Let's chat about smarter chatbots

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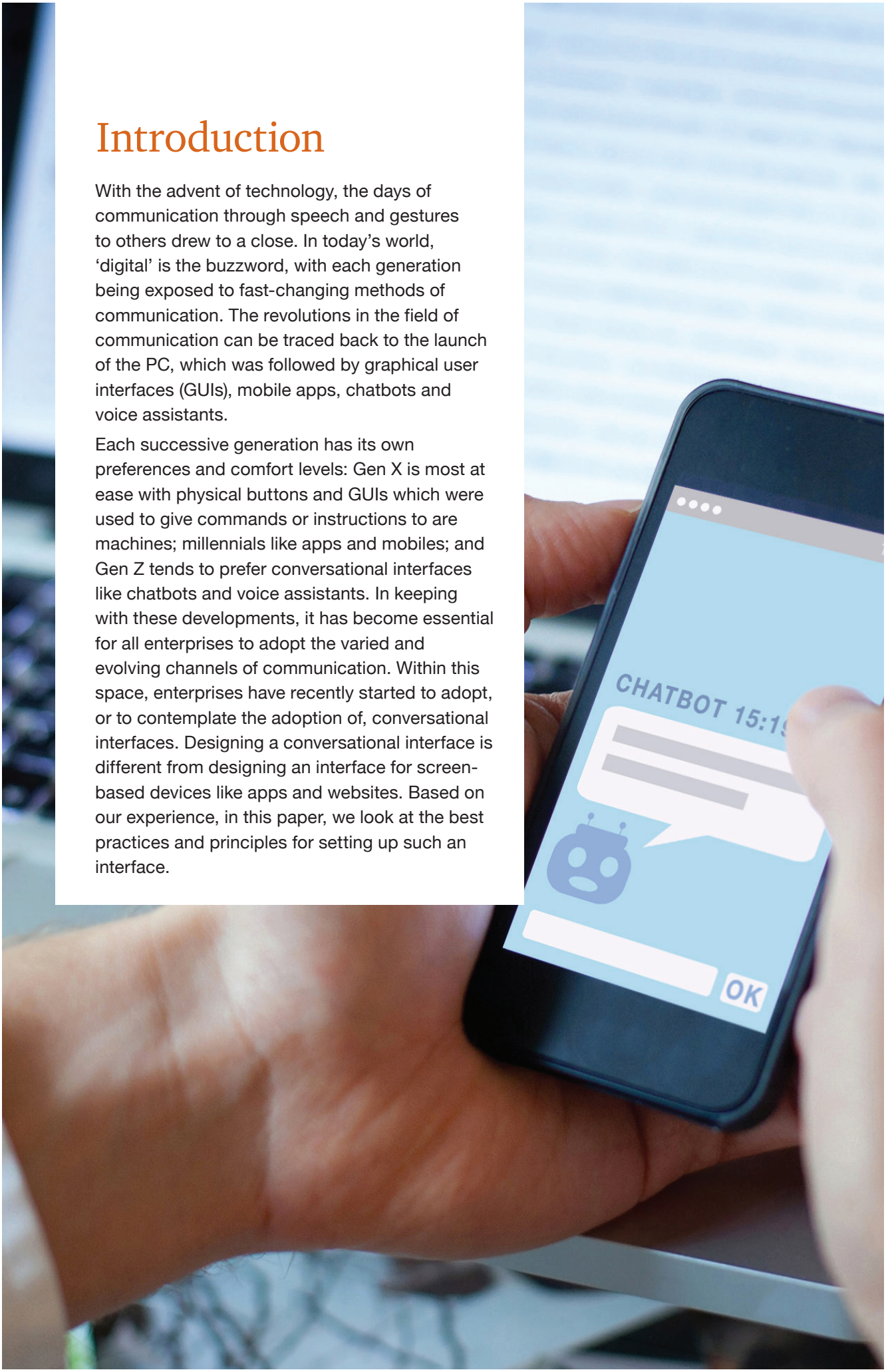
Introduction

With the advent of technology, the days of communication through speech and gestures to others drew to a close. In today's world, 'digital' is the buzzword, with each generation being exposed to fast-changing methods of communication. The revolutions in the field of communication can be traced back to the launch of the PC, which was followed by graphical user interfaces (GUIs), mobile apps, chatbots and voice assistants.

