



10 lessons learned from building big chatbots

A guide to corporate chatbots

Legal Disclaimer

This white paper provides a summary of Sinch's view of the world of corporate chatbots.

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Introduction

In the exciting domain of chatbots, there is a lot of talk about the promise of this new technology, the changes it will bring to communication and society as a whole and whether or not the current hype is sustainable. A lot of words have been written, but very few of these come from people who have extended hands-on experience with chatbots. Sinch, as a leading provider of chat and voice bot building tools, does have this expertise.

We want to share 10 lessons with you that we have learned over 3 years of building chatbots and advising clients how to build theirs. Our experience with large and complex chatbots for market leaders across several industries (insurance, banking, telco, ...) puts us in a unique position to share these lessons learned with you and drive conversational technology forward.

- 1 A valuable chatbot remembers you. Design it in a way that it keeps data from your users across sessions and across all the ways your users talk to you.
- 2 Help your customer before they know they need any help. Reduce churn of your customers by identifying when they're in trouble by analyzing your customer data and starting new conversations.
- 3 We teach you how to design and manage a complex Natural Language Understanding (NLU) model that covers the scope of your entire organization.
- 4 Even the best NLU model will be wrong if you ask your customers confusing questions. Use the best practices of conversational design to steer your conversations in the right direction.
- 5 Building a bot is only step 1. As soon as real user feedback and usage starts trickling in, use this to further improve your bot. We show you how.
- 6 Be where your customers are. Activate the same bot on your website, in your app, and on all popular messaging channels.
- 7 A chatbot is not only a textual conversation. Be smart about where to use graphic elements to share information in a different way.
- 8 A bot can only be good if it's useful. Is your bot solving a customer problem? Is a conversation the right way to deal with this problem?
- 9 Assemble a crack team of bot builders. Invest in conversational expertise within your organization, to have people that understand both the core of your business and can translate that into a chat or voicebot.
- 10 Most often, bots are used as a virtual customer support agent. However, they can be as valuable to achieve sales or marketing goals. We share best practices for this type of chatbot use case.



Joachim Jonkers
Product Manager

In this whitepaper we will dive into these lessons, and learn how you can use them to improve the chatbots of tomorrow.

ARE YOU LISTENING?

1. Context matters

We have all been there. Many chatbots today struggle with rich conversations because they lack context. Context means being aware of what's going on around the conversation, as well as things that have happened in the past, not only in your conversations but in other applications and services your organization provides as well.

Like a good sales person or contact center agent, a good chatbot should motivate engagement and should provide a personalized experience to become smarter, more trusted and more personable. A chatbot should offer its users the right information at the right time. Or even contacting them proactively by initiating a conversation when they least expect it!



1.1. Context types and examples

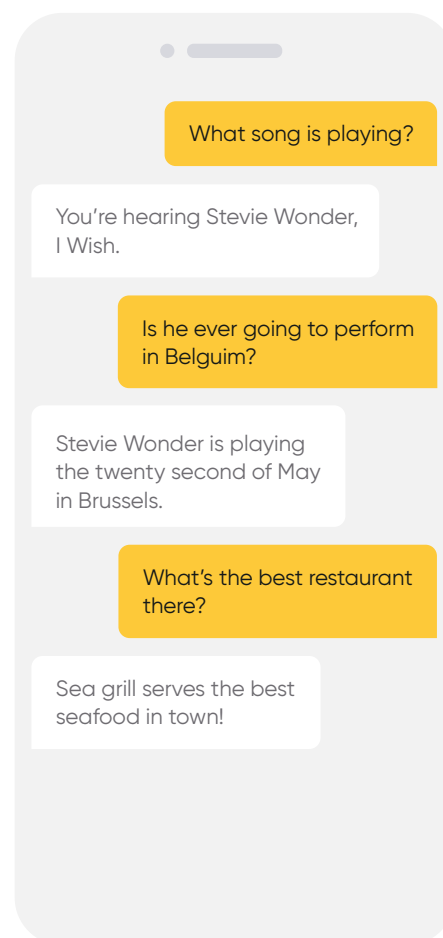
1.1.1. Current Conversation

A chatbot should keep track of information during the conversation. Without it your conversations will quickly breakdown. The chatbot knows "he" referred to Stevie Wonder and that there refers to "Brussels. This is called coreference and is an essential part of communication.

Look at how this chatbot got the context right and knows that:

- 'he' refers to Stevie Wonder
- 'there' refers to Brussels

Write sample dialogs and well-structured scenarios to think about all possible interactions. Ask your team members and colleagues the questions your chatbot would ask and transcribe it into how people would say it. It can be difficult to anticipate all the things your chatbot might need to track, but you can begin with the basics and build up based on what your users are actually saying.



Only with the right sophisticated AI, chatbots are able to:



- ✓ Motivate customer engagement
- ✓ Personalize customer experience
- ✓ Grow smarter by themselves and increase reliability
- ✓ Provide the right information at the right time, even proactively!

CO-REFERENCE is essential to a wide range of conversations, including banking. This chatbot remembers the context of:

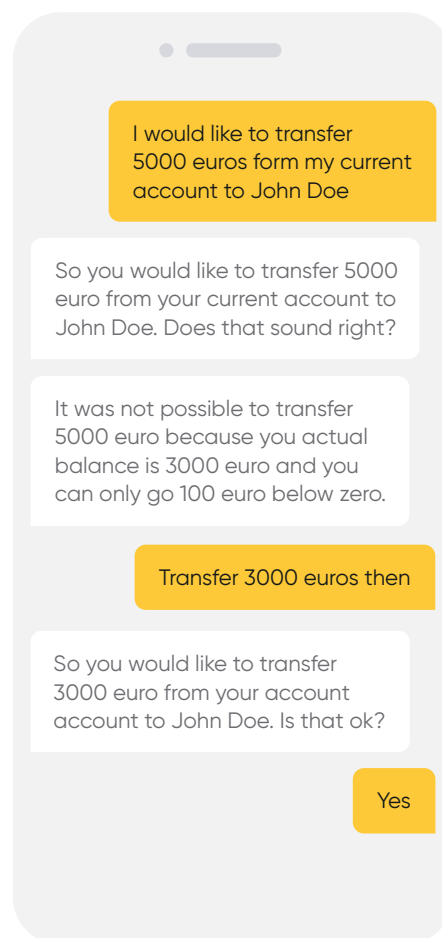
- the bank account type,
- the transfer destination,
- The right amount of money to transfer, and understands that the last 'ok' is an answer to the last request for confirmation.

1.1.2. Historical conversations

Passively collecting information

If you order a coffee today at your favorite coffee bar and the bartender knows that you take a cappuccino every day, she is probably asking you something in the trend of: "Shall I make the usual for you?"

Or if you have a restaurant chatbot, it should not show meat dishes to vegetarian customers.



Store and use information about the user, his historical actions, behavior and habits to deliver a relevant and personalized user experience.

Actively collecting information

You have to consider people's desire to feel understood. This is one of the strongest desires that people have. Without asking questions and taking time to get to know a person, it is impossible to truly understand them. Through a two-way conversation you can get to know the customer and that is where personalization begins. Think about this data collection process during the design phase.

1.1.3. External data

Increase your focus on your data ecosystem. Include the ability to pull and leverage data from a variety of sources, both within and outside your company. The faster the chatbot accesses, processes and responds to data, the better the overall experience will be. Also, your customer profiles and historical interactions which your users have used in other services, applications and websites should be considered to predict the right options and to provide personalized responses.

1.1.4. Environmental know-how

Greeting the user by their name, changing the salutation based on the time of day (good morning, good afternoon, good evening) and knowing the user's location, are all a great start to improving the chatbot user engagement with environmental personalization.

1.1.5. Interactions of other users

A customer service support chatbot that knows where a particular user is in the conversation could ask the user if they are encountering the issue most commonly associated with that specific issue. A sales-focused chatbot could store preferences and past purchases, and turn it into hyper-personalized recommendations based on what the user is shopping for and what other similar users have bought.

Analyse and learn various facts associated with each specific customer to offer personalized interactions with recommendations.



1.2. Sending proactive messages

Push notifications are an opportunity to get ahead in the game. Think for the user and even before the user expects any new messages, bring them back to the conversation, engage them, help and add value to their daily work. Messaging applications deliver those messages in real time on the user's smartphone so why not consider using it.

A hotel booking chatbot here shows a message that your hotel room is ready and that a bottle of champagne is waiting for you when you are flying to your honeymoon destination. A package delivery service shows you notifications about the delivery status of your package. A banking chatbot could warn you that you have to transfer money to a particular account before running out of money with unpaid bills as result.

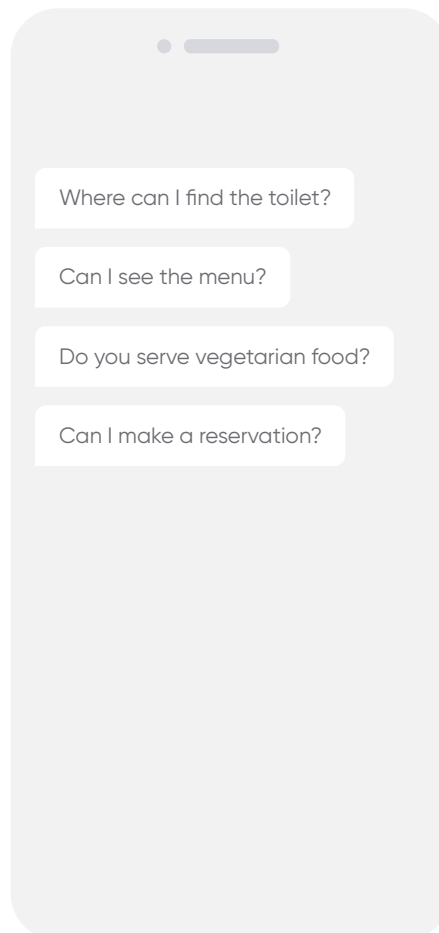
Identify the moments in which there are opportunities to start a new conversations and offer guidance or drive into action. These moments are not random. You need to be smart in order for the messages to be effective.



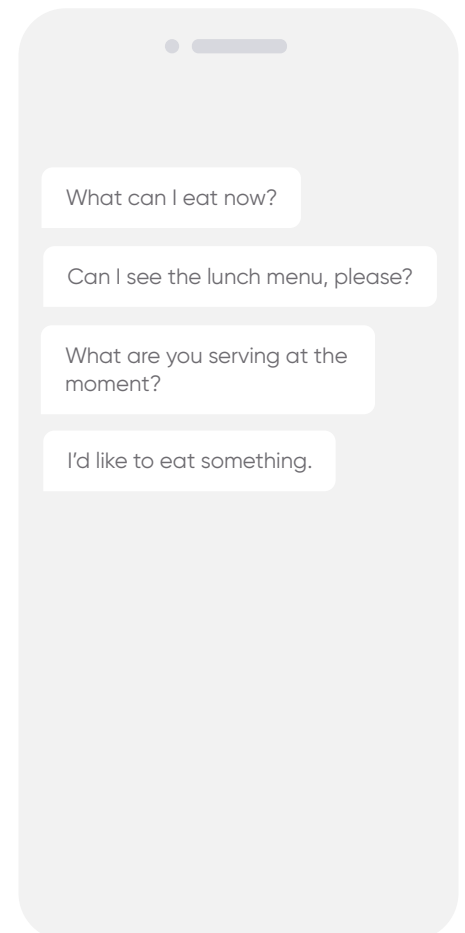
CAN I HAVE FRIES WITH THAT?

2. Managing Natural Language, Understanding is hard

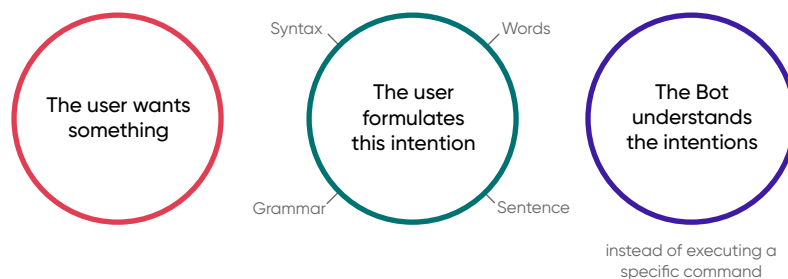
Creating a simple chatbot for a small use case is easy. Those conversations are usually limited in scope and the amount of intentions a user can have is typically relatively small. For large corporations but also for more advanced chatbots this is different. Some of these chatbots might cover everything related to the company. For this you will need to support countless user intentions.



