

# Topic 5

# Introduction to Chatbots

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AI HUMAN INTERFACE

A solid blue horizontal bar spanning the width of the slide at the bottom.

# Learning Outcomes

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- ☐ Understand the concept of Generative AI
- ☐ Define the concept of chatbots, virtual assistants and conversational UIs
- ☐ Understand the relationship between chatbots and AI
- ☐ Describe application of chatbots in personal life and in business

# Lots of hype around Generative AI recently

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**Washington is struggling to catch up on artificial intelligence**

**'20 minutes of hell': Pierce County family describes**

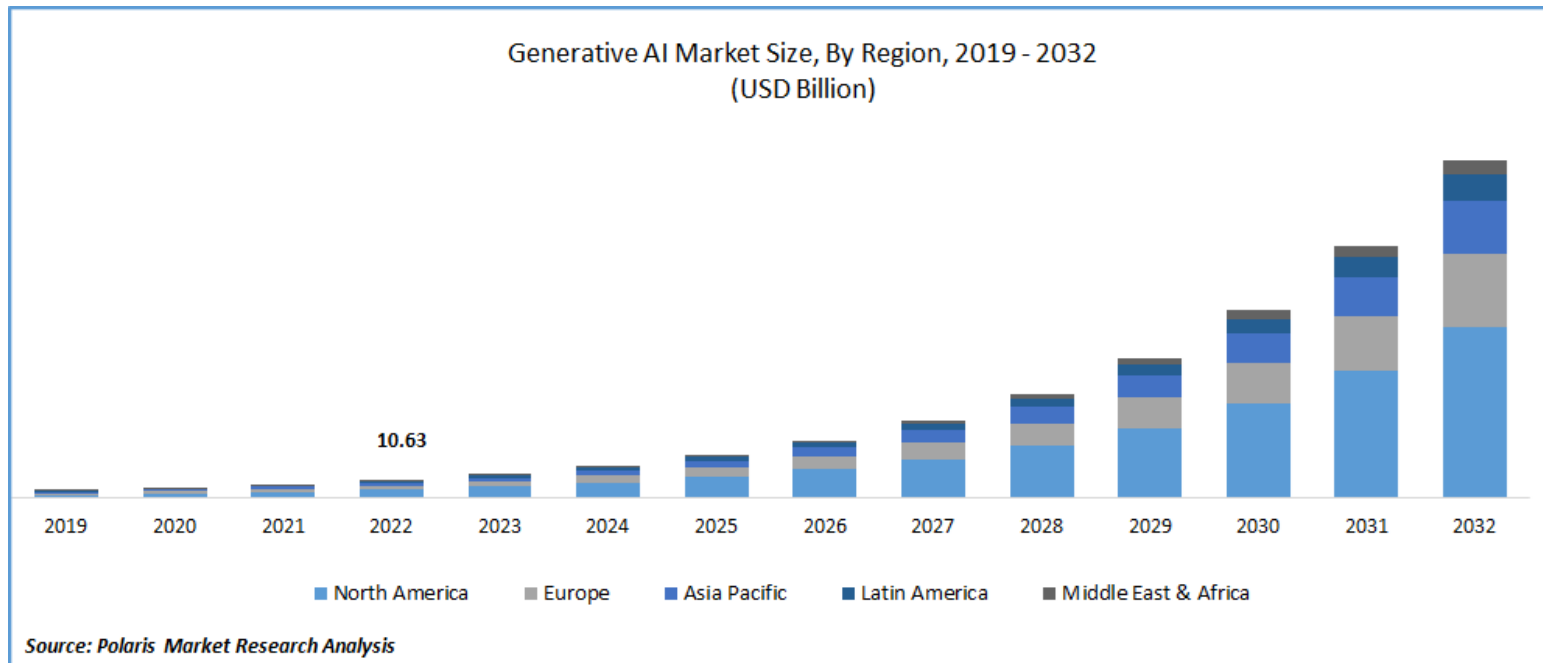
OpenAI's former safety researcher says there's a call  
'10 to 20% the tech will take over with  
many or many humans dead'

**#evilbrag**

**The end of coding as we know it**

**I'm a Student. You Have No Idea How Much We're Using ChatGPT.**

# Generative AI is Trending!



We are just at the starting point of generative AI. It is on the fly in the next 10 years.

