

POWER THROUGH AI AND AUTOMATION WITH CHATBOTS



Abstract

It is no secret that customer's expectations have massively changed over that last few years. With digital transformation and the constantly evolving digital landscape, customers are hyper connected across mobiles, tablets, social, and even non-digital avenues. This is changing the way enterprises do business, and has created a need to create and offer products, services, and solutions that resonate with customers personally. The gravity of this situation is huge, and it is time for companies to meet and ultimately exceed the customer's heightened expectations.

Customers expect fast responses and instant gratification across their lifecycle and experiences certainly across all touch points.

While this seems challenging, the transformation essentially needs the right technology solutions to get to the end goal.

This paper discusses a perspective on one of the components that enables better customer experience for enterprises – Chatbots. It also presents a point of view on how to transition into using Chatbots and ensuring the right solutions are being leveraged in the transformative endeavours. In our view point we illustrate the ICONIC approach which can be used to define the needs of an enterprise for automation and bots and traverse through the journey of ideating, implementing and improving the bots.

As end customers, we have all been through good and bad customer service experiences. Certainly in one format or the other, we have tried to reach out to customer service representatives across channels, and have had experiences that are time consuming, exasperating and possibly leaving us with unresolved issues. Over the years with technological advancement, new tools, products and upgrades, a lot has changed, but great customer experiences and customer service are still hard to ensure.

However, with the developments in Artificial Intelligence (AI) and all the components that come with it, enterprises can be closer to achieving planned and good customer service. A Chatbot is one such development in technology that can really enable faster and better customer service, with being a round-the-clock agent. Chatbots, are a major innovation in the field of AI – a highly responsive, interactive and engaging personality which emulates human conversations using AI techniques and resolves customer issues or needs anytime, with the ease of a chat. In most cases, Chatbots use messenger apps to converse with customers. A customer can post a question and the Chatbot replies with the right response, all executed in a conversational manner. Based on

the situation, Chatbots can learn from utterances in a conversation and further personalize the responses and learn from past connections.

The need for digital / Chatbot

Chatbots have disrupted the way human conversations pertaining to sales, marketing, customer service and other functions are perceived. Its ability to interact with the customers in a natural manner with continuous learning and adaptive abilities is a really exciting prospect for enterprises.

Over the last few years, there has been a huge technology shift in how people interact. Rapid spread of messaging technology has enabled people to use various messaging platforms (Facebook Messenger, WhatsApp, WeChat etc.). Chat is arguably the most appropriate medium, as it is quick and easy, and uses the popular messaging platforms which the customers are acquainted with. This coupled with the advancements in AI and cognitive technologies / services, mobile revolution with easier access to services like 3G/4G, have surely sparked a popular interest and accessibility in Chatbots.