Different intents



Different sentences for the same intent



INTENT: If a user asks "Which dishes do you have?" we recognize this as an intention by the user that it wants to know all possible dishes. In Natural Language Understanding (NLU) terminology this is called an intent. Machine Learning based chatbot platforms like

Sinch will allow you to train the chatbot and its Natural Language Understanding component by defining intents and creating example sentences (also called 'training sentences') for those intents.

1.2. Variation with intent training sentences

Capturing a wide variety of ways of saying something is extremely important when creating example sentences for your intents. If you create sample sentences for a chatbot intent, it is very important to include word synonyms and any word order or syntactic structure that makes sense.

For example, if you want to create an intent to 'book a train ticket':

Do's

- ✓ Book train ticket
- ✓ I would like to book a train ticket
- ✓ I need to take the train
- ✓ Can I order a train ticket
- ✓ I need to be in Paris next Friday
- ✓ I want to travel to Brussels
- ✓ Please assist me in booking a boarding pass

Don't

- ✗ Book a train ticket
- ✗ Book train
- ✗ Book ticket
- ✗ Book me a ticket
- ✗ Train ticket

2.2. Vocabulary used in subject intents

When managing different intents for one subject it's important to use the same vocabulary in each of those intents.

A financial chatbot could support different questions about credit cards such as requesting to block a certain card, requesting a balance or the limit of the card, requesting a new card, etc. If you use certain words such as 'visa card' or 'golden card' multiple times in sentences for only one intent, there is a big chance that user messages containing those words will always be recognized as that one intent meaning that in some cases they will be misclassified.

When adding new word combinations or synonyms to sample sentences in intents, make sure that you add the same vocabulary to all intents where you could use those word combinations or synonyms.

2.3. Define distinct intents

Having intents that are close to each other is dramatic for the performance of model. Make sure your intents are properly aligned and do not overlap. One expression can never be a part of two intents.



2.3.1. Using entities instead of multiple intents

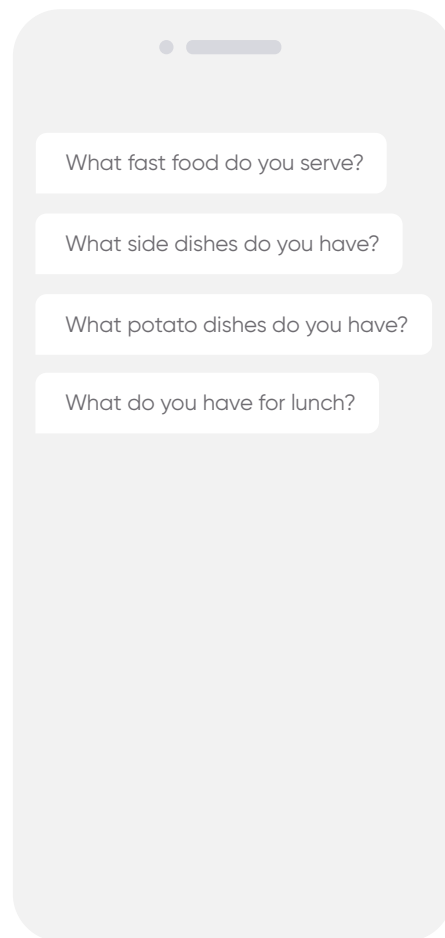
ENTITIES are words or small word groups that are particularly relevant for the dialog. They can be names of people or organizations, cities, products, brands, companies, street names etc. and get extracted from user messages by the natural language understanding model.

Intents should be varied enough. Make sure the vocabulary for each intent is only for that intent and not overlapping with other intents. If your system needs to distinguish them, use entities rather than intents.

EXAMPLE: actions regarding different debit cards aren't necessarily "different intents"

Different entities can have the same intent ("Lost bank card")

- My credit card / visa / gold card / master card was stolen
- I have lost my credit card / visa / gold card / master card
- Somebody stolen my credit card / visa / gold card / master card yesterday

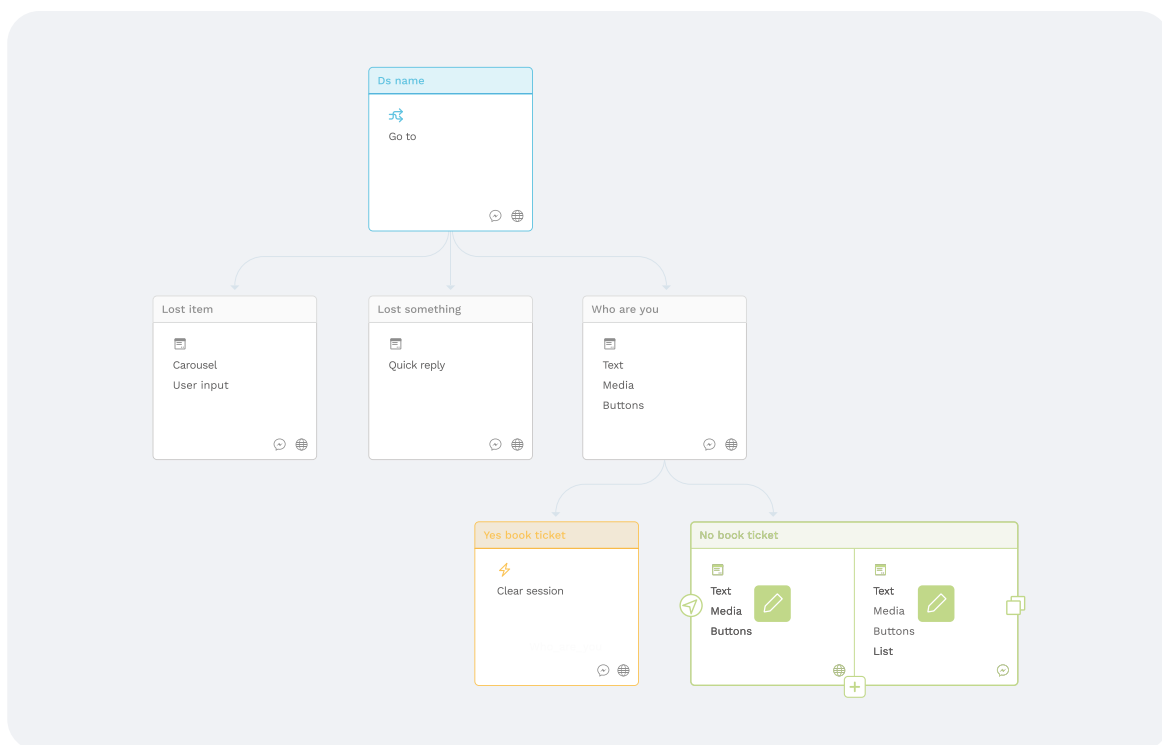


Different entities

- ✓ Entities are words or small word groups that are particularly relevant for the dialog. They can be names of people or organizations, cities, products, brands, companies, street names etc. In this particular case movie or series. They are extracted from user messages by the natural language understanding model. Intents shouldn't be too similar.
- ✓ Make sure the vocabulary for each intent is exclusive and not overlapping with a other intents. (Ex. Play a is different from Watch a).
- ✓ If your system needs to distinguish expressions, use entities rather than intents.

For example, if you want to have an entertainment chatbot that handles digital content such as watching series and movies, you can choose to have these subject areas as separate intents or the same intent with entities for specific data inside the sentences. The user messages "Watch a series" and "Watch a movie" for which it uses the same vocabulary of "watch a".

The format is the same, so it should be the same intent with the different words of the series and the hotel. They should be extracted entity values for the entity 'content type'.



For each intent, you need to create a set of training sentences, which should be distinct enough to distinguish between user intentions.

Training Sentence



- My Visa card was stolen
- I have lost my Visa card
- Somebody has stolen my Visa card yesterday
- My Mastercard was stolen
- I have lost my Mastercard
- Somebody has stolen my Mastercard yesterday
- My Diners club was stolen
- I have lost my Diners club
- Somebody has stolen my Diners club yesterday
- My Amex was stolen
- I have lost my Amex
- Somebody has stolen my Amex yesterday

Intent

- • • •  Lost Visa card
- • • •  Lost Mastercard
- • • •  Lost Diners club
- • • •  Lost Amex

Training Sentence



- My @entity was stolen
- I have lost my @entity
- Somebody has stolen my @entity yesterday

Intent

- • • •  Lost bank card

2.3.2. Merging intents with a similar goal and meaning

Don't create separate intents for user messages that are distinct in their meaning but have the same goal as response.

For example, if a user asks a chatbot 'I need more information about how to block a visa card', the user probably wants to block his visa card.

So, don't create separate intents for 'blocking a credit card' and 'Info about how to block a credit card' as they will overlap.

2.3.3. Adding real user messages

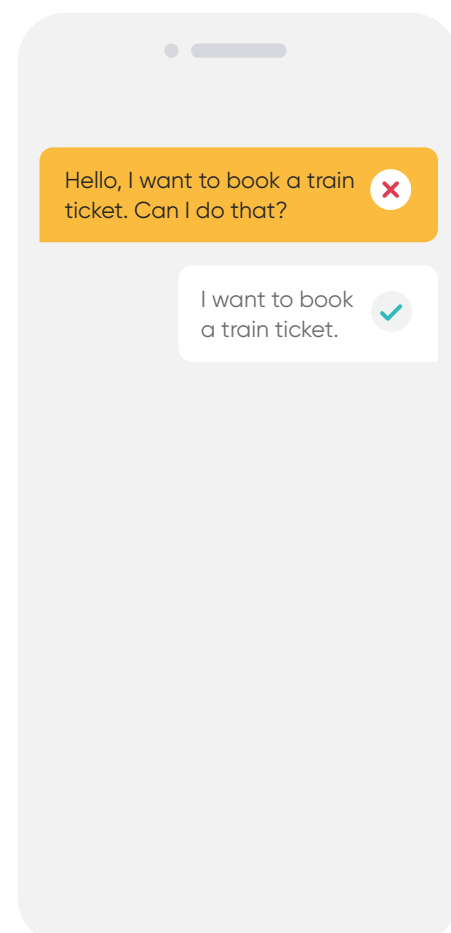
After you have deployed your bot (or brought it into a focus-group), you'll be able to take the sentences of real user interactions as additional training data to improve the accuracy. While it is important to add your real-life user sentences, you do not want to decrease your natural language understanding accuracy.

Don't swamp your intents by adding all the new user messages, only add those that are necessary.

Take into account that intents should have to be trained with more or less an equal amount of example utterances. Adding sentences with new words can also introduce word overfitting problems with new user messages getting misclassified as a result. Analyze your user sentences and define actions for all related intents to assure a stable NLU model accuracy.

2.3.4. Intent sample sentences guidelines

- Use correct spelling
- Slang/dialect is allowed
- Be specific enough
- Variety of words
- Variety of phrase structure
- Don't add paragraphs
- Don't use too formal language. Keep it light and natural
- Talk like you are used to talking and avoid jargon
- Don't use intros and outros:
Don't add the expression "Hello, I want to book a train ticket. Can I do that? Thanks". Instead, just add "I want to book a train ticket".



2.3.5. How can you keep an overview of all these intents and sample sentences?

What is the use of using state-of-the-art Natural Language Processing without an overview? When you are building a chatbot, you should do it the right way.