# Examples of Generative AI



AI can design and paint like an artist!

<https://www.youtube.com/watch?v=VCVgNDdlH4A>

# Examples of Generative AI



AI can generate music or imitate a singer singing

<https://www.youtube.com/watch?v=9HpMI2HaZfs>

# Examples of Generative AI

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AI can generate text and write articles for us,  
such as ChatGPT or Chatbot!

# What

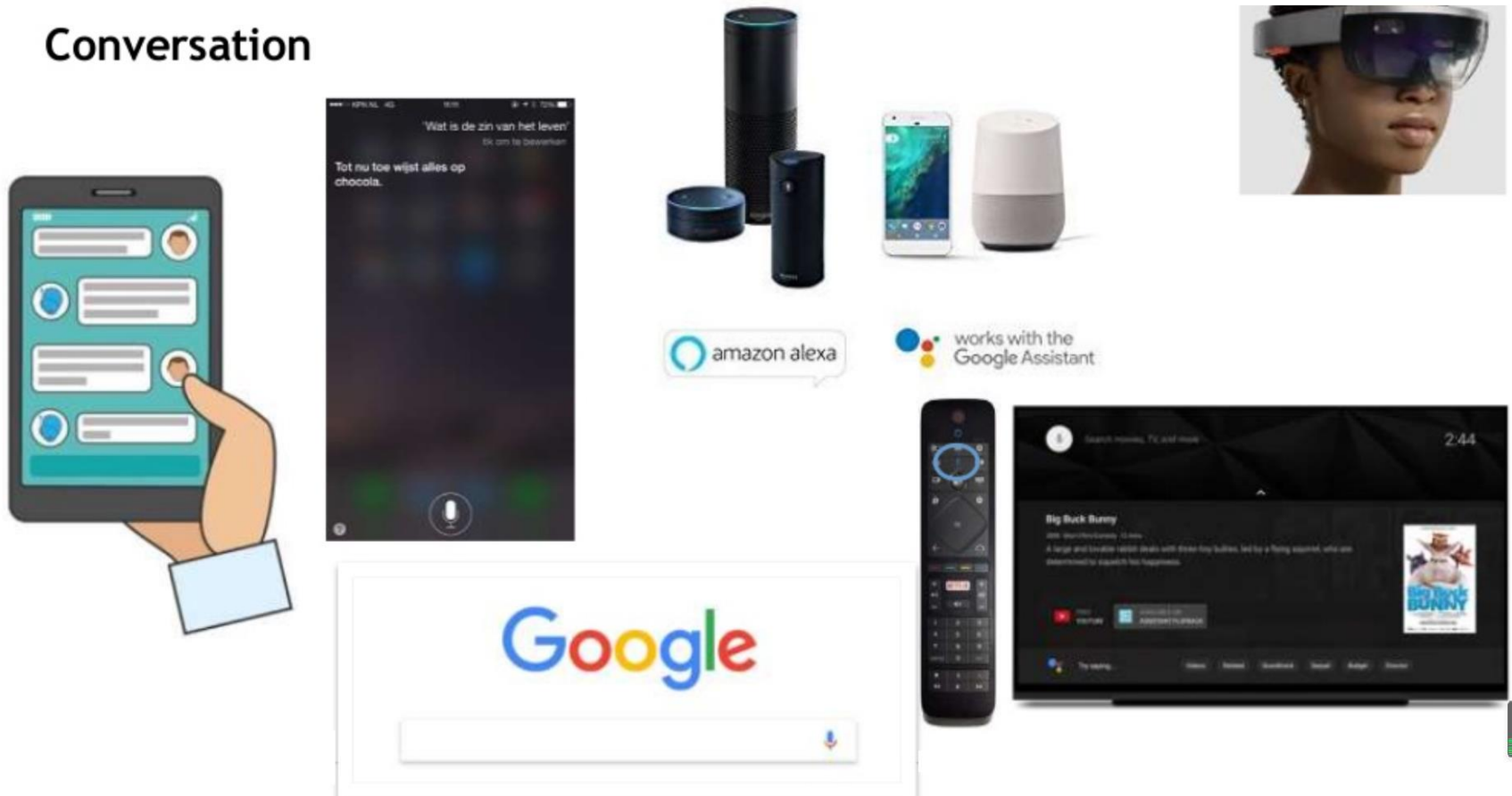
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- What are chatbots, Virtual Assistants, Conversational UIs?
- What is the relationship between a chatbot and AI?



