REPLY

WHAT ARE CONVERSATIONAL SYSTEMS?

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Conversational Systems are intelligent machines that can understand language and conduct a written or verbal conversation with a customer. Their use is aimed at improving customer experience by steering interaction.

Their objective is providing informed answers, assistance, help in direct channel interaction and possibly in real time. In the context of advanced customer interaction and engagement, **chatbots** can be exploited to enhance existing touchpoints or they may even constitute a fully-fledged new digital touchpoint.

Chatbots conduct a conversation via auditory or textual methods, convincingly simulating how a human would behave, taking advantage of sophisticated Natural Language Processing and Natural Language Understanding technologies.

Chatbots are an important touchpoint for customer experience: the user experience, the layout, the tone of voice and the approach (formal or informal) are key elements for chatbot success.

Human-centred design is an approach aimed at creating "experience systems", by humanising processes and exploiting advanced technology. **Personality by design** is an approach to chatbot personality through the design of interaction styles, by humanising customer touchpoints and user experiences.

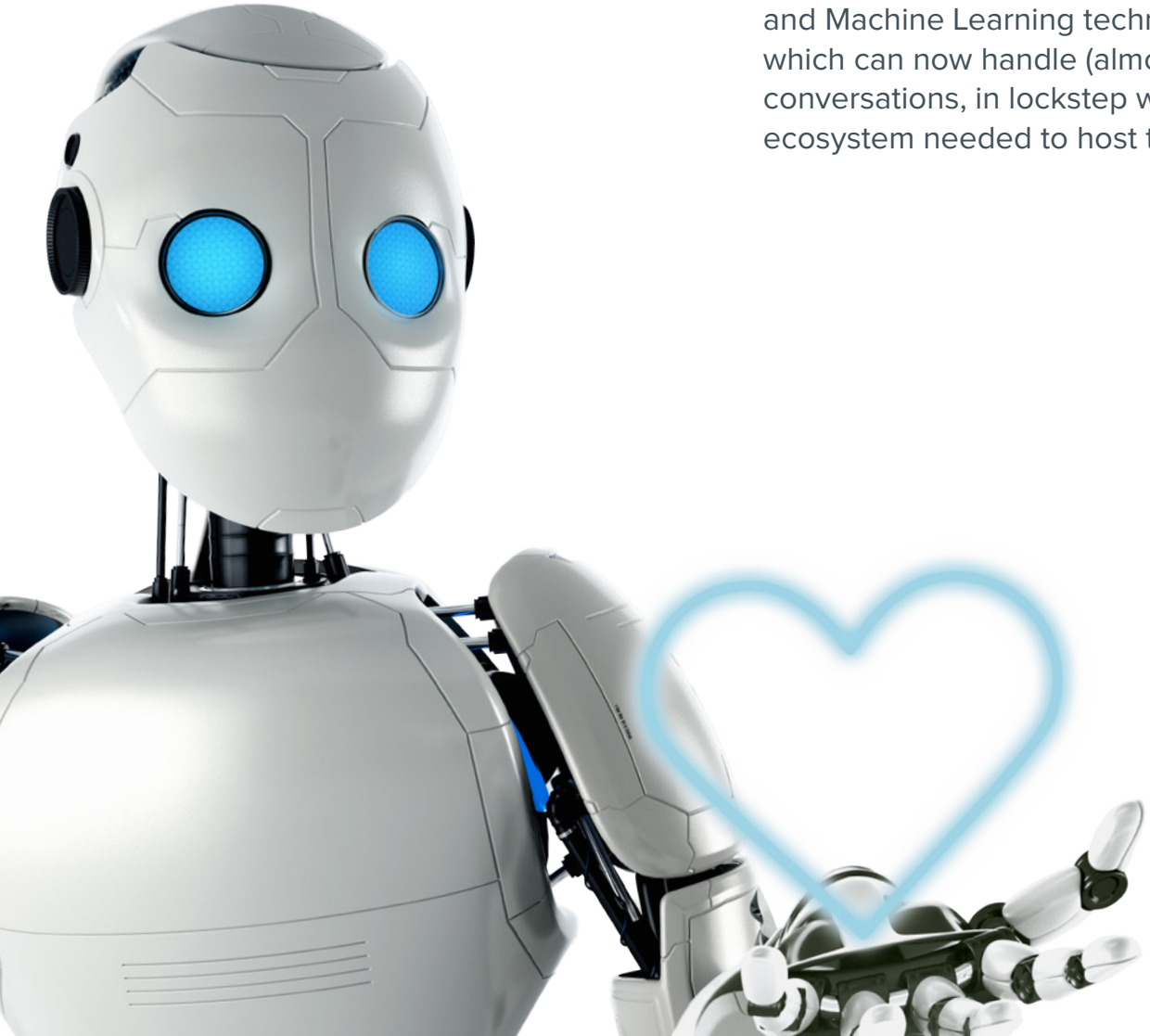
SCENARIO

The main reason for the recent buzz surrounding Conversational Systems is undoubtedly the shift between “always on” and “always on demand”, and how messaging has become the leading digital activity in the world, even overtaking social networks.