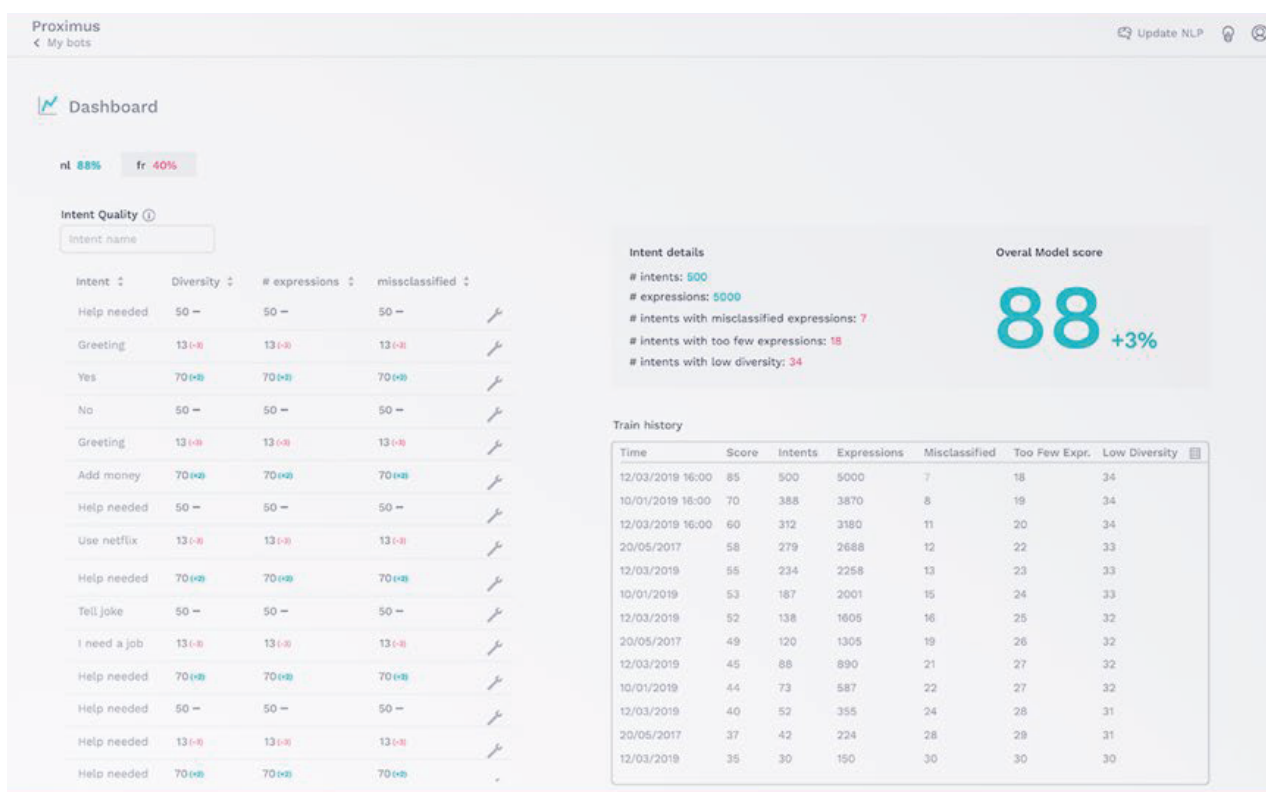
Sinch's Natural Language Understanding dashboard keeps a clear eye on the overall quality of your models, intent word diversity scores, number of mismatched example sentences, the amount of wrongly assigned expressions, etc.

It features a specialized NLU analysis toolbox to solve these issues and to keep improving your models.

Manage hundreds of intents and thousands of sample sentences in a user-friendly environment. Sinch's tools show you the problems and the actions you need to take in order to solve them directly.

We have detected that this expression is misclassified as the wrong intent. You can resolve this through one of the following options:

- Switch this expression to the CONNECT_TO_FACEBOOK intent.
- Delete this expression.
- Add more expressions containing the keywords MY and FRIEND to the GREETING intent.
- Remove expressions from the CONNECT_TO_FACEBOOK intent containing the keywords MY and FRIEND.
- Add more expressions not containing the keywords MY and FRIEND to the CONNECT_TO_FACEBOOK intent.
- Merge the GREETING and CONNECT_TO_FACEBOOK intents.

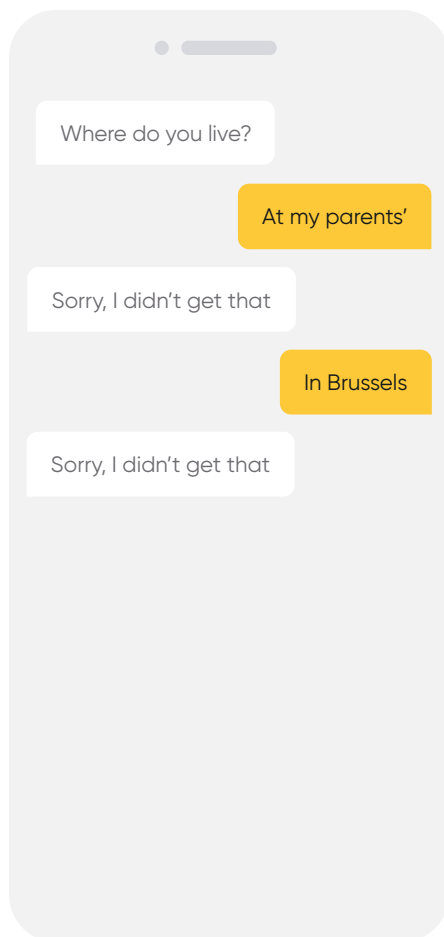


3. Reducing Friction & Disambiguation

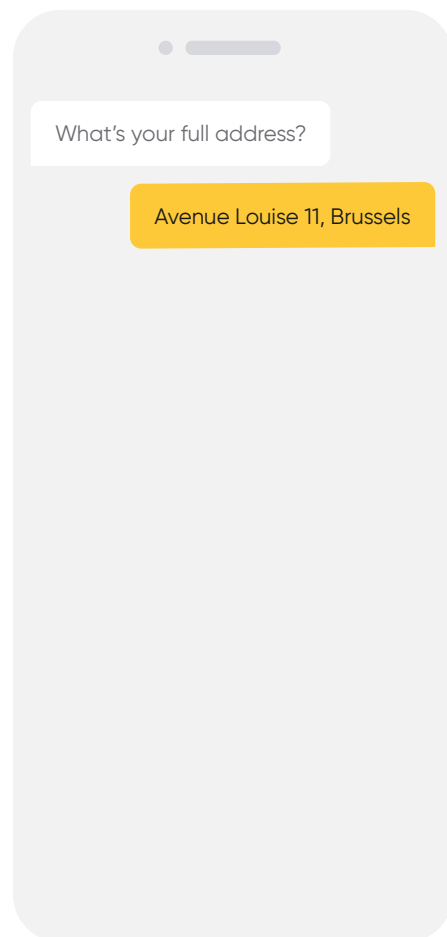
Users get frustrated when they are unable to complete their tasks or when they are not understood correctly. As a result they are unlikely willing to talk to you in the future. Good error handling is all about preventing errors and anticipating unexpected input.

Don't leave room for interpretation and make the success path more robust to "disguise" errors by using well-crafted prompts. Tell the user exactly what you want. A question might seem straightforward, but people could say anything. You should avoid this at any cost.

Avoid this: ... 



... by using this: 



Work to earn your users' trust.

Be prepared for simple questions that they might ask to the chatbot just to figure out what it can do. Yes, you read that right. Your chatbot must be even prepared of telling the user a joke. Think of it this way: to establish trust with a neighbor, you might borrow a cup of sugar

before you ask to borrow the lawnmower. People also want to see if their virtual assistant knows what they expect it to know.

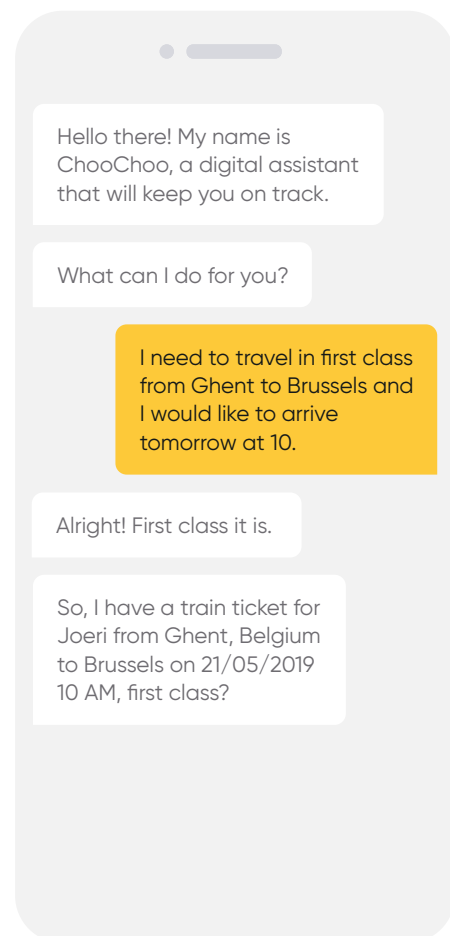
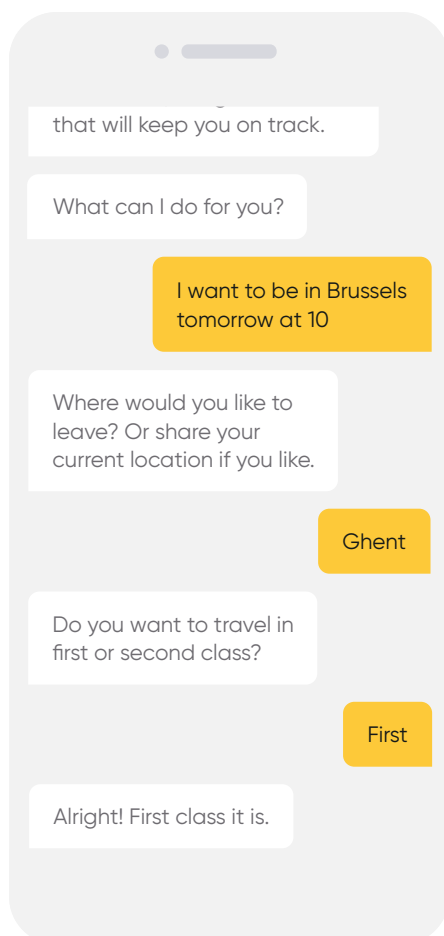
Humans are not always clear and interact in different ways. Imagine a user ordering a train ticket by saying 'I need to be in Brussels at 10 tonight'. The chatbot should ask only follow-up questions for missing information such as departure location and seat class. If the user says 'I need a train ticket' the chatbot should also prompt for the destination location and arrival time. So always make sure to create your dialogs in a way that it can handle all possible ways of user input.

You can't just design for when things work – you need to design for when things don't work as well. Try to improve anticipation of all the things a user might say. Do this by writing multiple sample dialogs for one conversational flow.

Create dialog flows to handle all possible ways of user input.

Create dialog flows to handle all possible ways of user input. Even though you're asking for the same information, the conversational context is different on the second or third attempt. In each step, consider

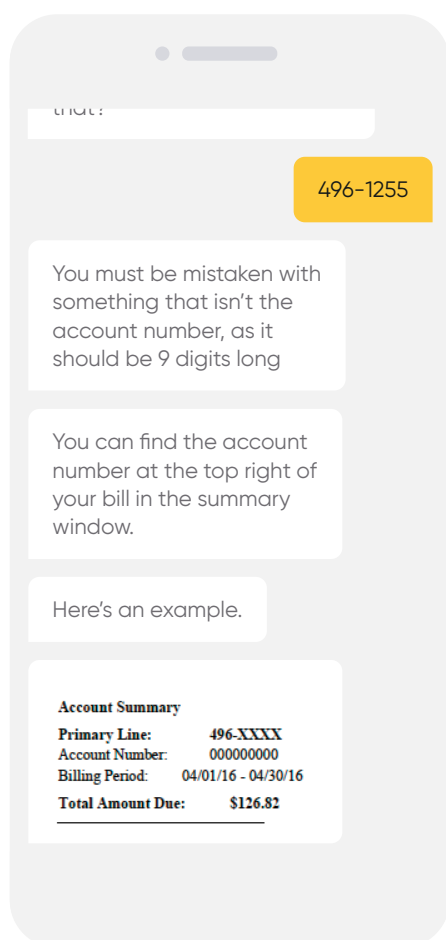
why the user might be having problems. Then, in the response, include additional support in the form of options, examples, or visual information.



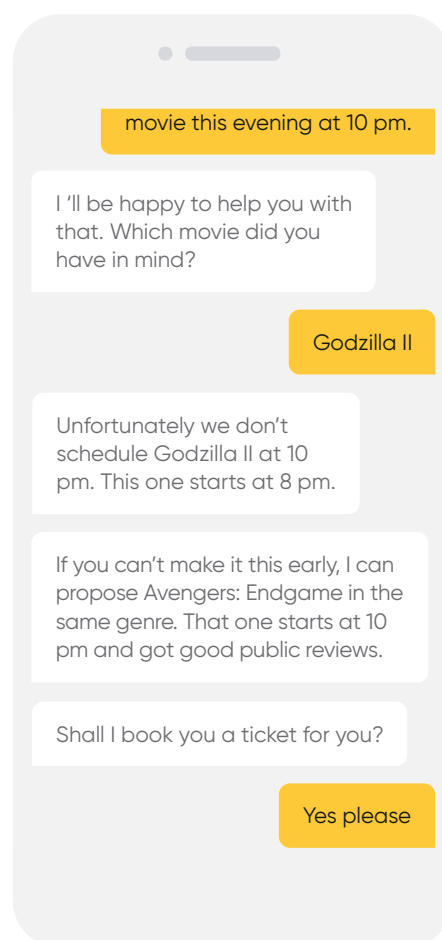
Another basic strategy – to prevent frustration is to make it easier for users to leave the conversation if they haven't completed a task or provided a validated value. The chatbot could transfer the communication to a live human agent who is using

a customer engagement platform or contact center solution. You could add the option to talk to a real human agent in the second or third attempt and create an additional 'talk to human' intent.