# Conversation

## Conversation



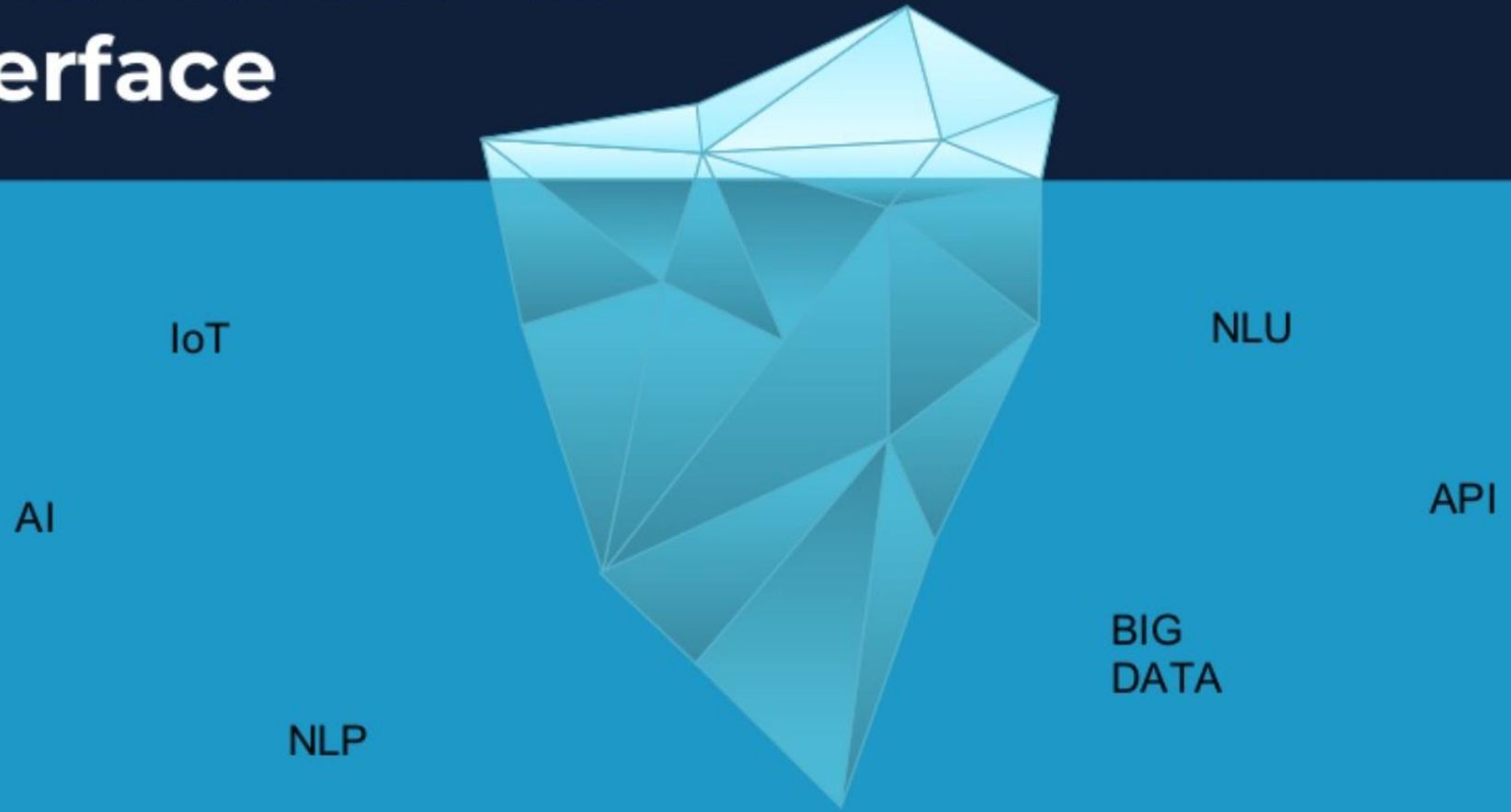
# Conversation

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A conversational, or natural language, user interface is a method of interacting with computers through text or voice commands.

With good speech recognition, accurate instruction detection and quick responses, voice interaction is starting to feel very natural.