Each successive generation has its own preferences and comfort levels: Gen X is most at ease with physical buttons and GUIs which were used to give commands or instructions to are machines; millennials like apps and mobiles; and Gen Z tends to prefer conversational interfaces like chatbots and voice assistants. In keeping with these developments, it has become essential for all enterprises to adopt the varied and evolving channels of communication. Within this space, enterprises have recently started to adopt, or to contemplate the adoption of, conversational interfaces. Designing a conversational interface is different from designing an interface for screen-based devices like apps and websites. Based on our experience, in this paper, we look at the best practices and principles for setting up such an interface.



Key considerations while choosing a chatbot

1. Types of chatbots

The first step is to decide on the kind of bot you need. Identify all required features and address the implementation tasks. Doing this at the outset will help you develop a robust chatbot and, ideally, one that can deal with a majority of the issues your contact centre handles today.

FAQ/static

The FAQ chatbot, also known as the QnA chatbot, is trained on semi-structured content like FAQs, product manuals and support documents. These chatbots can be implemented for newly launched products or policy information for the employees. They can reduce support workloads for basic support queries.

Transactional

Transactional chatbots are trained on structured data and perform a limited set of operations. These chatbots interact with external systems to execute the user's requested action. These interactions with external systems can be achieved using APIs or robotic process automation (RPA).

Conversational

Conversational chatbots analyse users' requests and take actions accordingly. They are not trained to perform a limited set of operations. These chatbots are generally designed using deep learning models, and will evolve with self-learning or feedback obtained over time.

2. Language

As businesses are becoming global and customer centric, your chatbot will have to engage with customers from different latitudes and longitudes, or geographical areas. Hence, the language of your chatbot becomes critical as customers prefer their native language. The market is filled with natural language understanding (NLU) engines, but most of them support one or two different languages, with English being the most common. For local languages, creating a custom NLU engine can be a tough task. Many cloud vendors provide translation services, and embedding these in a multilingual chatbot can be a quick win.

a. Domain-specific

NLU engines and platforms are trained on general domain-labelled data for context and entity recognition. Industries from various domains have their jargon. For example, a chatbot for retail banks needs to understand all financial jargon, or a chatbot for the healthcare or pharma industry should be able to understand the names of medication as well as their generic names. Therefore, while designing a chatbot, the first exercise should be the gathering and labelling of those words for entity recognition.

b. Informal dialect

While training NLU engines, create utterances like '**what's ur name?**' and '**what's your name?**' People in different demographics use words relevant to them. Design your chatbot to handle typos and goofs. Train your chatbot to process slang, abbreviations and urban lingo. NLU models are usually trained on data like the news and Wikipedia articles. While content on these sources is generally well written, people often make grammatical mistakes while using chatbots.

c. Macaronic

Macaronic sentences are formed by mixing words from two or more languages. Two examples of macaronic languages are Hinglish and Franglish. If your chatbots are developed in a regional language or are used by multilingual users, having a macaronic utterance can bring in efficiency and a reduced error rate.

3. Voice or text?

Users of different generations or age groups are comfortable with different modes of communication. Both chat and voice have their own benefits. For example, chatbots are good when you want to use images, graphs or buttons, while voice voicebots are useful when you can't type – for instance, while you are driving or involved with tasks that do not allow you the use of your hands. Using any leading automated speech recognition (ASR) engines, you can add voice recognition ability to your chatbots.

***More on this in another PwC India paper on voice user experience**

4. Channels

The integration model of the chatbot may vary based on the target user. For example, if the chatbot is for the employees in your organisation, it is recommended to house it on the internal employee portal and run it using the organisation's chat platform. But for external users, the best practice is to extend reach by integrating your chatbot with all the top social media or messenger platforms used and interactive voice response (IVR). It's best to have multiple channels for communication. A chatbot can also be used to send push notifications to the user – for example, about the launch of a new product or a non-compliance reminder to employees. Voice-only bots can take advantage of smart voice assistants.