User having difficulties retrieving the Account Number: explain and show.



Inform user about schedule and propose an alternative.



4. Conversational Design Matters

Moving from the idea of publishing content to engaging in conversations can be uncomfortable in the beginning. For conversational design, most enterprises are still taking their first steps. Most employees creating bots nowadays are doing so for the first time, in a very trial-and-error kind of way. Today's bot platforms might make it easy to get started, but don't be fooled – human conversation is incredibly complex – and it is a challenge to build a bot that is able to handle the unpredictable nature of it.

It is important to understand that conversation design is not a simple act of writing down text in a conversational format. It requires a complex set of skills and careful planning. Conversational design is a combination of several techniques including copywriting, UX design, interaction design, visual design, voice and audio design.

Successful communication does not only depend on what we are saying but also on how we are saying something!

Remember

- ✓ Conversational design is not a simple act of writing down text in a conversational format.
- ✓ It requires a complex set of skills and careful planning.
- ✓ It is a combination of different disciplines like copywriting, UX design, interaction design, visual design, voice and audio design...

The attraction of social media messaging has little to do with producing text or rich media. Instead, it is the always-available social connection, the brevity and unpredictability of the messages that triggers the release of dopamine and drives users to come back for more. Humans need empathy, so conversations need

to have dialogues that are helpful, natural, personalized and persuasive. There are lots of psychological principles you can apply to reach your goals. Principles that are used in negotiation techniques, neuro linguistic programming, persuasion tactics and psychological operations.

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Speakers intend to be cooperative when they talk. Each speaker knows that each utterance is a potential interference in the personal rights, autonomy and wishes of the other.

Paul Grice,
English language philosopher

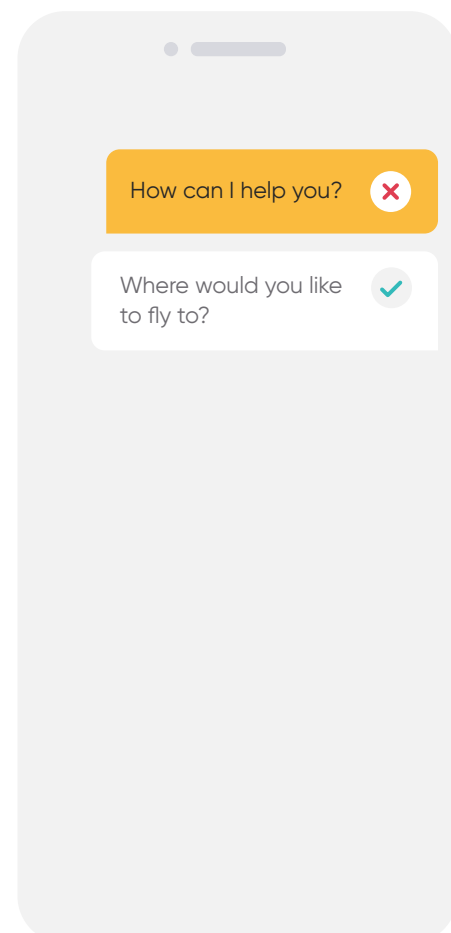
4.1. The cooperative principle

Efficient communication relies on the assumption that there is an undercurrent of cooperation between conversational participants.

The flow of conversation needs to be natural and one that offers information that can help users get the answers to their questions and make their lives more simple. Grice's cooperative principle is a set of norms that are expected in conversations. It consists of four maxims, which we have to follow in order to be cooperative and for being understood:

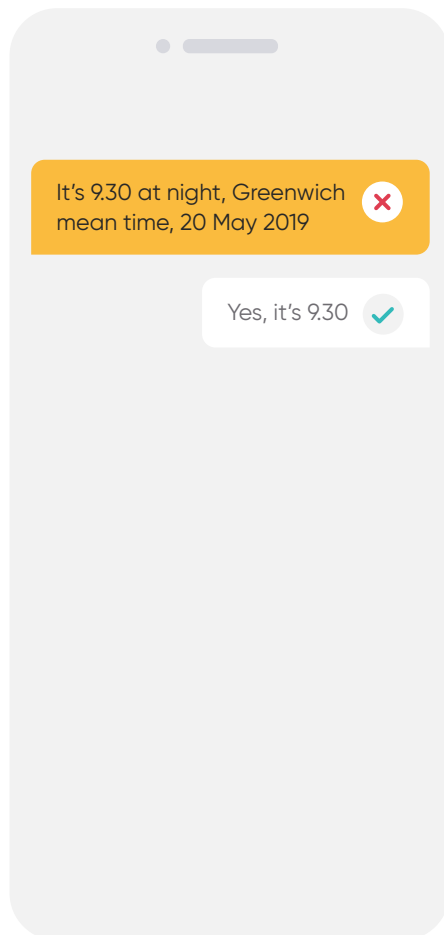
Maxim of quality

As a speaker we have to tell the truth or something that is provable by adequate evidence. Do not advertise things you cannot live up to, such as saying, "How can I help you?" when really all the chatbot can do is take flight reservations.

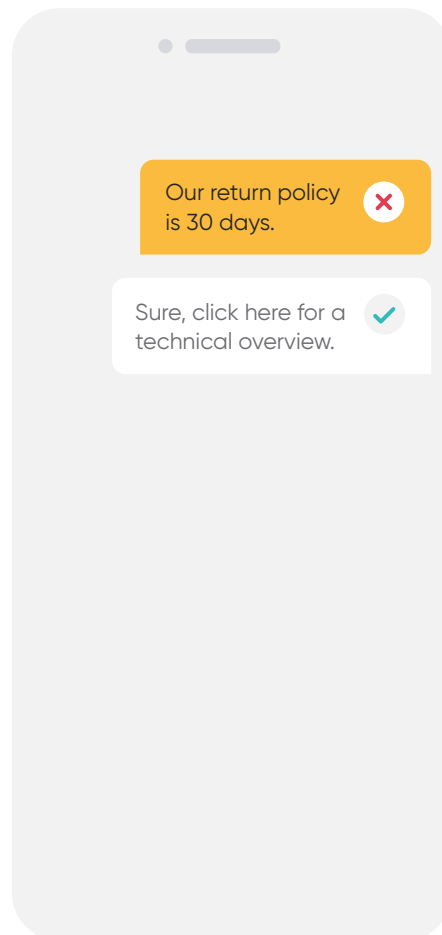


When a chatbot is only designed for booking flights.

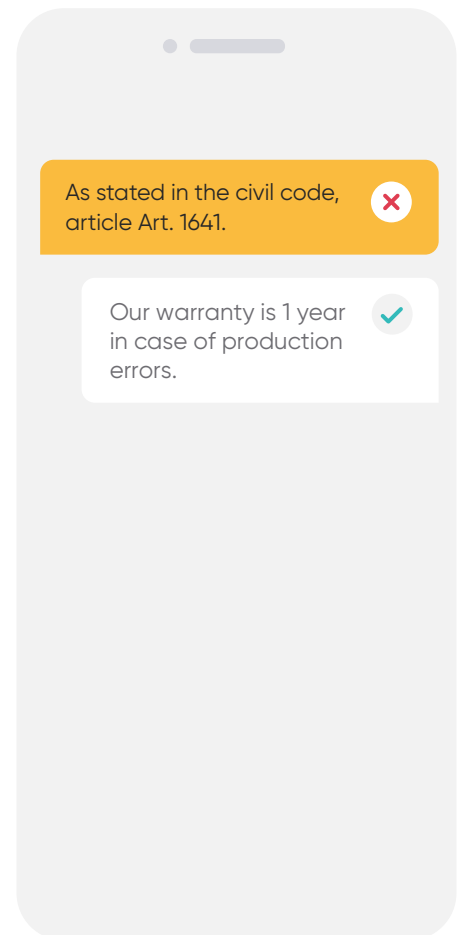
When a customer asks for the time.



When a customer asks for technical product specs.



When a customer asks for the warranty.



Maxim of quantity

We have to be as informative as required, we should not say more or less. Do not say "it's 9:30 at night, Greenwich mean Time, 20 May 2019" if the user is asking "Do you have the time". Just reply "Yes, it's 9:30".

Maxim of relevance

Our response has to be relevant to the topic of discussion. For example, do not explain a return policy before someone has even placed an order.

Maxim of manner

We have to avoid ambiguity or obscurity; we should be direct and straightforward. Don't use technical jargon that confuses the user.

4.2. General Guidelines to conversational design

- ✓ Define your audience
- ✓ Define the role and type of your chatbot
Create a chatbot persona
- ✓ Create sample dialog scripts and speak them out loud
- ✓ Outline the dialogue flows by creating flow diagrams and handle all possible scenarios such as fallbacks and error handling
- ✓ Manage different emotions in your scenarios
- ✓ Use greetings and endings
- ✓ Use suggestions to help the user discover new features
- ✓ Ask questions in a specific way to ensure you catch the right intent – and sub-intent
- ✓ Use persuasive principles to motivate users to go through a service process
- ✓ Confirm the resolution
- ✓ Do not allow a dead-end street
- ✓ Do not repeat the user's request
- ✓ Do not ever blame the user
- ✓ Keep track of context
- ✓ Interaction should be time efficient – keep it short
- ✓ Use emojis and rich content

Sinch has an expert conversational design team that helps your organisation to design the conversation. We also provide full day trainings with guidelines, best practices and examples to share our conversational design knowledge and expertise.



5. Improve, Learn & Evolve

How users are interacting with your virtual agent is critical information that is often not apparent prior to release. There can be eye-opening gaps, places where the chatbot fails, and opportunities for development and improvement. Do you see a topic that your users are requesting frequently but which your bot does not

yet support? Why not integrate it into your flow? That is the best way to show your users that the chatbot they are using is always striving to provide a better experience. Maintaining your bot is an essential part of its long-lasting success.