This is coupled with the fact that websites and native apps are inevitably confined to offering the same user experience, whereas the removal of these barriers, these interfaces, can open up a much more personal experience.

After all, language remains the most powerful, useful and effective communication tool ever existed!

The other fundamental explanation for the current momentum behind these new touchpoints is the maturity of Natural Language Processing, Artificial Intelligence and Machine Learning technologies, which can now handle (almost) real-life conversations, in lockstep with the digital ecosystem needed to host them.



THE "STATE OF THE ART" IN THE MARKET AND REPLY'S POSITIONING

Today "chatbot" is a commonly used term. It already boasts countless applications, ranging from customer care (automation of front-line call centres or self-care 24/7), to product advisors/virtual assistants, frequently asked questions (FAQ), conversational help and robo-advisory services. It spans all industries, from finance and insurance to the media, automotive sector and healthcare.
In short... the sky's the limit!

However, we need to make sense of the wide variety of conversational technologies that now exist.

Before building our chatbot, the first question we must ask ourselves concerns the conversation topics it will have to handle. Take Siri, for example: this is an open domain, where the potential topics are endless.

On the other hand, if our bot is to support our customers, or provide assistance in browsing our catalogue, or answer a limited number of FAQ, then this is a closed domain and the number and range of topics will be more limited and specific. This brings us to the next question: once we understand the user's query, how will our bot provide an answer that is consistent with that request?

One solution would be for the bot to search for the answer among a set of predefined responses (retrieval-based).

This would give us complete control over the style and communication of the chatbot, which after all is part of our brand image.

Another solution would be to allow the bot to generate on-the-fly responses based on the linguistic rules it has been taught (generative-based).

However, in an unstructured conversation, the chatbot will obviously have more difficulty in talking and interpreting a given language.

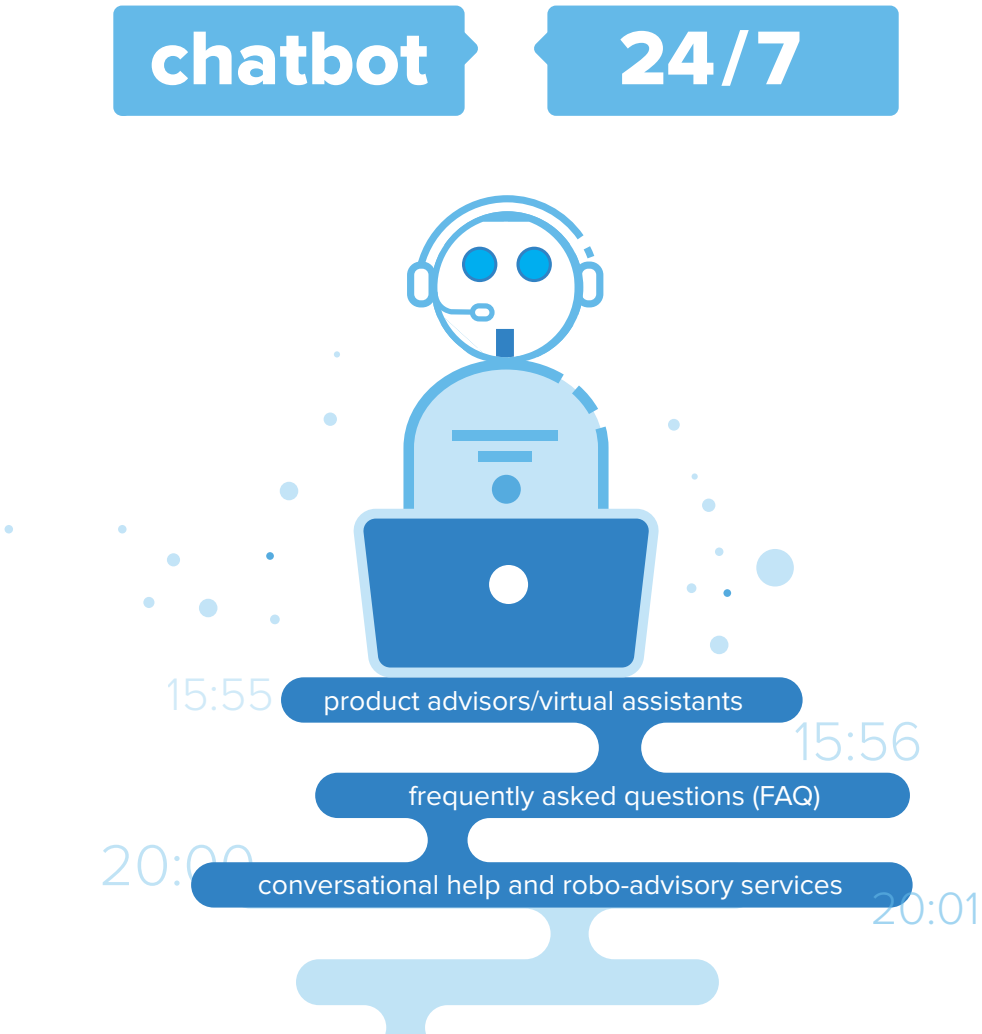
We can draw a parallel with the conversations we have with children: they can understand what we're saying when they are just a few months old, but it will take them several years before they can master the language.