# Chatbot is more than a conversational interface



# Introduction

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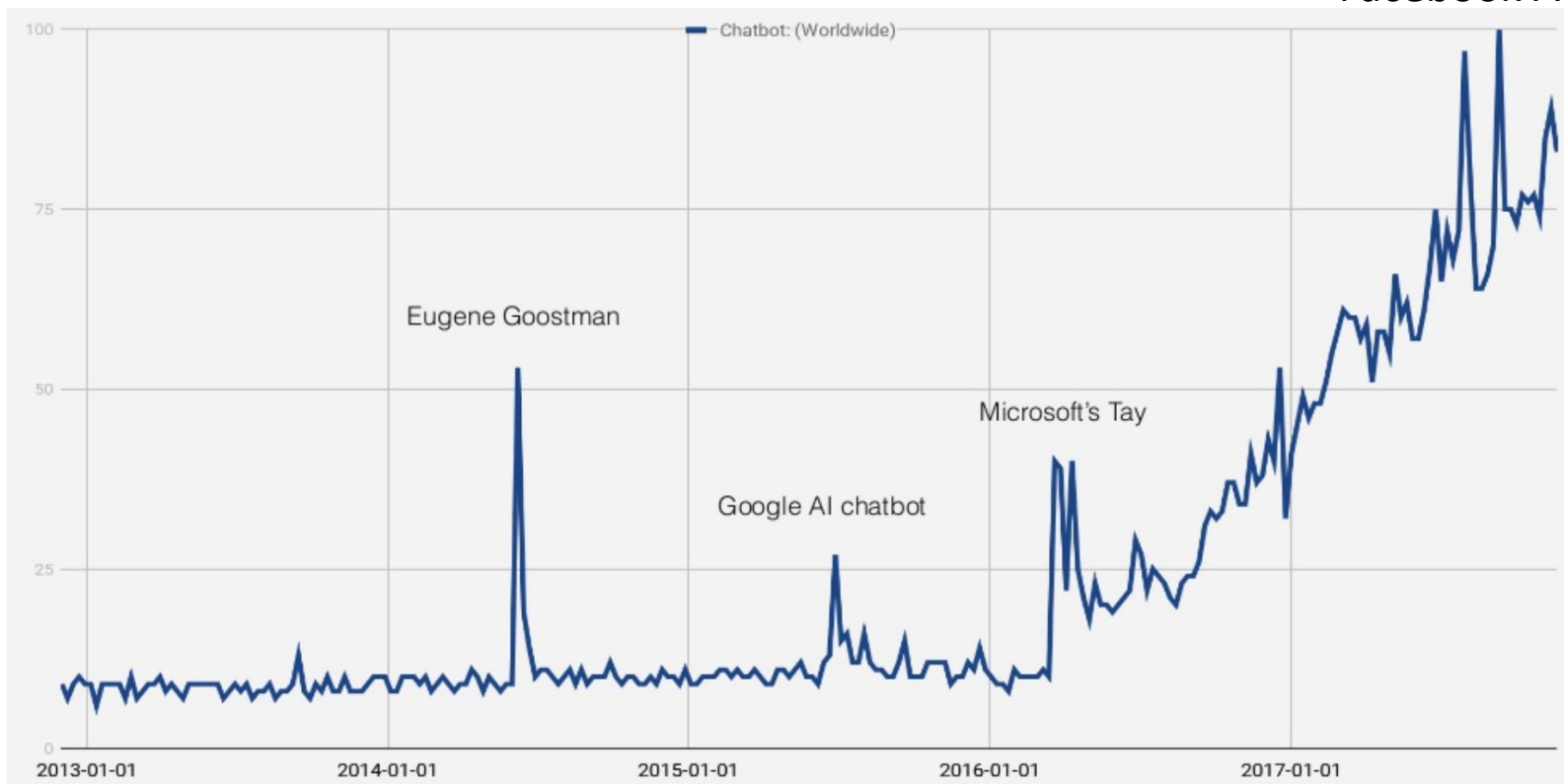
Chatbots provide a natural language interface to their users

Chatbots is able to converse with the user.