5.1. Monitoring

1.1.4. Environmental know-how

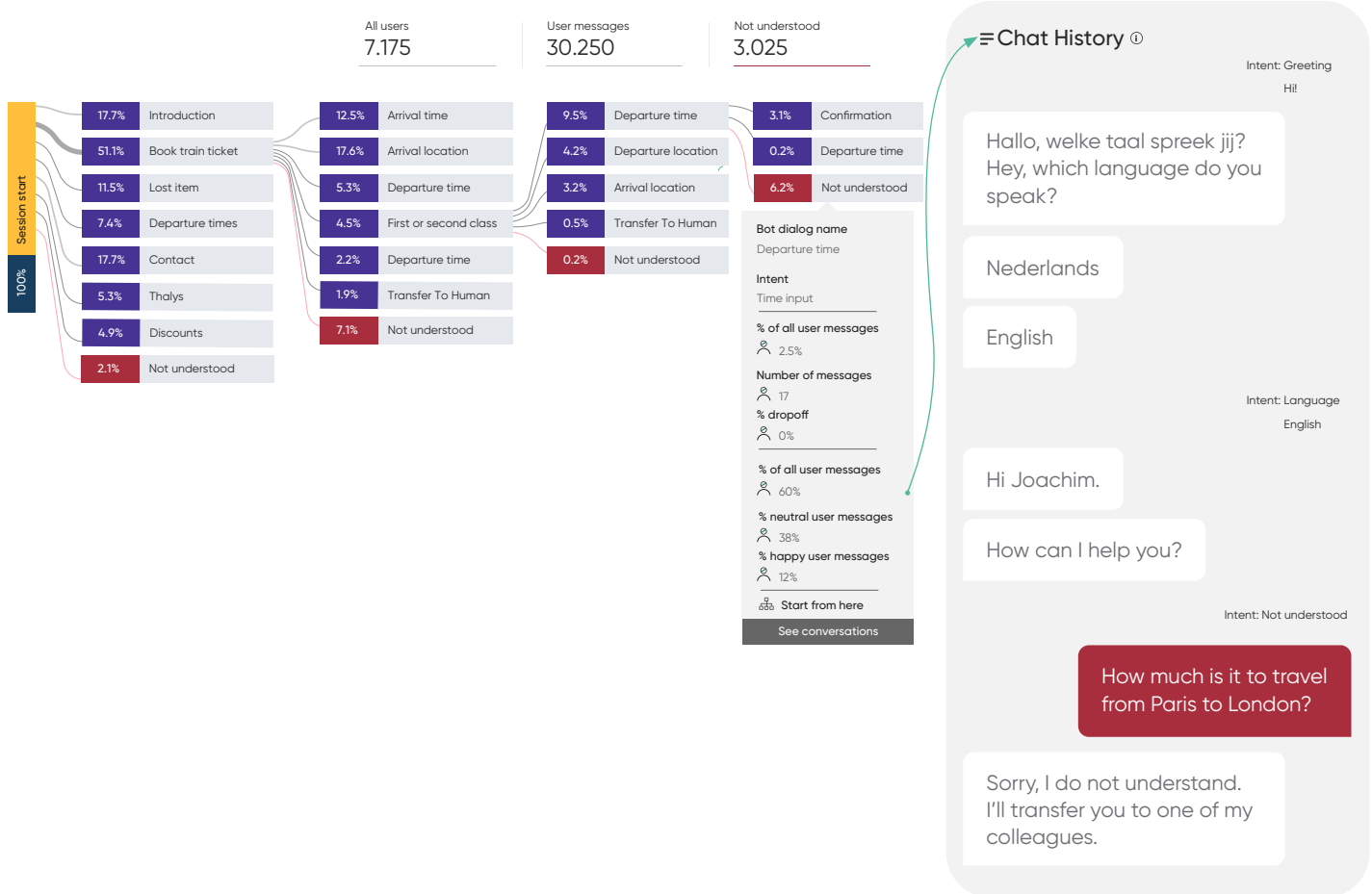
A conversation log feed is the place where you can see what users are talking about. They show to the user (i) which flows are most used, (ii) where conversations go to after starting from a specific conversation step, (iii) how users end up in a specific conversation step, (iv) where users stop their conversations and (v) where users drop off.

To fill gaps and solve pitfalls you need to analyze and detect the cause of each flaw to define a suitable action.

- Bad conversational design and/or copywriting
- Wrong configuration in the chatbot platform
- A not supported use case or user intention
- Sentence was not or badly understood (NLU)
- A technical error



It is of the utmost importance to constantly improve and to adapt your flow designs and copywriting, your flow configuration and/or create new use cases based on what your metrics and historical conversations are teaching you.



5.1.2. Improve Natural language Understanding

Chatbots are only as good as the training they are given by their makers, and the quality of the training is only as good as the training data is. It is needed to check the analytics often to ensure your bot understands new words, and then train the bot as necessary.

When adding new word combinations or synonyms to sample sentences in intents, make sure that you add the same vocabulary to other intents where you could, this is in order to prevent word overfitting. Constantly monitor your model accuracy and analyze the not or badly understood messages and intent data.



5.1.3. Ratings and feedback

Allowing users to rate your chatbot is a good method of providing users with the opportunity to express satisfaction or dissatisfaction with your chatbot. If users are dissatisfied, your bot has to ask feedback. Integrate useful feedback loops in the conversation by requesting feedback after a completed key action to get valuable, qualitative insights.

If a user answers “Very Likely” or “Likely”, Choo Choo automatically recommends that they share the bot with their friends. This leads to a higher share rate and a boost in user growth and bot engagement for the company.

However, if a user is not happy, the Choo Choo solicits open-ended feedback to learn more.

How likely is it that you would recommend Choo Choo to a friend?

Very likely Likely

Neutral Not Likely

Thank you for your feedback. Please share with their friends.

How likely is it that you would recommend Choo Choo to a friend?

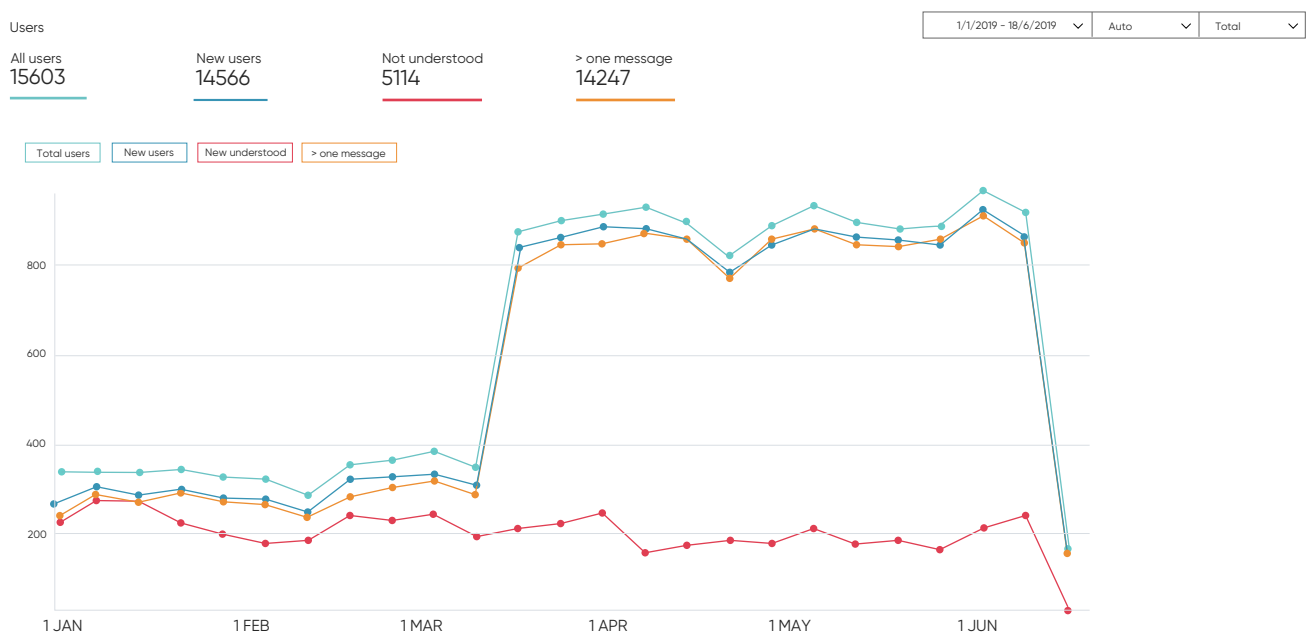
Very likely Likely

Neutral Not Likely

Thank you for your feedback. What could I have done to help you better?

5.1.4. Monitor your users

Monitoring your current users allows you to get a feel for the overall popularity of your chatbot and its success. If this metric is trending downward, it could be an indicator that you need to rethink the use cases of your chatbot and its design. The amount of new users shows the overall success of your chatbot promotion campaign.

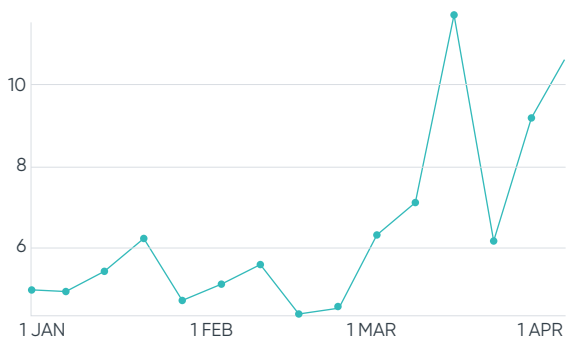


5.1.5. Messages and Sessions

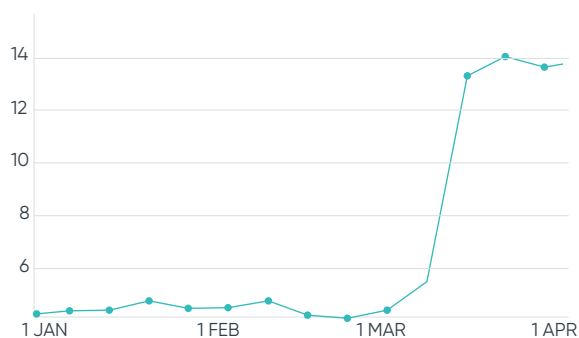
The amount of sessions presents the concept of engaged users. Session duration measures average customer interaction and ensures customer engagement.

Messages per session is another important metric. Ideally, chatbots need to resolve a request in as few messages as possible. Impatient users will leave a

conversation if they have to go through too many conversation steps to reach the value they are looking for. On the other hand, conversations with very few messages are likely to indicate pitfalls that are causing users to lose faith early on. So, monitor closely.

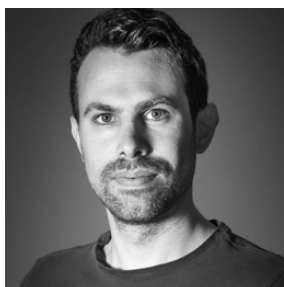


Session Duration, showing the average duration of a user session during the date range you have selected.



Messages per session, showing the amount of messages an average user sent during the date range you have selected.

Sinch's unique advantages



Pieter Buteneers,
Director of Engineering, AI and ML

- Deep insights in customer-chatbot interaction with analytics dashboards, a flow analysis tool set, NLP analysis and a conflict resolution tool box.
- Understanding customer intents and analysis of how customers are being understood by the system.
- Providing guidelines and actions, based on exclusive and valuable data.

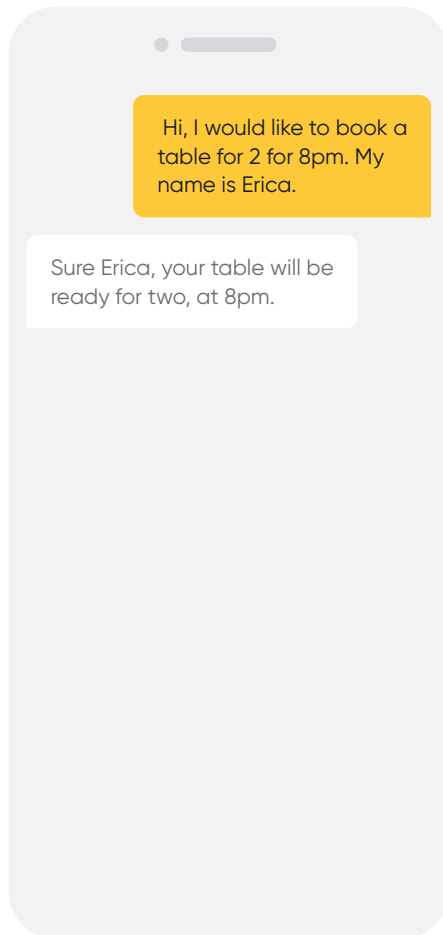
Intents

Intent	NL	EN	FR
Who are you	50	45	5
Yes	70	15	15
Book train ticket	205	196	100
I want to speak to a human	20	10	20

Expressions

Expression	Version
Ik wil een treinticket	Draft
Ik wil een ticket	Draft
Ik wil van Antwerpen naar Brussel morgen om 9u	Draft
Kan ik een treinticket kopen?	Live
Kan ik een ticket naar Brussel	Live
Ik wil naar Gent	Draft
Ik wil naar Gent reizen	Live
Kan ik morgen naar Brussel reizen	Draft
Ik zou graag een ticket kopen	Draft
Ik zou graag een enkele reis boeken	Live
Ik zou graag een ticket voor de trein kopen	Draft

6. Be where your users are – A multimodal experience



Today's thriving enterprises recognize the value of content and the role it plays in the customer experience. Consumers now expect highly relevant, timely, personalized content at all touchpoints of the customer journey, on any device or interface, across any and all channels of their choosing.

Content formats range from microcontent in text or speech, to rich images, videos and podcasts, to apps, email, mobile push notifications and others.



Erica uses her smartphone in the morning to make a reservation via Messenger in the restaurant later that day.