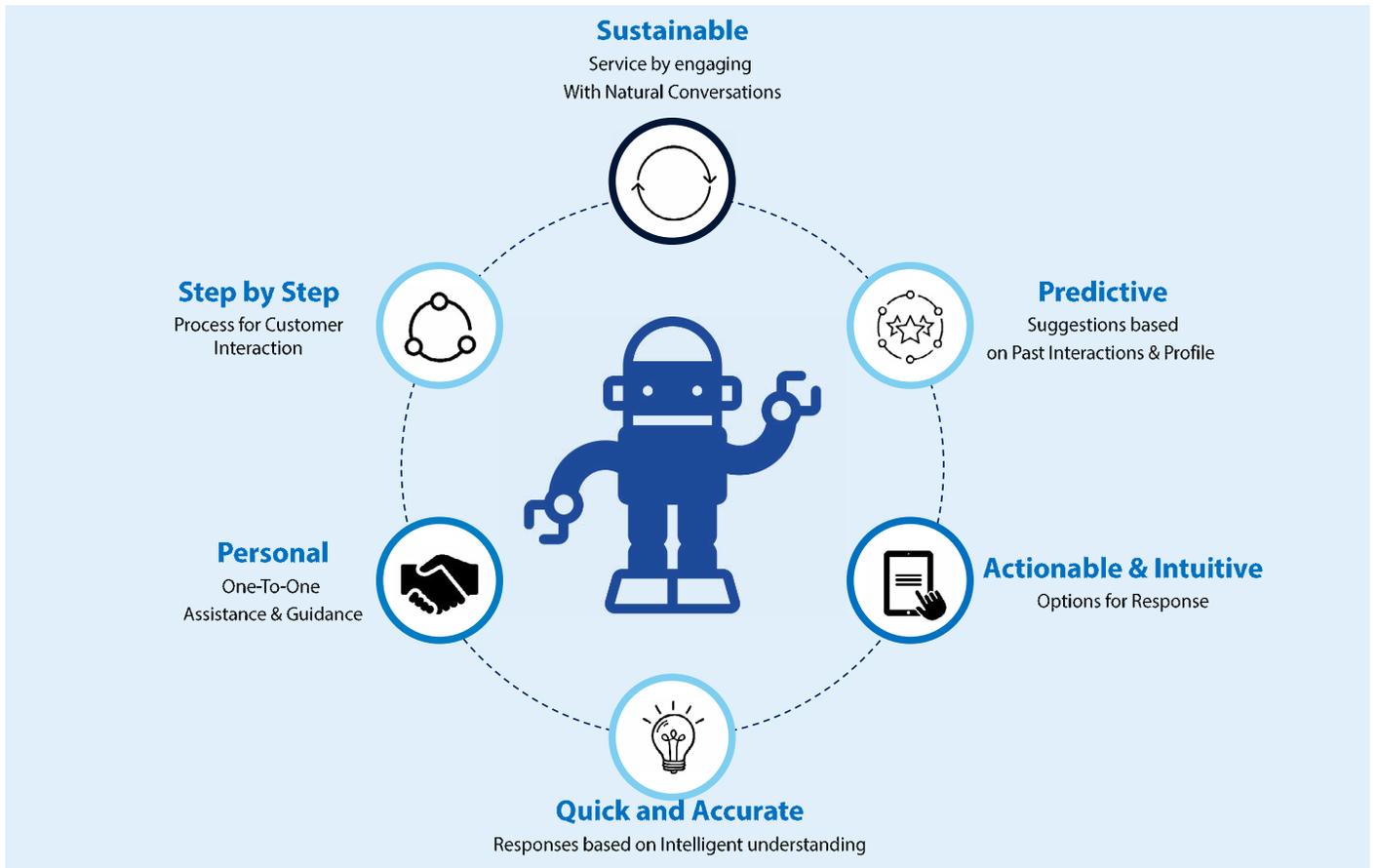
Customer expectations are very "volatile". This means, customers tend to compare

their experience of buying clothes with grocery shopping and expect the same kind of experience across all avenues which involve digital interactions. Today's customers have very high expectations and want –

- Convenience
- Quick & Accurate Responses
- Complete & Robust Resolution
- Service that is available Anytime Anywhere

All of these can be addressed with well-designed Chatbots. Given that the entire experience is conversational and on a channel of the customer's choice, simplicity and ease of use is enabled right from the start.

With the advancement of bot technology, more and more channels are being brought under the gamut of bot capabilities. This ensures that users can access customer service from a convenient channel of their choice. Also with Chatbots, the need to have a human agent to be available 24x7 is eliminated. And when coupled with artificial intelligence, it ensures accurate and empathetic responses to user messages. Here's what a Chatbot can do...



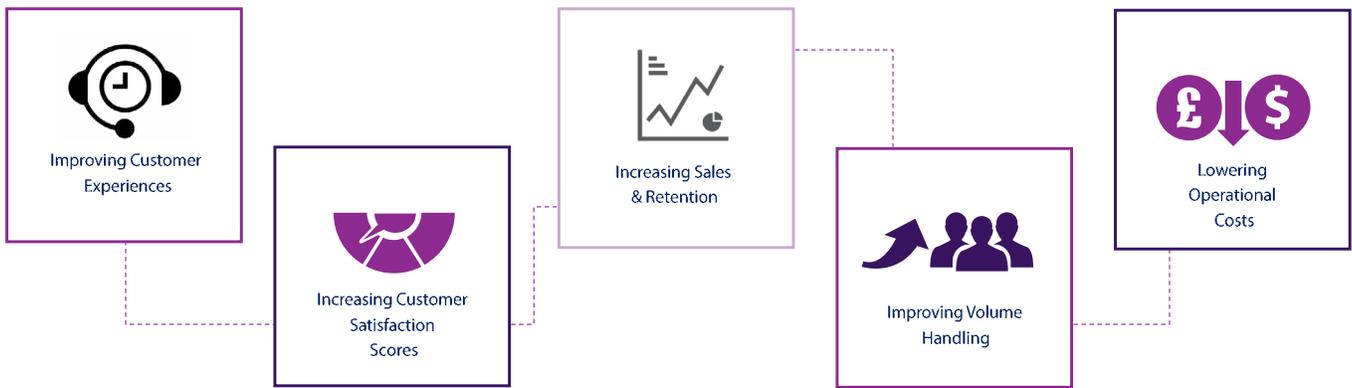
With the changing ecosystem, enterprises are starting to invest heavily in the chat economy and it has fueled the development of Chatbots across various