Key considerations while designing a chatbot

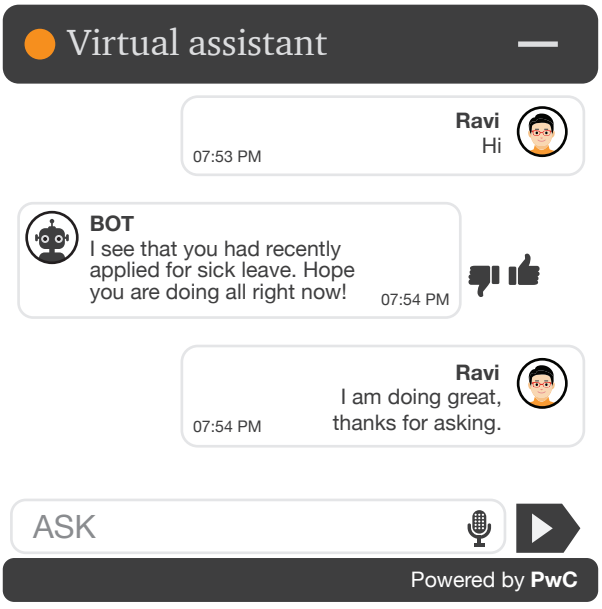
1. User experience

The conversational user interface (CUI) or voice user interface (VUI) forms the core of the user experience. For chatbots, CUI is a combination of graphical elements like links, buttons and natural conversation.

a. Personalisation

Personalisation plays a key role in the user experience of chatbots. The user experience can be enhanced by remembering past user actions and applying them in future conversations. The chatbot should also connect to the user's account to gather information about the user for personalisation. For example, if an employee asks about the holiday list, the chatbot should be able to identify the employee's location and inform her/him about location-specific holidays.

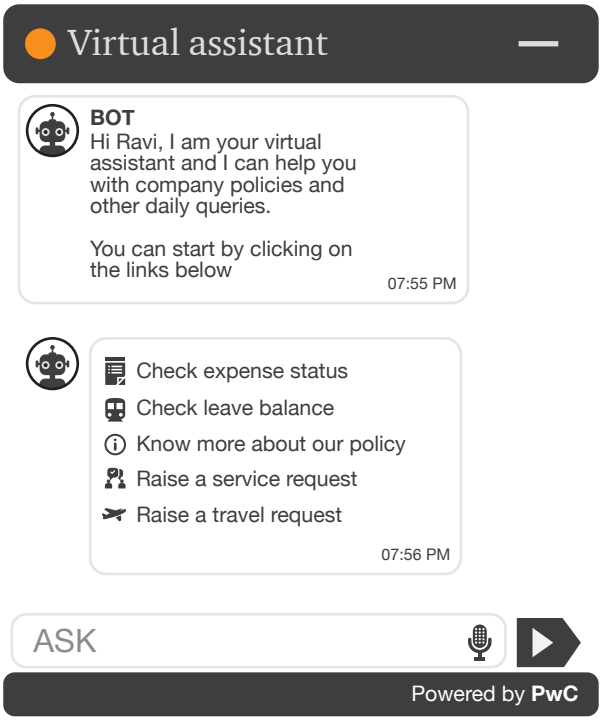
Example of personalisation



b. Set the context

The chatbot should clearly define the value it can bring to the user by specifying the tasks or activities it can perform in the beginning. Clear context setting helps the end user to understand the purpose and brings in efficiency.

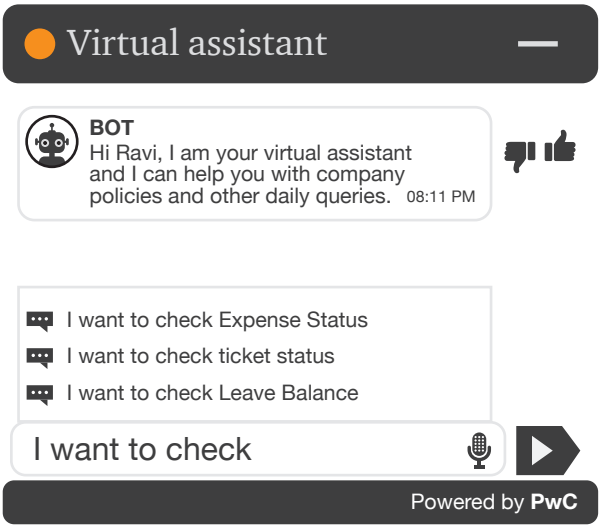
Example of context setting



c. Provide suggestions

A chatbot is designed to help users find the right information quickly. Adding a text prediction feature (completing a word/sentence even as users type) reduces the time users spend typing their queries and helps them get an answer more quickly. This also reassures users of the chatbot's ability to answer their queries.