6.1. A multimodal experience makes "impossible" interactions possible

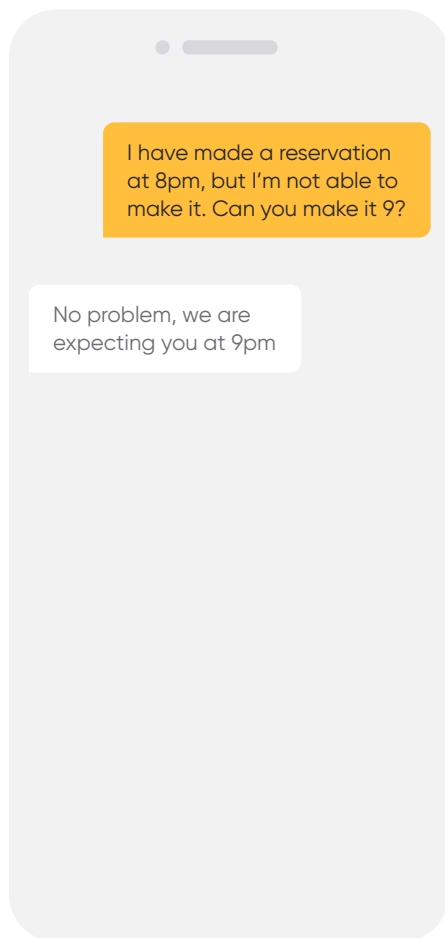
To get this content to your users in a useful way, it is important to design an experience that helps interactions become possible. When you design your bot to interact beyond the typical messaging platform, you help enhance the experience for your audience. That is because you are creating convenient ways for users to interact with your brand and business in ways that they may never have been able to before. For example, you can create a bot that interacts with users via their

cars and have it picking up the conversation where the user has left it off when they use their phone.

Future chatbots will be multimodal like human beings in the sense that they will interact through touch UI, vision, voice, & text. They should deliver an experience that involves more than one human sense.

So multimodal is the idea of being able to marry two or more senses through input and output experiences.

Later that day, Erica realises she is not going to make it at 8 pm. While she has a visitor, she can easily reschedule through her smart speaker.



6.2. Multimodal offers information in different formats

Creating experiences that users find valuable is crucial for driving engagement that leads to customer loyalty. With a multimodal experience, you can achieve this. For example, you can design your bot to use voice and visuals to provide answers in different formats. This means when your target audience asks their smart speaker for a vegetarian recipe, the bot won't just return a spoken reply.

You can design it so that it can offer video responses and even provide a map to the nearest grocery store which have all of the ingredients in the messaging application or any other application. A user could stop or play the video or ask the chatbot to go to the next step in the recipe with voice while he is cooking without the need to clean his hands to stop or start a video. This helps improve the experience your users have and deliver them valuable content they can leverage.

These technological advancements all improve customer experience:

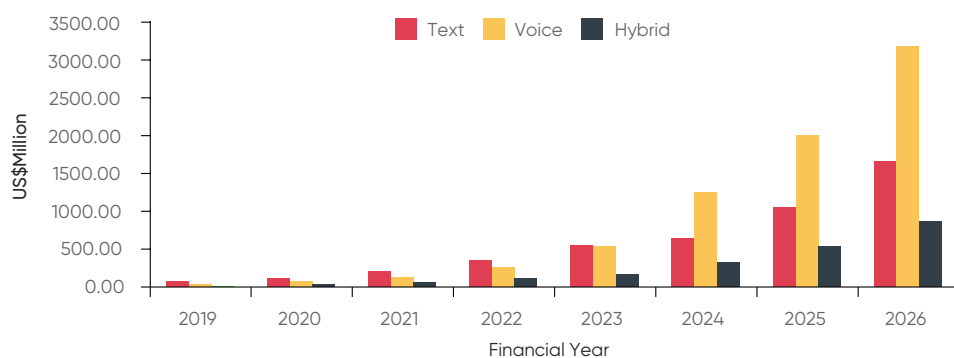
- They reduce the amount of effort required to find and act on information and manage transactions
- They save time and blur the barriers between humans and devices
- They make the overall digital experience more inviting, appealing, and entertaining
- They enable us to automate time consuming and costly tasks
- They help create a more consistent brand presence across multiple channels
- They build more detailed customer profiles for improved targeting and messaging across sales and support journeys

6.3. Voice rate adoption

A revolution is about to happen. Currently, most chatbots are embedded in messaging services. Today, voice is exploding. In the US, there was a 78% year on year growth in December 2018 to a total of 118.5 million households that own a smart speakers. 52% of those have two or more devices in their home, providing a wide coverage and deep integration into their lives. Gartner Predicts 75% of US Households will Have Smart Speakers by 2020. It is expected that Europe will follow suit.

A recent Adobe Analytics survey found that 91% of US businesses are making significant investments into voice technology. A recent market study by Mind Commerce in March 2019 showed that voice will surpass text in 2022.

Global markets for AI based chatbots by interface type



Source: Mind Commerce, 2019

6.4. Multimodal design

Designing and developing intuitive voice interfaces and chatbots is challenging – that is the least we can say! Building a bot that interacts in both the voice and visual space adds another dimension to that challenge. Voice-first is a design approach in which one starts designing the voice interface before adding text or visual UI elements to ensure users can interact both hands-free and eyes-free. In general, spoken prompts are optimized for and follow the conventions of spoken conversations. Display prompts are optimized for and follow the conventions of written conversations. Although slightly different, they should still convey the same core message.

It is often the easiest way to start by writing prompts for a screenless experience, again imagining what you might say in a human-to-human conversation. Then, try to imagine how the conversation would change if one of the participants was holding a touchscreen. What details can now be omitted from the conversational components? Typically, the display prompt is significantly reduced since the user can just as easily comprehend the information in the visual as they can in the display prompt. Group the information now in such a way that the user doesn't have to look back and forth between the display prompt and visual repeatedly. Last but not least, think about how the experience would be going from one device and visa versa.

6.4.1. General guidelines to multimodal design

Voice – efficient input

- Gives the user commands quickly and permits multi-tasking because it is hands-free
- Allows users to bypass multiple navigation levels for familiar tasks and known commands

Screen – efficient output

- Permits the display of large amounts of information at a single time to reduce memory burden
- Visual hints and affordances suggest new options and commands

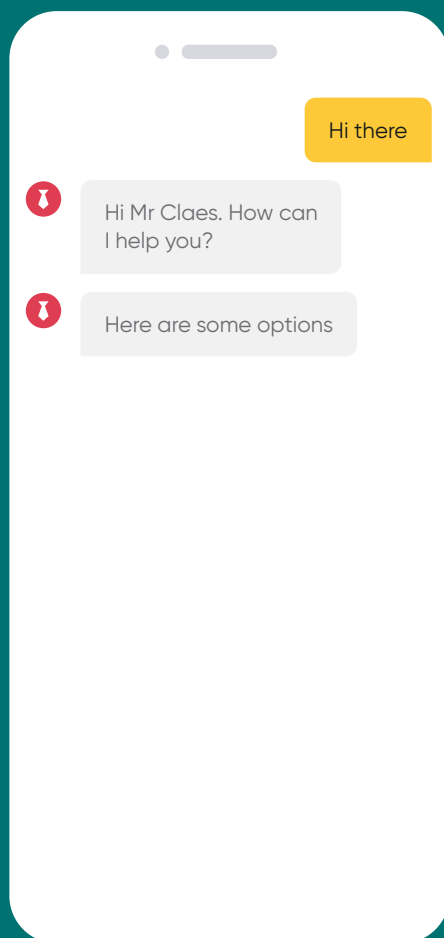
- 1 Remember 'which modality is good at what'
- 2 Think voice first
- 3 Don't forget about accessibility. Even though you are designing a multimodal application, the user should be able to complete the entire task using either voice, text or vision
- 4 When scoping, put in 3x your normal time for testing
- 5 Contextual and field testing is important

- 6 Find a conversational designer/copywriter/linguistics major (Sinch can help!)
- 7 Voice tone is critical. A personable tone helps users forgive those moments when your product is unable to complete a task. More importantly "tone" will be perceived as "attitude" by users
- 8 Think "temporarily uni-modal" and expand your user journey maps. what do your users see?
- 9 What should your users hear? what are your users doing concurrently? What can your users touch or reach? Create detailed storyboards and task flow charts to be sure you have addressed each step
- 10 Improve, learn and evolve. No matter how carefully you test, there's a 99.99% probability that users will need something you did not include



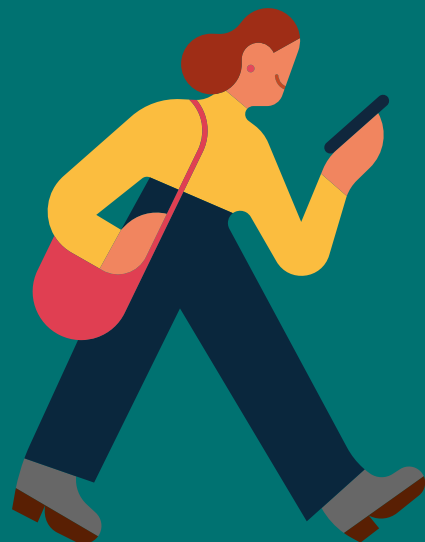
7. Think about where to use graphical elements

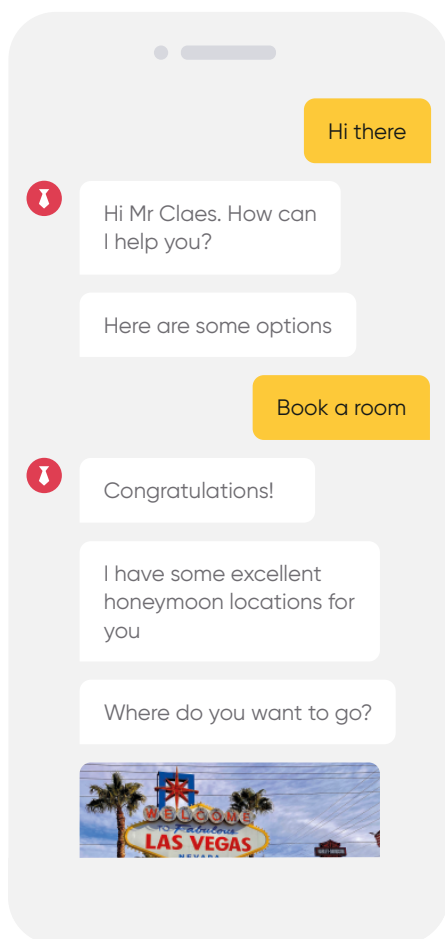
Good chatbots give users the freedom to control the conversation and ask whatever they want to be pleased. This is accomplished by using Natural Language Understanding. Besides this, users also want to have recommended guided conversation flows through the use of graphical elements for boosting interactivity and ease of use. Chatbots should never reply with long-winded blocks of texts but need to diversify.



If users are unsure of what they are asking for, one resolution is to provide recommendations for users to get started and getting the bot to a more useful state. Recommendations can help ease the conversation and make them faster.

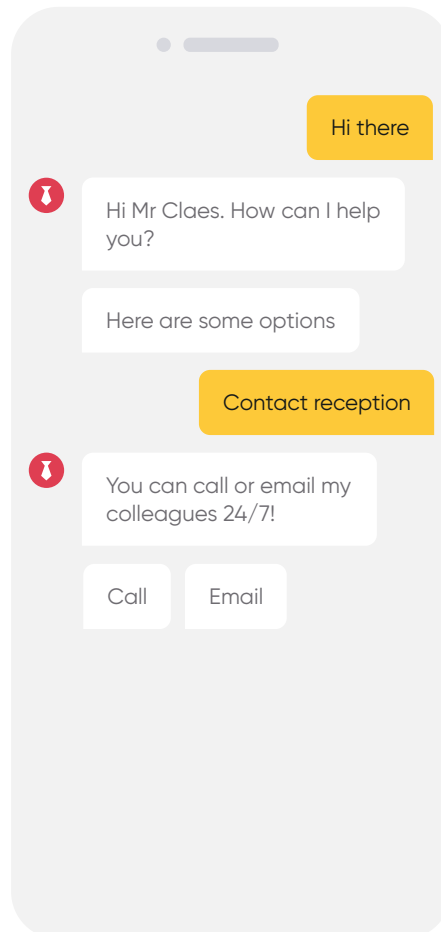
During the design phase it is important to think where to use which graphical elements while still making sure the entire flow can be done using natural language. The right combination of free form messaging vs buttons and quick replies can depend on the use case. So think about your users and how they will interact with your conversational solution.