business functions. Most importantly, with Chatbots enterprises will have a cost effective way to interact both inside and outside the organizations. Some of the

business functions where Chatbot can be used are -

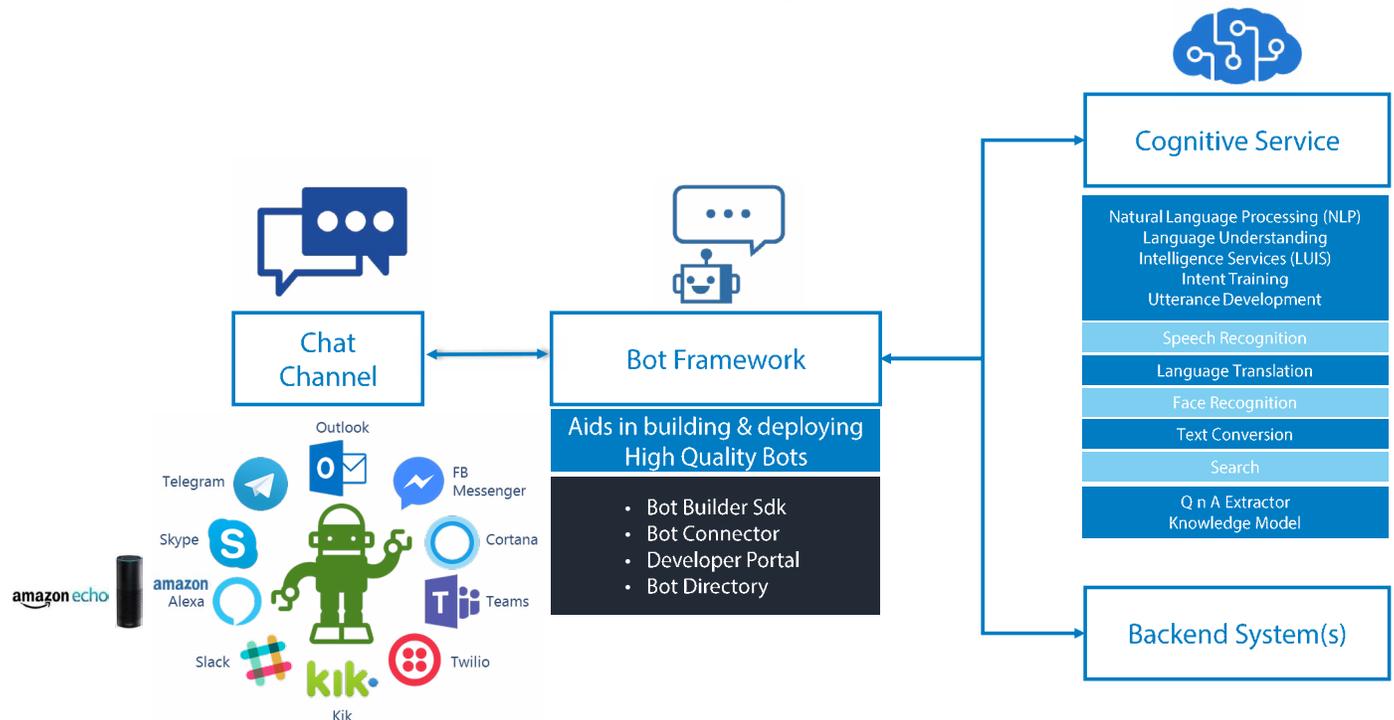


Using a Chatbot in an enterprise comes with a host of benefits. Some of the reasons why a Chatbot should be used are -



Components of a Chatbot

Building a Chatbot requires more or less the same number and the type of components irrespective of the technology landscape. The solution snapshot below depicts the components and their associations at a high level-



Typically, a Chatbot would require a set of chat channels like Skype, Web Chat, Email, Facebook messenger etc., for a user to interact with. This channel is then required to be connected to a bot service which would receive messages sent through these channels / messaging platforms. The

bot service will implement the business logic and it may also involve interacting with one or more back-end systems for performing data operations like retrieval, update etc. to achieve process automation. While it is optional, it is common to have Artificial Intelligence and Machine

Learning components as part of a Bot. It helps in making the bot intelligent and boosting its self-learning capabilities. One such component that can be used as cognitive service is NLP (Natural Language Processing) tool which aids in providing conversational intelligence to the bot.