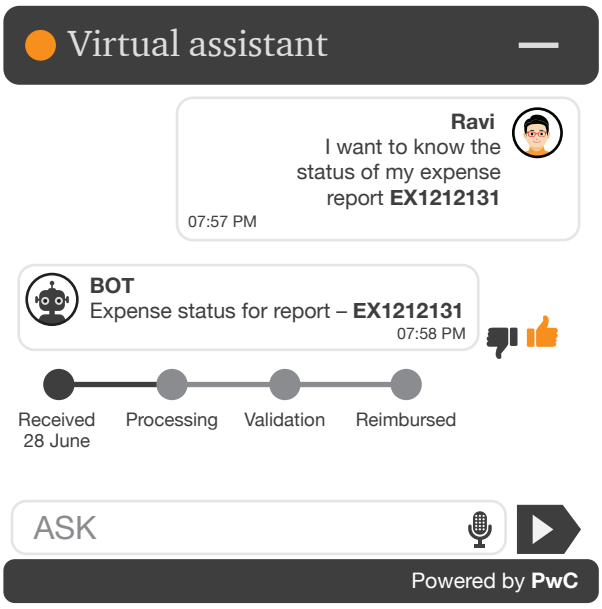
Example of Auto suggestion feature



d. Analyse user behaviour

Tracking and getting feedback around the chatbot's response can improve efficiency and the user experience. Providing 'like' or 'unlike' buttons for every response can help capture data about the accuracy of the chatbot's response. This information can be analysed and used to retrain the chatbot.

Example of user behaviour



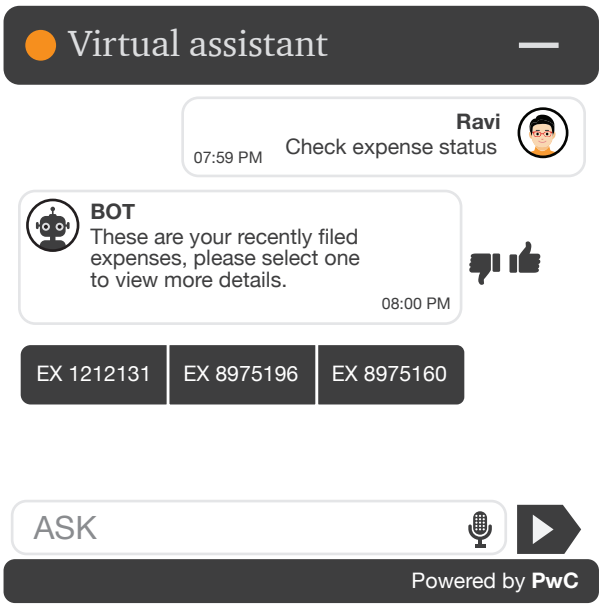
e. Multiple input formats

Each individual may have a different way of writing dates and numbers, so it is important to train your chatbot to accept all variations in formats like DD-MM-YYYY and DD/MM/YYY, or 10,000 and 10000.

f. Options

A chatbot responds in free-flow text. The likelihood of erroneous responses can be reduced by providing smart options to various user prompts/queries. For example, when the user inquires about the status of expenses, the chatbot should provide all valid expense report IDs.

Example of options



2. Conversation flow

While conversing with a human, all that must be communicated is not necessarily conveyed in words. There is a visual component involved in the form of gestures and expressions. Therefore, conversations can be unguided and their context can shift. However, when a human talks to a chatbot, this conversation must be guided. Any chatbot implementation should start from the conversation flow, and this is an important step in the design phase. The sequence of chatbot replies and questions must be meticulously thought through, without losing context.

a. Error handling

Chatbots are usually designed to serve a specific purpose. Therefore, it's not possible for them to answer all possible questions. Below are the three methods which can facilitate ease of handling:

i. Clarify the understanding

If the chatbot is not able to understand the user's request, find a similar or closest intent developed in the chatbot and suggest that to the user. For instance, the chatbot can have the 'Did you mean?' feature available in top search platforms.

ii. Remind the user about the chatbot's capabilities

If the user's request is off-topic or cannot be served by the chatbot, remind the user about the chatbot's capabilities and the activities it can perform.

iii. Handover

If the chatbot consistently provides unsuccessful responses, provide the user with a service ticket link or transfer the conversation to a human agent to improve user satisfaction and decrease the exit rate.