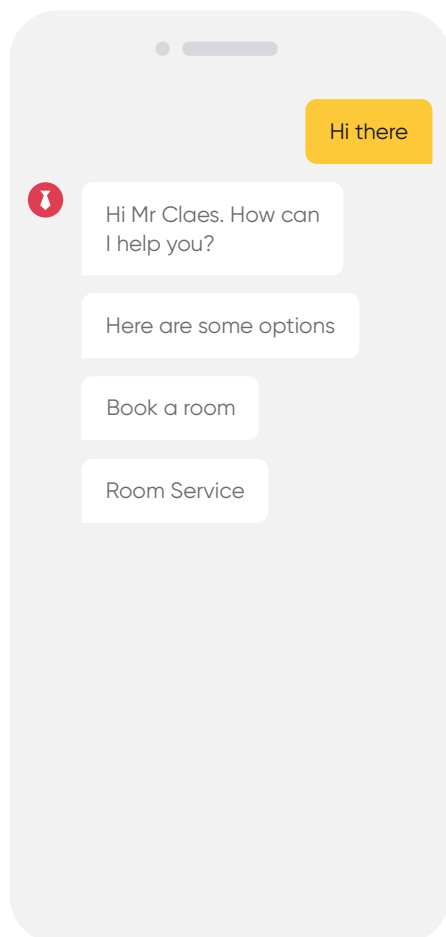




Use carousels and lists for showing a list of options. They offer the possibility to present more info by using a title, description, image and one or more action options.

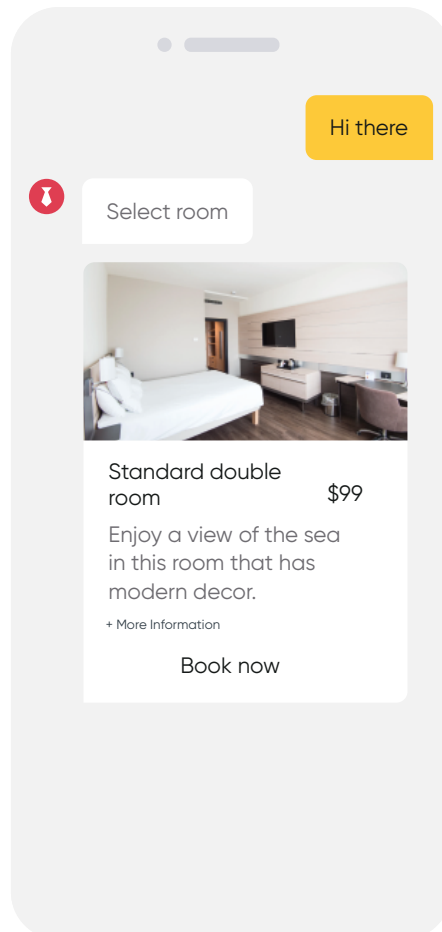
Use buttons to open links to external sources, to download documents, initiate a telephone call or an email, opening a mobile application or even opening an application in the conversation, also called web views.





A persistent menu can help the users to navigate through your chatbot and see what else it can do.

Messaging solutions allow users to open a web view, where the user can load webpages inside the conversation. This offers users experiences and features that might be difficult to offer with message bubbles, such as picking a hotel room, seats to book, or dates to reserve.



8. Finding the right Use Case

The fundamentals of every successful digital product or service is a good strategy. Chatbots are no exception. Chatbots are a complementary layer on your customer experience, and overall they should delight your Users.

So, do not build for the sake of building, but understand the opportunity, one of offering a great user experience and returning business value in terms of ROI.

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We have often heard users saying 'I want a bot that does this, I want a bot that does that' but when we dig deeper, we realize a different bot use case would actually fix the issue much more efficiently.

Delphine Jacquemart,
Partner Success



8.1. The right use case

If you want to build a chatbot that manages customers' questions on return policies, but know that these queries are less than 2% of your global volume of queries, you might want to build a chatbot for another purpose. So, start from the business problem and build it from there.

Technological trends alone are no guarantee for a successful bot. It is also necessary to find the right use case. Based on a user-centric approach and different criteria and questions provided, thanks to a chatbot canvas you easily find the best objective of your virtual agent you define some key performance indicators on how to measure ROI.

Things that should be taken in account

- Target audience - Who is going to use the chatbot solution? Describe your customers or employees.
- How, where, when and on which device will your users interact with the bot?
- Which problem are you going to solve?
- Which internal and external system integrations will you use to enrich the user experience?
- How will the bot help to solve this problem?
- How does the bot add value to the organization strategy and vision?
- What are the key performance indicators and how will you measure ROI?

8.2. Importance of user stories

Design user stories that have high value for your target users. Creating a use case matrix helps to evaluate each individual story and will tell you which scenarios are primary, which are secondary and which are nice-to-haves.

8.3. Channel strategy

It is important to engage with customers where they are, in their preferred mode of communication. It ensures you stay relevant and accessible in today's on-demand world. It helps you choose the right text- or/and voice-based channels and it helps to define a strategy on how your users will interact with your bot.

8.4. Enrich your chatbot with third party services

Describe the user experience from the beginning. E.g. which added value can you integrate in your solution. If you are thinking about creating a chatbot for a radio station and it is possible to ask the current or previous song, why not integrate music services such as Spotify, so that your users can save these songs to their playlist or even create a new playlist and add this song. If a user can request information about the radio presenters you should think about social media integrations to show the latest Instagram pictures, facebook posts and tweets. Remember, always try to offer value.



9. Behind every successful bot, there's a strong bot team



Nico De Vriendt,
Conversation designer

And behind every failed bot... there wasn't much of a team

There are a lot of frameworks out there on how to develop a chatbot. Some are better than others, but they all have one thing in common; they're agnostic to the people doing the work, and how they work together. That's strange, since a lot of chatbot projects fail exactly because people lack:

- Time to focus on the bot
- The right skills (or again, time to develop them)
- Proper ways of cooperating and communicating

It breaks our hearts to see promising chatbot projects not reach their full potential or even die because of these reasons, which is why we want to highlight this oh-so-important but often underestimated aspect of building a bot.

9.1. It takes time

Bots can bring huge benefits to your organization, by increasing customer satisfaction, lowering employee workload. But to reap all the benefits, be prepared to invest as well. Depending on the scope, you will need a number of people who dedicate a large part of their time to your chatbot(s). You are creating an entirely new competence within your organization. It's not just another IT project, so don't treat it like one!

Too many bot projects start off without a proper staffing strategy. A few people, usually within IT, are assigned to building a bot, often alongside other projects. Of course, they don't have the time to properly focus on it, resulting in a mediocre bot full of beginner's mistakes, not suited to expose to your customers. In other cases, a good bot is built, but then considered 'finished'. That's a terrible idea for several reasons;

- First, we talk about 'Machine Learning' for a reason. Only once your bot starts talking to actual customers, you will be able to track how it performs, and gradually improve your conversation flow and NLP model.
- Second, take your bot to the next level! Once your bot is up and running, you can increase the scope and add capabilities with minimal effort, but considerable gains. Don't leave your bot to rot.

So, when planning your bot project, take staffing very seriously and make sure you give the right people enough time for building, enhancing and maintaining – over the entire lifecycle of the bot.

Your bot team will grow and shrink based on the bot's needs. It can consist of your own business and IT people, temporary consultants and new hires – experienced or not. Next, let's dig into who you need exactly.

9.2. It takes skills

Every bot team consists of a few basic building blocks. There's the Core Bot Team, who cover Conversational Design and NLP. Integrations and Monitoring are also crucial to the bot, but usually consists of people also working on other projects. In an MVP phase, or for a smaller bot project in general,

a handful of generalists could each take on several roles. The larger the team, the more specialized roles it will have. As a rule, it is better to have a small team that can focus on the bot and perfect their bot-specific skillset, than a large amount of people involved only part-time!

9.2.1. Bot Owner/PM

Responsibilities: The Bot Owner is the watchtower, the caring parent of the bot. This person is responsible for both high-level strategy as well as day-to-day organization and coordination of both the bot team and other stakeholders. The Owner has a very good view on every aspect of the bot, without knowing the details.

Skills: The Bot Owner is a real people manager, well-organized and good at bringing structure. A real chatbot enthusiast, tech-savvy but also comfortable with talking about the business side of it.

Recruitment: A Bot Owner could have any background, as long as it's someone with the right skills and some project management experience. It could be beneficial to recruit within the organization. A good knowledge of the business and a solid network within different departments is a great asset. In a small project, the Owner could combine his role with more operational bot responsibilities.

Conversational design



Flow design

Responsibilities: The Flow Designer builds the conversation flow, the logic that determines how the bot interacts with users, and thus the core component of the bot. Because this impacts all aspects of the bot, he or she works in close cooperation with a lot of other stakeholders.

Skills: On the one hand, the Flow Designer has to be able to connect with business and get a deep understanding of the end user, and of the unpredictability of human conversation in general. On the other hand, he or she needs to be both structured and creative enough to build a robust flow in a chatbot platform.

Recruitment: This is a very new role, no university graduates flow designers (yet), so be creative! Professionals or fresh graduates with backgrounds in social sciences, design or arts could be good candidates. You might also find people internally (in customer service for example) who are interested in making the switch – having the added benefit of already knowing the business well.



Copywriting/Translation

Responsibilities: While the Flow Designers build the skeleton of the bot, Copywriters put on the meat by writing all pre-scripted dialog.

Skills: Of course, Copywriters need to be good writers – but this is not a generic copywriting job. To write good bot copy, they need to be able to get a good understanding of their target audience, and thorough insights into conversational design and the specifics of writing for bots.

Recruitment: Like Flow Designers, Copywriters could come from diverse backgrounds. They could be language professionals with an interest in bots, but anyone with good language skills – including reoriented internal employees – could become great bot copywriters.

Natural Language Processing



NLP designer

Responsibilities: Defining the intent structure of the NLP model, in close cooperation with the Flow Designer, creating expression to train the model, and testing it.

Skills: As a baseline, the NLP designer needs to be a logical thinker with a strong interest in language, and the ability to empathize with the end user. Bot projects with a large amount of intents and/or a lot of user data (voice/chat/ mail history) could benefit from having an NLP designer with data science or NLP engineering skills.

Recruitment: Again, a role that hasn't been around long yet, which could be performed very well by people from any background. Think social science graduates, language professionals, internal candidates from customer-facing departments... Given the difficulty of finding profiles with machine learning knowledge, you could consider a temporary NLP engineer to design the initial model and leave the follow-up and maintenance to someone less technical.



NLP trainer

Responsibilities: Maintaining the NLP model by verifying and feeding it user expressions.

Skills: Similar to the NLP Designer but on a more junior level.

Recruitment: Could be a new hire, but this is typically a function that could be performed by employees facing the same users as the bot. Possibly only part-time, but frequently enough to get a solid insight in intent structure and NLP training fundamentals.



Integrations

The required skills of developers (front-end, back-end, security, devops, ...) are more generic, however (especially in larger IT organizations) it's best to engage the same developers as much as possible.

Monitoring



BI expert/data scientist

Quantitative monitoring could be performed by the corporate BI/analytics department, a dedicated person within the bot team, or at least part time by the Flow Designer, NLP Designer, or Bot Owner.



Qualitative monitoring

Qualitative monitoring, i.e. analyzing individual bot conversations, is important, but will probably be performed by the Bot Owner and/or Flow Designer – only the very largest bot projects will have a dedicated function for this.



Testing

To be performed by the bot team and business users. There's no use for a dedicated role: Because users are very unpredictable in how they interact with bots, it's best practice to have it tested by as many people as possible.

Business



Product Owner

Ideally, the bot team has a single point of contact within the business department the bot is "working for". He's the Bot Owner's sparring partner and determines strategic priorities. He delegates more operational tasks such as discussing flow details in detail to other employees in his department.



Contact center

If the bot has a human handover component, there should also be a single point of contact, for example the contact center manager, who is in frequent contact with the bot team. Agents handling handovers from your bot have invaluable insights into potential improvements of the bot, so they should be communicated to the bot team on a regular basis.

That's a lot of people... so how to make them cooperate?

9.3. It takes cooperation

A well-functioning bot team works as a close team, well-connected to all relevant stakeholders. The Core Bot Team consists of the Conversational Design and NLP experts, and of course the Bot Owner. They're doing mostly 'bot-specific' work, ideally on a full-time basis, and have a good understanding of each other's workflows.

The position of the Integrations team depends: Developers working on the bot full-time for a longer

period (or continuously), and managed by the Bot Owner, are pretty much part of the Core Bot Team. Same goes for how close Monitoring team members are to the bot.

Key business stakeholders are not really part of the bot organization, but part of its 'inner circle' and thus in close and frequent contact with it.