Key elements of the Infosys framework

The implementation of Chatbots in an organization need to begin with the foremost aspect of identifying the purpose and need for the bots and the outcomes they seek to achieve. Consequently, the various intents, utterances and goals behind the Chatbots need to be thought through. This is where the ICONIC framework becomes key to a Chatbot implementation. The framework goes beyond the mere development and set up of the chatbots. It begins with advisory services on what exactly the enterprise

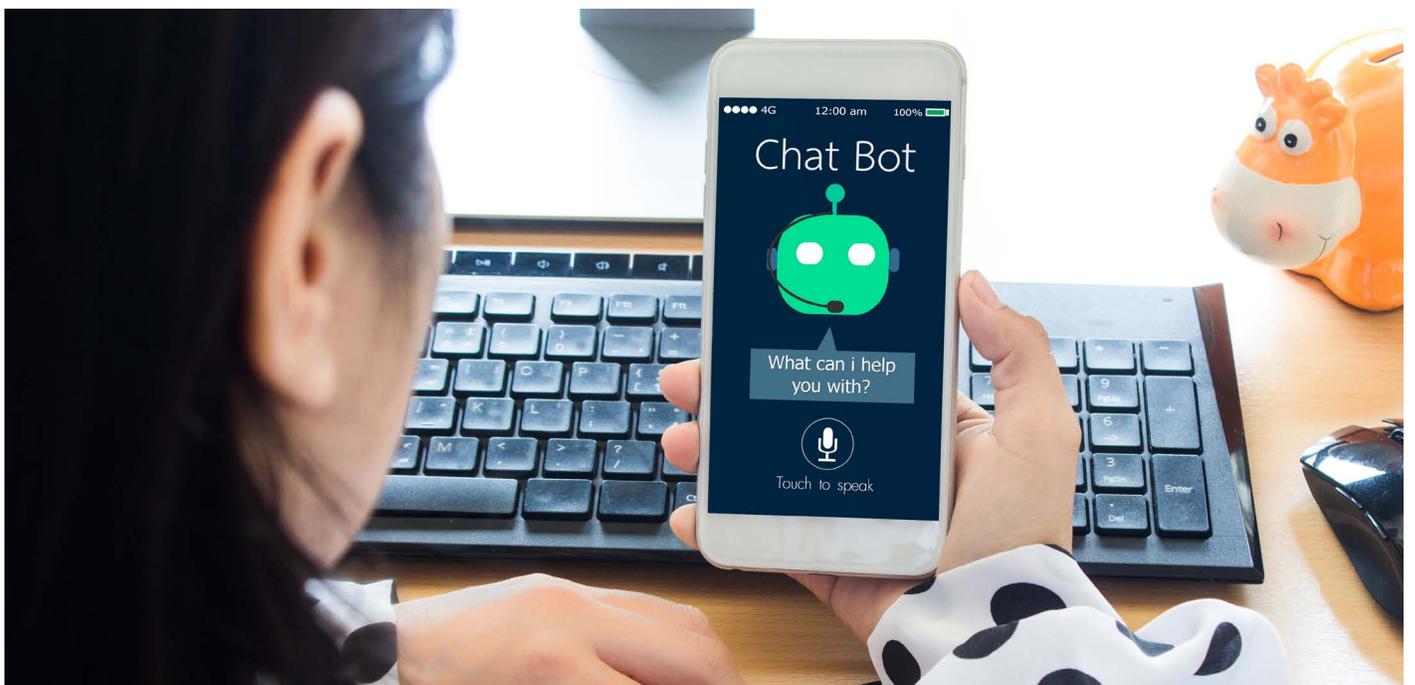
needs. An enterprise may plan for next generation features and digital disruption in their implementations for many reasons. Whatever the reason, the most critical factor for the success of such a goal is the effective implementation of the right solution/s, without affecting usability, longevity and eventually the ROI.