b. Avoid long conversations

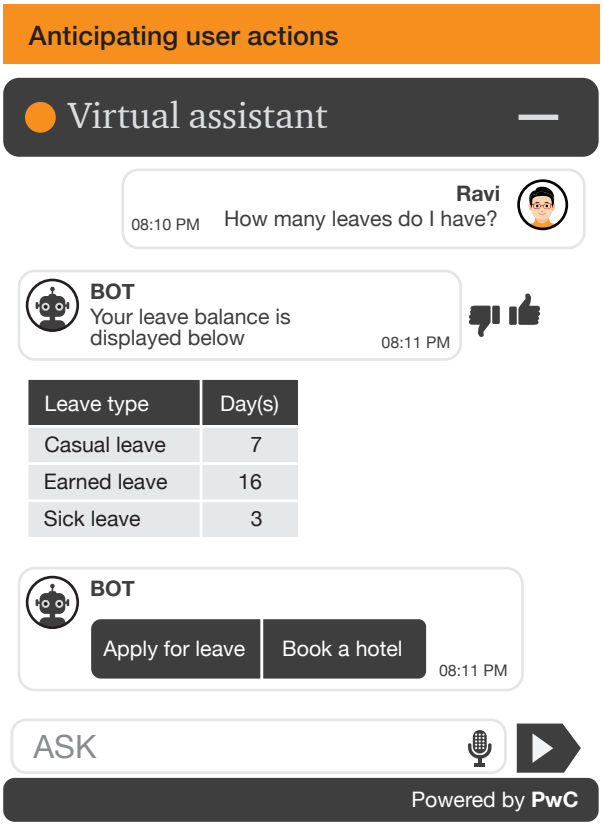
The purpose of using a chatbot is to facilitate communication that achieves an outcome. Therefore, while designing a conversation for a chatbot, ensure that it is done in a way that the outcome is arrived at using the shortest path with least inputs from the user.

c. Refrain from posing open-ended questions to the user

Avoid asking open-ended questions such as '**What's the shirt size you want**?' to users. This question is more prone to errors as users can respond in their terminology which the chatbot wouldn't understand. Questions that offer relevant options (e.g. '**Do want a small, medium or large shirt?**') can help reduce errors.

d. Anticipate user actions

Chatbots should be designed to learn and adapt from the historical and current conversation context. This context should be used to predict the user's next action and recommend relevant services or options.



3. Build in variation

When designing a voice-based chatbot, one must fall back on the standard components of a conversation between two human beings.

Assume you have a neighbour who always responds to pleasantries in the same way. You will soon tire and start avoiding having conversations with him or her. In the same way, conversations with a chatbot will get dull if its responses are repetitive and predictable. This makes variety in conversations extremely important.

Conclusion

With Gen Z and future generations having become the most important segment to address, enterprises will need to tailor their communication channels based on this segment's preference for conversation before instruction. Simply adding a chat window to an app and calling it a conversational experience is not enough. The entire experience has to be reimagined from a conversation perspective. Designing for conversation-based instruction is different from designing for screen-based instruction. There are subtle but potent differences to consider. We hope this paper will help you kick-start the journey of designing an effective chatbot.

About PwC's Intelligent Automation (IA) practice

PwC India's Intelligent Automation practice assists clients in their automation journey from strategy through execution. Conversational intelligence is a critical aspect of this automation journey, and chatbots plays a major role in it. Our Conversational Intelligence CoE helps clients at every step of their journey:

Initiation

- Build the vision and align the conversational strategy with the client's enterprise goals and objectives.
- Bring in a transformational approach with a focus on improving customer experience and loyalty.

Identification

- Our natural language understanding (NLU) professionals assess leading chat solutions to propose the optimal and best-suited platform for enterprise usage.
- Our conversational specialists assist in identifying the right internal and external use cases.

Incubation

- Build an exhaustive governance structure considering the organisation's existing technology, risk and compliance frameworks.
- Our domain and language professionals help organisations build a seamless customer conversation journey.
- Our solution architects design an architecture that helps scale across functions, channels and languages.

Industrialisation

- Create best practices to build robust, scalable solutions.
- Develop standard operating procedures and automated testing frameworks for rapid development and deployments.
- Build a continuous feedback mechanism to constantly improve accuracy and meet customer demands.

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