9.3.1. So how does this work on a day-to-day basis?

Bot building is well suited for an agile approach. The exact way of working depends on the team and the phase in the bot lifetime, i.e. the mix of build and maintenance or continuous improvement tasks. Regardless of the phase, a well-functioning bot team could be organized in sprints with the following recurring elements:

Daily



Stand-up - 15mins

Who: Bot Owner, Core Bot Team, Integrations if relevant

What: For a brief moment every day, the Core Bot Team gets together to give a brief progress update and discuss any general issues

Why: It's important for everyone, from Bot Owner to specialists, to keep an overview of what is happening in the bot. Any issues can be addressed quickly, and huddles organized to tackle them if necessary



Huddle - 15mins

Who: Relevant Core Bot Team or Integrations people (Bot Owner = informed but not invited)

What: Part of the team gets together ad hoc to discuss specific issues. For example, the Flow Designer discusses certain flow changes with the NLP Designer, to assess the impact on the NLP model

Why: Maintain close cooperation and a quick feedback loop between team members whose work is intertwined

Weekly



Business, bot connect – 30min–1hr

Who: Business Owner or other stakeholders, Bot Owner, relevant Core Bot Team members

What: Provide business stakeholders with an update on progress/changes and validate choices/improvements/assumptions made (in detail), plan/discuss business testing

Why: To keep a short feedback loop with business to ensure it meets their requirements and is in line with their view on the customer, and get their approval on improvement ideas



Monitoring meeting – 30min

Who: Monitoring team, Bot Owner Conversational Design and NLP

What: Discuss high-level trends and specific cases of bad conversations, and possible fixes

Why: To keep a constant eye on actual user behavior and tackle issues quickly, to ensure continuous improvement

Monthly



Retrospective (end of sprint) – 1hr

Who: Bot Owner, Core Bot Team, Integrations if relevant

What: Discuss both the major bot issues and improvements in the way of working, gather major improvement proposals to present to the Business Owner

Why: To step out of the day-to-day routine and take a moment to reflect back and openly discuss



Requirements meetings – ±1hr

Who: Bot Owner, Business Owner / Bot Owner, Core Bot Team, Integrations if relevant

What: The Bot Owner meets the Business Owner to capture new requirements, from small changes to major new elements. He also proposes any major improvement ideas from the team, which can be added to the requirements if business approves. He then discusses them with the whole team, to return to business with a solution proposal – and hopefully have it approved

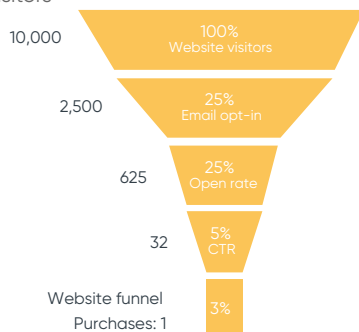
Why: Capture formal requirements so the Bot Owner can plan the next sprint

10. Chatbots can boost your sales & marketing

Most organisations think about automating customer support, frequently asked questions (FAQ) and optimizing customer and employee processes when they want to integrate a chatbot in the customer or employee experience. However they often forget that there's a big opportunity in sales and marketing as well.

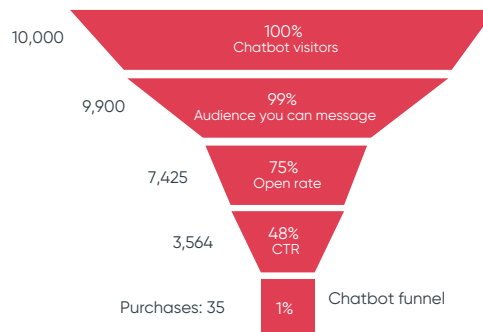
Messenger marketing vs website & email

Comparing 10K visitors



Today, websites and emails monetize 1–3% of their traffic and about 97% of visitors never buy. This whopping 97% is a complete waste of time, effort and money. Fortunately, conversational marketing is quickly beginning to solve one of the biggest problems in the marketing space, waste!

In the marketer's eyes, once users are first introduced, the key is to make sure they are taken care of well enough to keep them coming back for more (middle of the funnel). Chatbots are really good at finding out what these interests are and then automatically sending users the right messaging and thereby increasing their desire. Once the desire has increased, the odds of buying go way up!



After the user has purchased, the bot can then be used to send order updates, as well as handling logistics like shipping and tracking, and even be used to up-sell similar products!

For the first time technology, e.g. via Facebook Messenger or via WhatsApp for business, is allowing websites to talk back to their visitors after they have left. We know the value of email marketing. It is the go-to strategy for most companies. Collecting emails is the way websites try to talk with us today, however Messenger Marketing has a number of big advantages over email.

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From a business perspective, there's a massive upside into providing fast response times. If you wait just five minutes to respond after a lead first reaches out to you, there is already a 10x decrease in your odds of actually getting in touch with that lead. After 10 minutes, there is a 400% decrease in your odds of qualifying that lead.



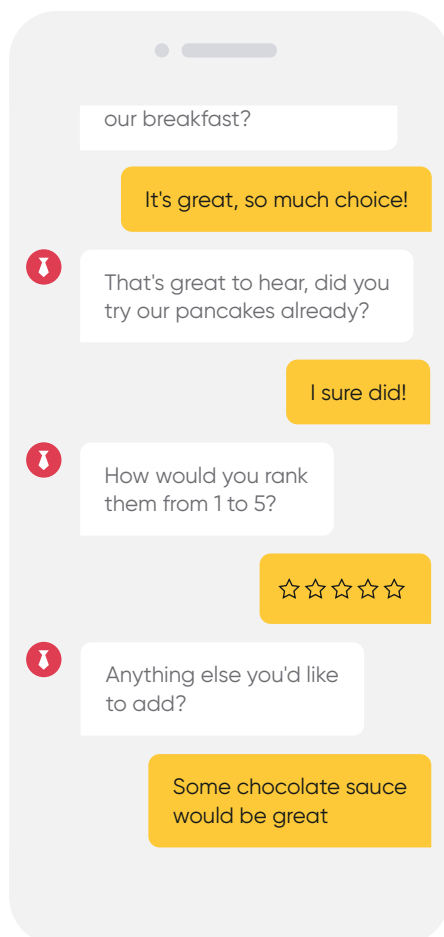
Rick Van Esch,
CEO Chatlayer Sales

- **Increasing sign-ups:** It is easier to get website visitors to sign up to your bot than for them to give you their email. In the simplest terms, it is pressing one button vs typing out their email address.
- **Open Rates:** Good open rates range from 70% to 90% which is 2 to 4x better than email.
- **Click-through-rates:** Good click-through-rates are between 28% to 48% which is miles ahead of the single digit click through rates on email.
- **Cost Per Lead:** When HubSpot tried generating leads through Facebook Messenger, they "saw a staggering 477% reduction in the cost per lead, while lead quality only slightly decreased".
- **User Data:** Bots are an easy and natural way to gather user data and insights. Each time a user takes an action in our bot we are learning about his preferences.
- **Content Marketing:** Bots leverage the power of dynamic content over static content. Chatbots are dynamic and can personalize the content so customers get exactly what they want without guessing. Furthermore, the bot can know what content the user has consumed and naturally take him to the next step. A user takes an action in our bot we are learning about his preferences.
- **Personalization:** Chatbots allow to personalize on scale.
- **Micro Targeting:** Once you have even a little bit of data on your users, it is easy to send the right person the right message at the right time. Just consider that it is possible to use conditional statements when sending a message. For example, you can send a message to everyone who is male, likes red polos, and has a birthday today.
- **Automation:** Essentially, a chatbot is a chat application which means that it can make decisions based on the rules. The bot can automatically respond when spoken to, gather data, and send users the appropriate messages based on the user's behavior. Email can't do this...
- **User Base:** Messaging apps have surpassed social media apps in popularity and usage.

10.1. Facebook advertisement direct to bots

In the examples on the next page, clicking the Facebook ad doesn't go to a landing page, but instead triggers the Facebook Messenger bot. Chatbots remove the need for your prospect to type anything in order to become a subscriber. With the

click of a button, the prospect engages in Messenger and is signed up. Immediately, it is possible to gain access to the user's full name, gender, time zone, preferred language, and even the user's profile pic.



10.1.1. Use Gamification to gather lead information

Try gamifying the user's preferences. For example, you can ask users to play a quiz or how much they like an item from 1–10. By playing a ranking game like this, you can quickly get an idea of what the user likes most. After the game is complete, it is possible to send a coupon towards their favorite items.

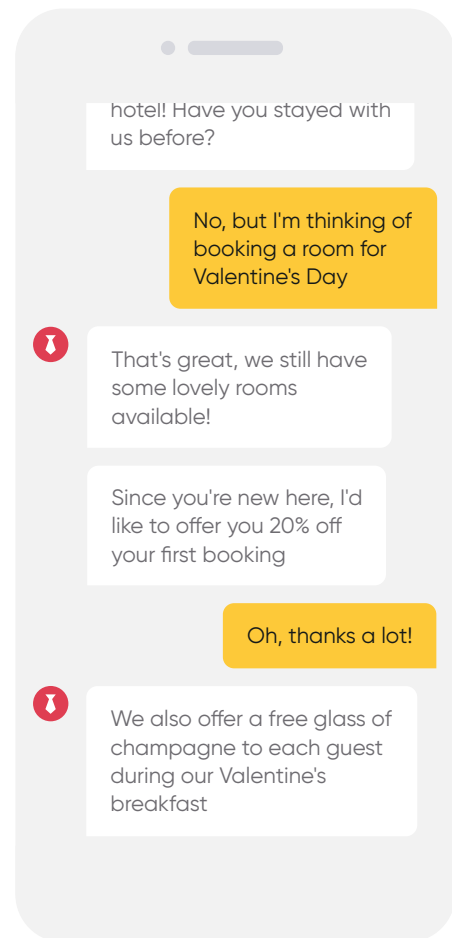
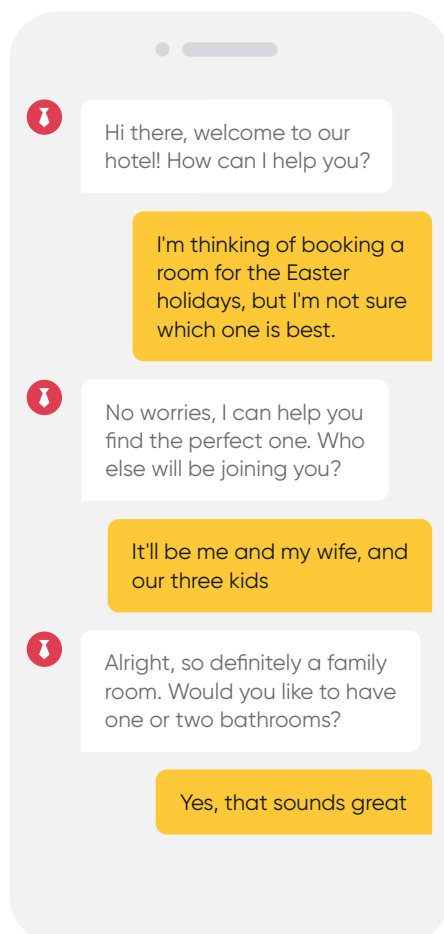
Two big differentiators set quizzes inside chatbots apart:

- By interacting with the quiz, the user immediately becomes a subscriber
- Based on quiz responses, the chatbot better serves the user by delivering personalized content and messaging

For example, users who answer that they prefer springtime over winter will receive a message telling them that, "Spring is almost here, you might like 'X' product to get you ready." Meanwhile, users who enjoy winter will get, "Here's some gear to help you take full advantage of the cold while you can."

10.1.2. Incentivize sales with gifts and coupons

Experiment with gift giving in exchange for a lead. By offering discounts inside a bot, your company can take advantage of unique opportunities. There's no doubt that coupons and discounts incentivize first-time sales.



10.1.3. Importance of good onboarding

Be sure to have a generic flow that onboards users who randomly find your bot and be sure to ask them the right questions so you can put them in the right segment. Then later you can easily see how well different groups of people convert into customers and where they came from.

About Chatlayer by Sinch

Whether you're in the business of Customer Service, HR, Marketing, or eCommerce, Chatlayer's intelligent AI assistants enable your organization to achieve real results, with best-practice templates that fit your exact needs. Our powerful, easy-to-use AI lets you automate processes and personally connect with your customers, at the right moment, in 125 languages, across multiple channels. This results in a great experience for your customers, and unparalleled efficiency and flexibility for your business – all in a transparent, competitive monthly subscription package.



Chatlayer's SaaS platform seamlessly connects to your IT and Communications tools, from CRM to Knowledge Base. And as a part of Sinch, the world's leading CPaaS provider, Chatlayer can expand your business with the best multichannel communications ecosystem on the market.