# Interest over time (Google Trend)

Facebook AI Bot



# The Good of Chatbots

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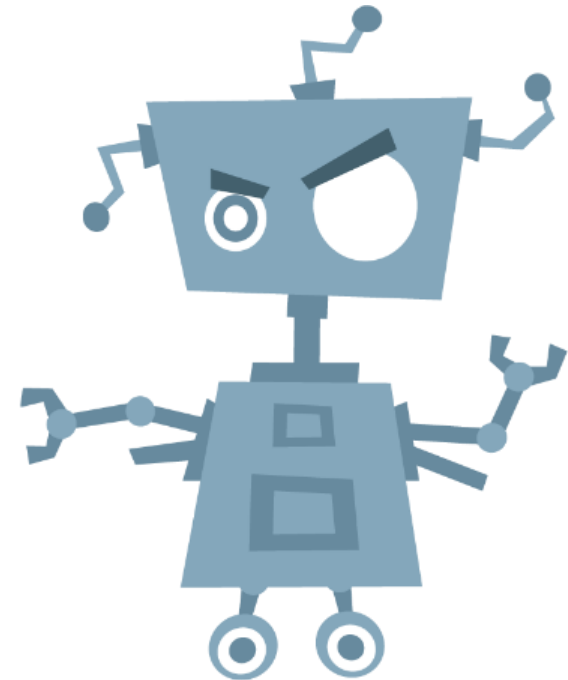
- Message platforms are everywhere
- Simple, known interface
- Applicable to many situations
- 63% of the people are willing to communicate through chatbots



# The Bad of Chatbots

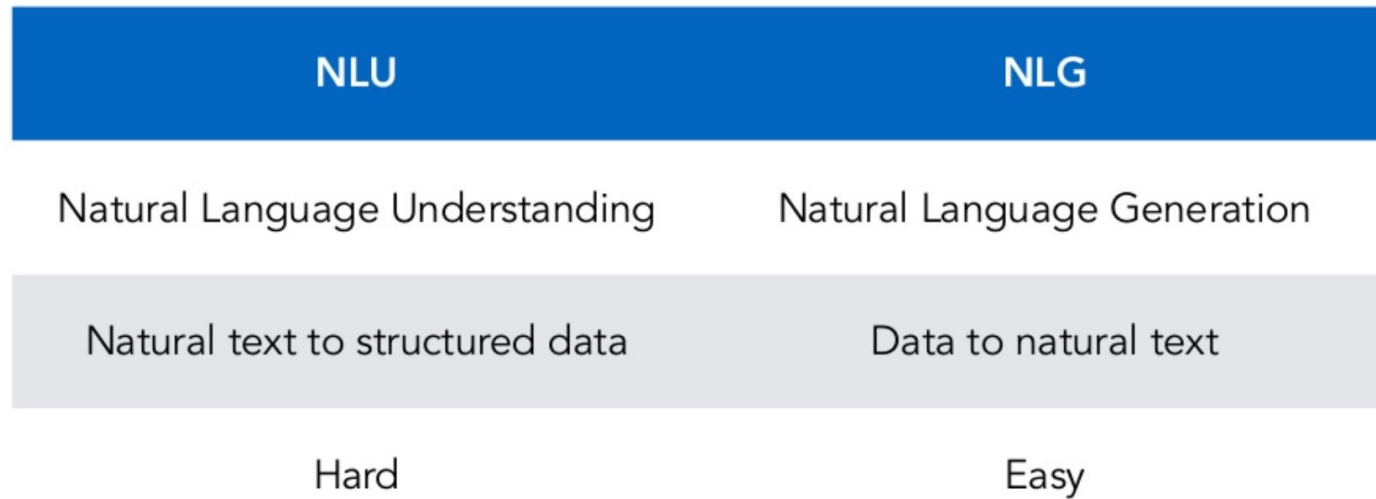
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- 73% won't use the chatbot again after the bad experience
- 75% want to know it is a bot
- 50% are disturbed when the bot pretends to be human
- Not all languages are equally supported