And we certainly don't want the chatbot to sound like a three-year-old child when it responds to customers, right?
It is crucial therefore that we channel our efforts towards ensuring that our chatbot understands and correctly interprets the language so that it can respond appropriately and convey our brand message.

With this in mind, Reply has defined a new framework, Robotics for Customers, in which chatbots are built according to the basic principles of closed domain Conversational Systems.

These are essentially founded on crafting predefined responses in line with the brand's communication style.

This protects the brand, which at that point in time is represented by a bot rather than an actual person.



REPLY'S SOLUTION

To understand Reply's solution in terms of Conversational Systems within the framework Robotics for Customers, let's start with an example of a chatbot not aligned to Reply's vision:

OK, let's start again...
where would you like to go?

Don't know

Show weekend trips

OK, let's start again.., where would you like to go?

Don't know

Show weekend trips

15:56

to Rome

15:56

You're going to Rome, Italy.

Where will you fly from?

15:56

Milan

15:56

A flight from Milan, Italy

Change origin city

Set as home airport

15:56

Route Tip: round-trip flights on this route are usually more expensive than $72

More route tips

When are you plannign to travel?

The day after tomorrow

15:57

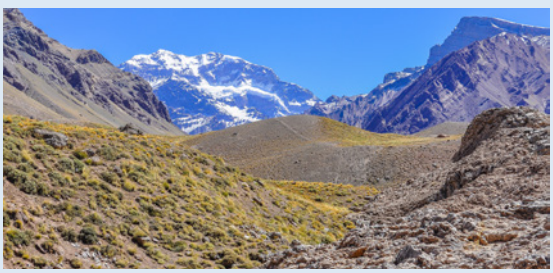
When are yoy coming back?

One way

same day

15:57

Sent



You're going to Mendoza, Argentina

Apart from the “surprise ending”, from our point of view this definitely can’t be described as a conversation.

The conversation should not be an interrogation. When we have a conversation with a colleague, friend or stranger where we are asking for or providing information, this involves a continual exchange of questions and answers.

This cannot be a unilateral path (also known as a “conversation tree”) organised for the sole purpose of simplifying the comprehension needs of our chatbot.

In other words, a Conversational System must be an intelligent machine that truly understands the other person’s language and does not force the other person to adapt their language to the limited abilities of the machine.

To achieve this, we must start with the ability to understand the query (the so-called “intent”) and the accompanying contextual information (or “entity”).

To this we must add conversational memory. It is safe to assume that the next request our chatbot receives will be based on information known from the previous exchange.

In addition, typo correction is not to be limited to the specific language being used, but needs to cover the subject domain (in finance for example, this might include the names of financial instruments, the acronyms used, etc.).

The information conveyed must be interpreted from natural language into something usable in system-to-system integration (e.g. dates and periods can be expressed as “yesterday” or “in the past six months” but n eed to be converted later on in their IT format dd/mm/yyyy).

Lastly, the chatbot must be proactive in suggesting new pieces of information, products or services during the discussion, when needed even by relying on Recommendation Systems of the Robotics for Customers framework.

