Created by Statsbot.co)

Conclusion and Summary

With the proliferation of messaging platforms, chatbots are well positioned to continue taking market share from mobile apps as they provide enhanced user experiences. Startups and software veterans are embracing different approaches to both chatbots and messaging platforms. We believe that each has its merits. Below is a high-level summary about each approach. To help technology companies and brands establish and enhance their chatbot strategies, we identified who we think the winners will be in each category.

Google Microsoft

Enterprise messaging platforms and chatbots. These solutions seek to drive organization intelligence and enhance workplace productivity. While privately-held Slack is in pole position with 180-plus chatbots, we expect that Google and Microsoft will control the most market share long-term due to synergies with their workforce productivity suites.

Consumer messaging platforms. Consumers engage in conversations across multiple messaging platforms. We think that Facebook will maintain its dominant lead—34,000 chatbots have already been created on Messenger.

Google amazon

Voice messaging platforms and chatbots. Incorporate voice into chatbots require more technology than those built for just text messaging. We expect the three winners in this sector will be Google given its search supremacy and Amazon, which already has 6,000 “Skills” on Echo/Alexa, due to its ecommerce dominance.

IBM amazon Microsoft Google

Enabling technology. There are four primary technologies running behind the scenes that power chatbots: natural-language processing, machine learning, API integrations, and messaging channel agnosticism. We expect IBM, Amazon, Microsoft, and Google to be the leaders in enabling technology.

Use cases. Thousands of developers are creating thousands of chatbots. We categorize chatbots into four general use cases: enterprise, collaborative commerce, customer service, and content & research.

[1]Gartner [2]botfunded.com [3]BI Intelligence [4]Comscore [5]New York Times [6]TechCrunch [7]The Information [8]Forbes [9]blog.kik.com [10]OpenMarket

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