# Natural Language Processing

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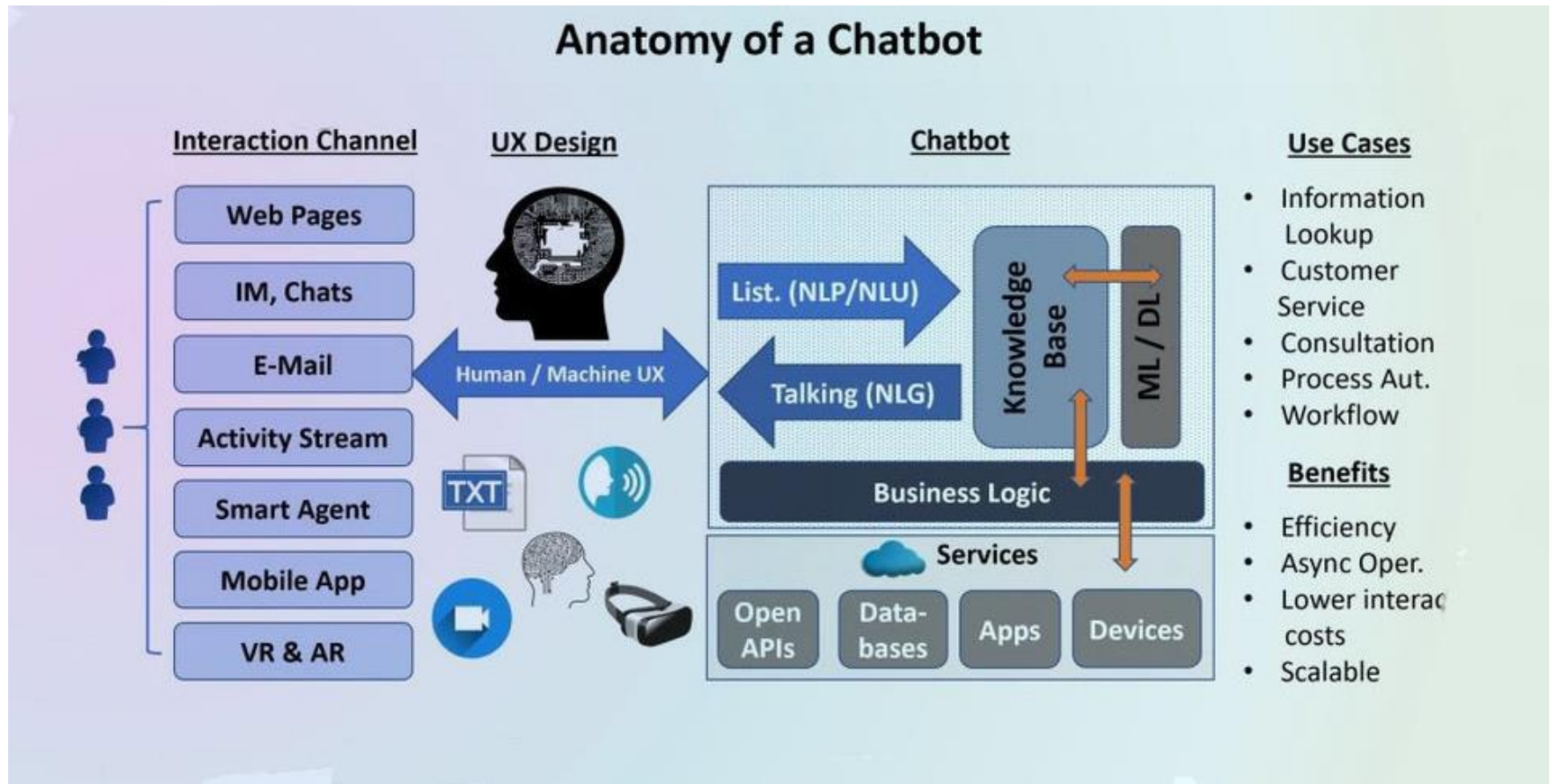


From data to natural language is easy task, but from natural language to data is challenging !