This is a comprehensive framework to streamline the Chatbot implementation process with a process based approach involving readiness assessment, expert

judgment and best practice based analysis, implementation and continuous improvement.

The framework leverages best practices as well as experiences from client deployments to facilitate and validate enterprise readiness, requirements and user stories, understanding and design for the implementation and long term maintenance and improvement. This is applicable to any business implementing a next generation solution like Chatbots.

Chatbots can be implemented for an organization, by leveraging the ICONIC approach and working in collaboration with the organization, to ensure useful Chatbots for the long term.



Identifying potential / goals:

The first and foremost step in this process, is to assess the readiness of the enterprise / organization for Chatbots. Once established, the true purpose of this initiative and the different business areas of potential, where this functionality can be used need to be considered. Every change / initiative is tied to an end goal and purpose. The goal of enabling Chatbots is a critical influencer in the phases that follow. The pain points and areas of improvement that an enterprise is seeking to address with the Chatbots will be gathered and documented during this phase. This could start with exploratory brainstorming sessions where tools such as 'Design Thinking' can be used to churn out ideas. This can be followed by detailed workshops with business and IT to finalize on the target goals and lines of business that have the potential to use and exploit Chatbots.

Capturing user stories:

Gathering the market requirements and the specifications to meet the business goals is a very critical step in the Chatbot journey. In addition to gathering and understanding requirements, capturing them as user stories is very essential in this context. Given that the solution is intended to be a conversational experience, looking at each and every requirement from the end user's point of view is a must. How would the customer react, what would he want, what he would not want etc., are questions that need to be pondered, earlier on in the user story definition, to arrive at a bot with the right perspective. Throughout this process, the business goals to be achieved also need to be kept in mind, so the use stories are also documented and organized in line with the end goal. Chatbots can have different personalities depending on the nature of business, the intent of the overall experience, the purpose of the bot etc. While capturing the requirements, looking at various perspectives for the user stories is also important to influence the personality of the bot.

Organizational landscape understanding:

Before taking the plunge into designing and developing the Chatbot, it is very important to have a complete understanding of the organizational landscape. The existing IT set up, infrastructure, user's settings, commonly used products, restrictions if any etc. need to be analyzed. This is important to narrow down on the messaging platform that will be used for the Chatbot as well as the setup of the Chatbot and how it will be eventually deployed. The purpose of the Chatbot is essentially to have a wider reach than the previously used methods of customer experience. To exploit this effectively, a landscape understanding and proposal of the future state needs to be carried out, coupled with an understanding of the demographics of the customers the bot will be catering to.

Natural language conversation design:

The user stories and user journeys once finalized, need to be prioritized. The prioritized user stories will then be used to direct the conversation design for the Chatbot. In addition to considering the bot's personality, the conversation flows have to be designed in such a way that processes and activities are optimized for the customers. This is essentially the stage where the user journeys are mapped to the design with steps and details. It is at this stage that the personality of the bot is also defined. Depending on the nature of business and products or services being offered as well as the goals of the bot, the personality can be defined. The script of the conversations, must be representative of actual user conversations. The conversational interface will not have pop-ups or prompts, so it is important that the scripts guides the users to accomplish the desired task. The bots would use Natural Language Programming to aid this process and with this, the bot script should be able to handle a wide range of variations in user inputs. Conversation design also involves

training the natural language processor to understand the users, focusing on the key functionality and then expanding as user data becomes available. Another critical aspect of the conversation design is to take care of the front-end and back-end components. The conversational interface resulting in action by the bot as well as integrations to back-end systems or other components to enable resultant actions or computations at the back-end need to be designed.

Implementation of the Chatbot:

This is the development stage where the bot is developed. The development of bot scripts follows an incremental process. The development of bot scripts takes place incrementally, beginning with the core functionalities and then delving into intents based on the bot personality and eventually expanding to have multiple responses.

This phase is very iterative, given the nature of the development using a conversational interface. The coding and testing of conversational statements and responses, should be tested on a messaging interface and with multiple user groups and characters, to have a range of questions and accurate responses. A library of utterances, intents, entities for the conversational bots can be accessed to reuse and customize based on the specific bot that is being developed. Templated cards available as part of the development library can also be leveraged here to enable faster development cycles. Depending on the number of messaging platforms to be used, the testing process could take more time, but the testing is recommended to be done on all the messaging platforms planned to be used, as the guidelines for each may also vary. Once the bot is developed and tested ok, it can be deployed in the hosted environment that is set up, stable and ready to use.