Together this enables conversations to take place such as:

Hello

Hello. How can I help you?

I need to know the closing prce of scroders emering europe the day before yesterday.

On 30/10/2017, the NAV of schroder isf cto emerging europe was 22.87.
Would you like me to send you the documents?

No thanks, but give me the peformance since the beginning of the yer

OK. From 01/01/2017 to 31/10/2017, the total return of schroder isf cto emerging europe was 2.25.

could you show me the time series?

Here is the graph for schroder isf cto emerging Europe from 01/01/2017 to 31/10/2017.

and pitcet megatreds in the last six months?

Here is the graph for the Pictet Global Megatrend Selection from 01/05/2017 to 31/10/2017.

Thank you. Now please send me the kiid.

The KIID for the Pictet Global Megatrend Selection has been sent to your mailbox.

This is just an example we created as a result of a specific training for our Conversational System.
We can easily think of other potential scenarios, such as a virtual assistant, where the same elements are repeated in exactly the same way.

"I'm going to meet Mario Rossi. When did I last see him?". And then: "Did I take any notes?". And again: "Have I ever recommended product X to him?".

And: "Can you email me the brochure so I can show it to him?".

And finally, at the end of the meeting: "Can you put a reminder in my diary to contact Mario Rossi again in a couple of weeks?" Think of your own situation and take a moment to reflect on what your customers might ask the bot. In their queries, you will no doubt come across the same basic conversational aspects as those described above.

I'm going to meet Mario Rossi. When did I last see him?

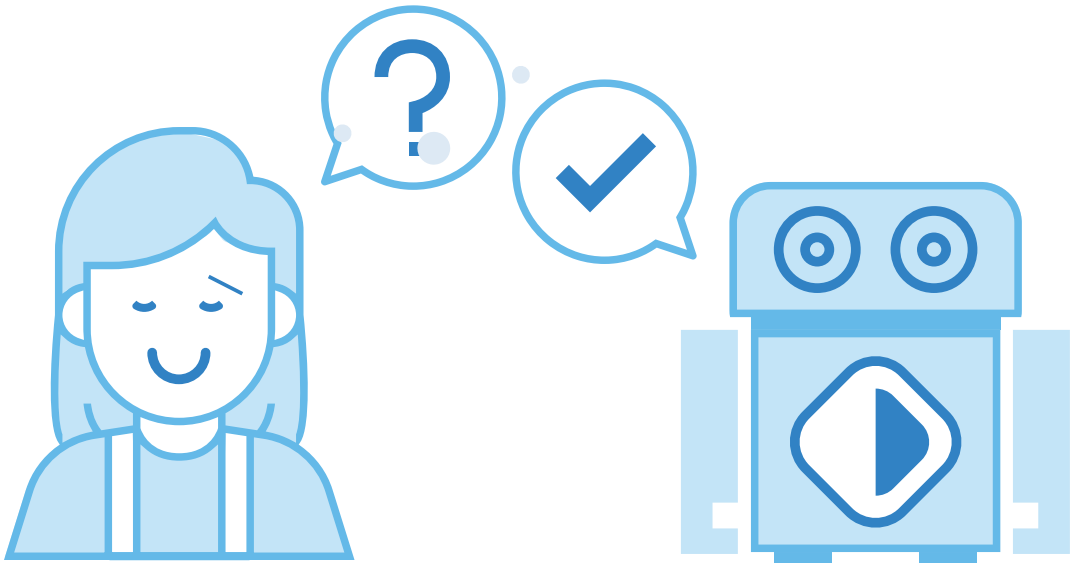
Can you email me the brochure so I can show it to him?

STYLE, COMMUNICATION, CHARACTER, PERSONALITY

Interesting, don't you think? And this is just one piece of the puzzle of a Conversational System.

Necessary, without a doubt, but nowhere near enough. Everyone we speak to has their own character, their own personality. Why should a chatbot be any different?
Why would users want to use a private virtual assistant unless they were impressed not only by the content, but also by how enjoyable the conversation itself was?

That's why the basics of the conversational approach of the Robotics for Customers framework include both Human-Centred Design and Personality By Design.



REPLY specialises in the design and implementation of solutions based on new communication channels and digital media. Reply is a network of highly specialised companies supporting key European industrial groups operating in the telecom and media, industry and services, banking, insurance and public administration sectors in the definition and development of business models enabled for the new paradigms of big data, cloud computing, digital media and the Internet of Things. Reply services include: Consulting, System Integration and Digital Services.

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