<https://transcranial.github.io/keras-js/#/imdb-bidirectional-lstm>

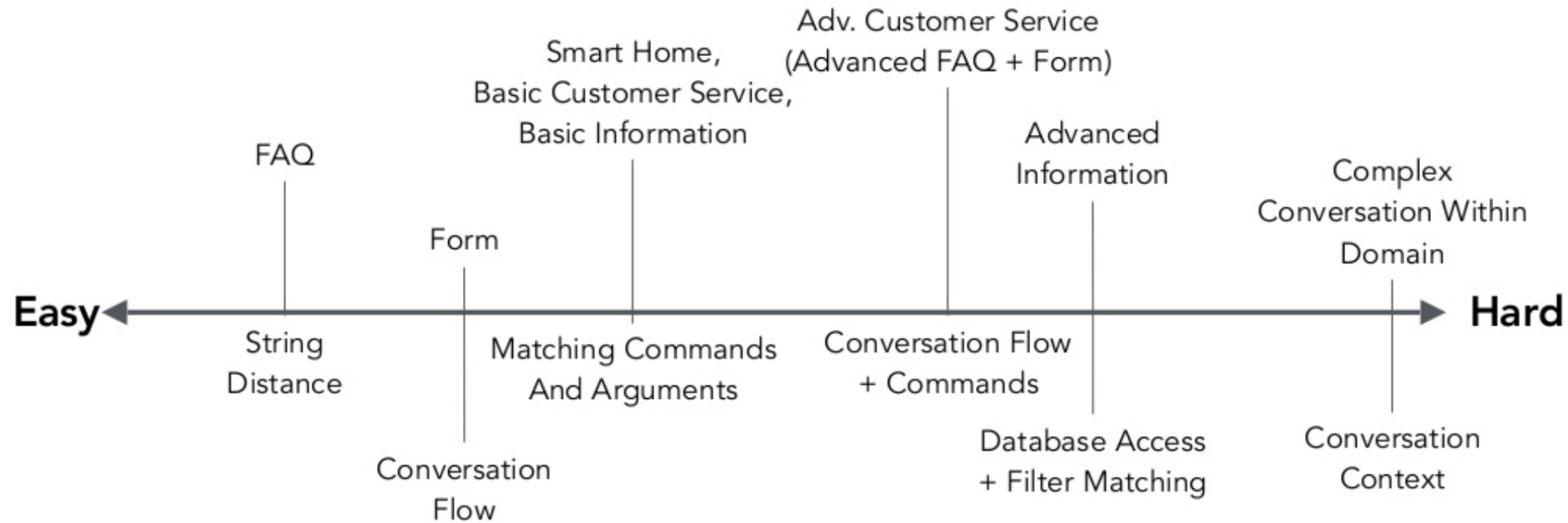


# Anatomy of Chatbot



[https://www.reddit.com/r/Chatbots/comments/j8fpx7/anatomy\\_of\\_a\\_chatbot/](https://www.reddit.com/r/Chatbots/comments/j8fpx7/anatomy_of_a_chatbot/)

# Types of Chatbots



# FAQ / Simple Information Lookup

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- User: asks questions
- Chatbot: gives answer
- Easy to build
- No machine learning

# Guided Conversation / Form

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- Chatbot asks questions
- User answers
- Slightly harder
- machine learning → extracts entities

# Information Lookup

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- Database access through conversation
- User asks questions or gives commands
- Chatbot gives answers, asks questions back
- Difference with FAQ: Context and Entity resolution

# Smart Home / Simple Information Lookup

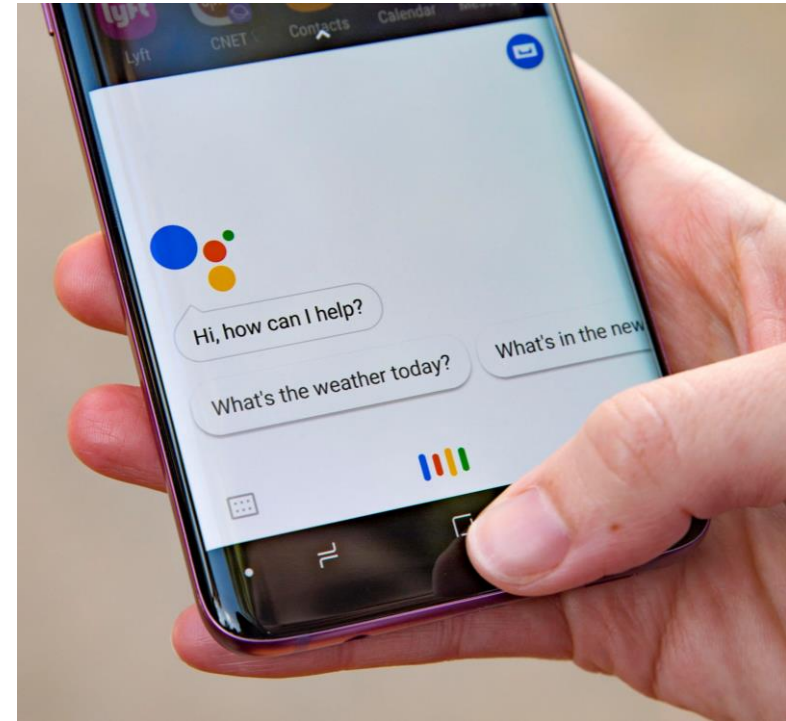
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- Perform tasks
- User tells Chatbot what to do
- Chatbot answers / confirms / asks follow-up questions