Continuous improvement:

The bots once deployed offer a host of information to work with. Analyzing the user's real life responses and the bot's ability to respond, might result in additional requirements and user stories that need to be addressed. With NLP, the bots also learn based on user's behavior and these responses should be tracked and analyzed. Continuous improvement of the

bot should be enabled, based on patterns in conversations that break, incorrect bot responses, additional load on users. Once the Chatbots are in use, analysis of the environment in which it is consumed, influences from changes in the business or trends, varying reactions from respondents to the conversations will also serve to generate new utterances, intents or even personality changes to be made to the bot. Eventually reporting and analysis of the

KPIs that were set out to be achieved need to be done to further measure the success and reach of the bots. This would also result in a causal analysis of the outcomes which can influence improvements to the bot design or deployment and maybe even result in extending to have more bots or different personalities and intents. This may even result in fresh ideas and requirements, taking the cycle back to the beginning of ICONIC.



Challenges in this journey

Human conversations in general may be associated with randomness, endless possibilities and past contexts. An ideal Chatbot program would have to handle all such cases. And in such a situation, a conversation designer or a developer might fall short of the different type of cases to handle, especially since, they may not know that some of these exist. While a Chatbot may fall short of such unknown situations, some of them can be considered and dealt with in advance.

User messages may contain a lot of information, expected information or no information at all. This will involve handling the user intention or intentions properly. For a Chatbot program that may involve handling multiple intents and different categories all at the same time and would need to accordingly steer the conversation forward.

It's important to analyze the user base that the bot will serve. This is of prime significance as user habits may involve usage of certain words, acronyms, slangs, previous contexts and of course typos and spelling errors. This need to be very well thought out for a successful bot experience.

According to Ilker Köksal CEO of BotAnalytics, the initial drop off is huge: "about 40% of users never get past the first text and another 25% drop off after the second message. Daily retention rate is at a paltry 1-2% and the monthly retention rate for bots isn't much better, sitting at about ~7%." Hence it's important that a bot undergoes a continuous improvement cycle involving monitoring of conversations, adding more phrases and utterances to the NLP tool and finally modifying code base to handle the evolving situation.

As mentioned earlier, conversation design is an important aspect of a Chatbot. It is directly responsible for the kind of user experience that the Chatbot user gets and is also responsible for if they will come back to the bot or not, hence directly affecting the investment and productivity. So a conversation should be designed in a manner that it resonates with the users, creates a journey that seems engaging and authentic and of course choosing an appropriate tone and pitch for the messages.

Last but not the least, there will be some unknown scenarios where the Chatbot is bound to fail hence it is important how the Chatbot is programmed to move out of such situations and take the conversation forward or pass-it-on. It may involve re-directing the user to a knowledge base or connecting the user to a human, where users may feel more comfortable and mishaps can be avoided.

Conclusion

Making an entry into the Chatbot spectrum may seem fairly simple and straight forward to accomplish today, with the varied technology and tools available. Enterprises can enable a customer service that never sleeps, quickly and efficiently. However, it is very important to enable good customer service that never sleeps and not just a rudimentary Chatbot that is available. Certainly enterprises will also have a lot of expectations from Chatbots, given the hype that surrounds this as a concept. But it is imperative that well designed and comprehensive bots are developed, to facilitate reaching the customers anywhere and anytime and via tools where they spend most of their time. As discussed in this paper, there are various aspects to take into consideration in the entire lifecycle of developing and launching a bot, and all phases of the lifecycle are important and significant towards creating a bot that works well.

The success of bots in the future relies on their ability to be intelligent, know their users, and know when to stop and most importantly to constantly learn and improve based on the experiences with users. While the true future of Chatbots is hard to predict at this point, there is no taking away from the fact that they are a significant part of digital transformation of the future. Gartner indicated that by 2020, 85% of customer interactions would be managed without a human, and bots are a huge part of this. Gartner also mentions – “The usage of Chatbots (called virtual customer assistants by Gartner) will triple through 2019 as enterprises seek to increase customer satisfaction and reduce operating costs.” The bot revolution might evolve into something very different from what we see it as today. But from where we are today and based on the potential of bots, AI and customer service that is always on, we can only infer that bots are here to stay!

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