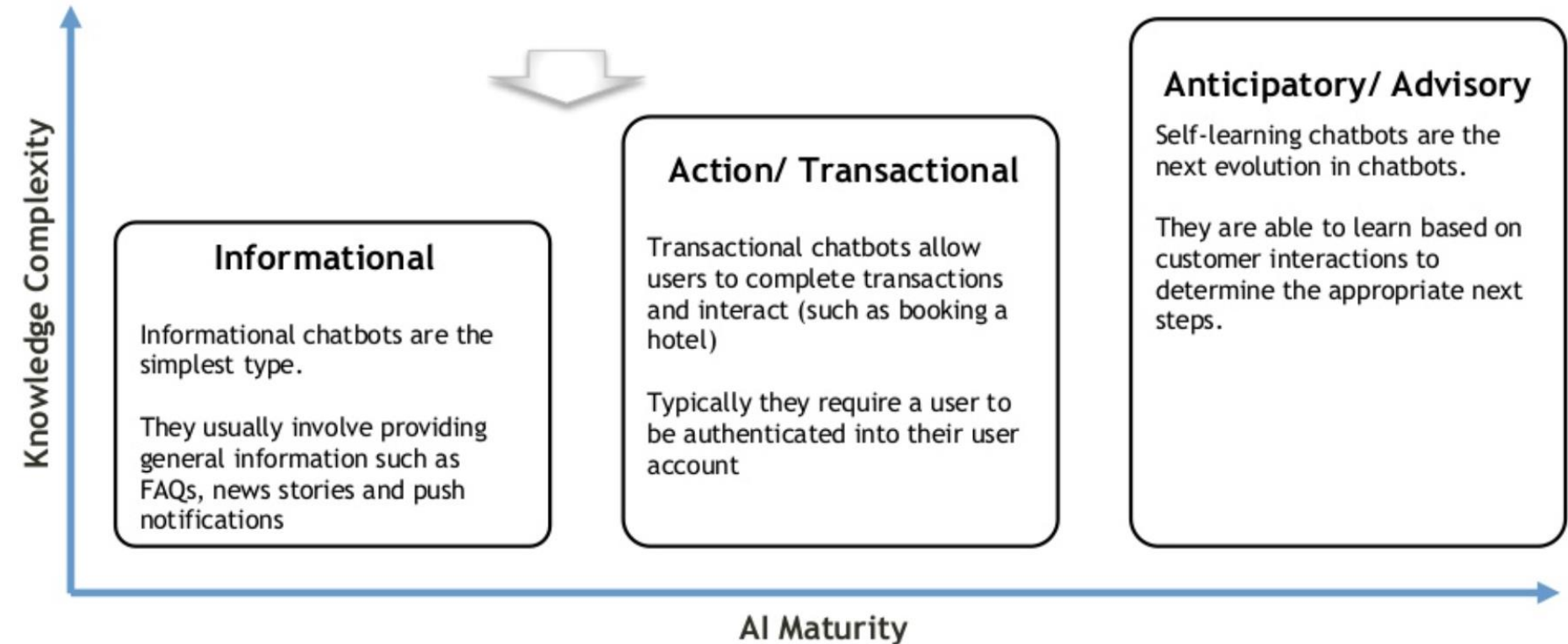
# Types of Chatbot: Personal Assistant

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- Collection of other chatbots
- Redirects actions / questions to “sub” chatbots
- Seamless integration between different chatbots
- e.g. Google Assistant, Siri, ...



# Complexity of Chatbots





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# Experiment Time: Chatbot Examples

# Singtel Shirley

[Products & Services](#) [My Account](#) [Support](#) [Promotions](#)[Shop](#)

## How can we help?

[Ask](#)

### Need Help?

You'll find frequently asked questions, troubleshooting guides and videos to help you in our Support section.

[View All Support Articles](#)

### Contact Form

If you can't find the answer to your question or have any feedback, reach out to us by completing the form.

[Submit Your Feedback](#)

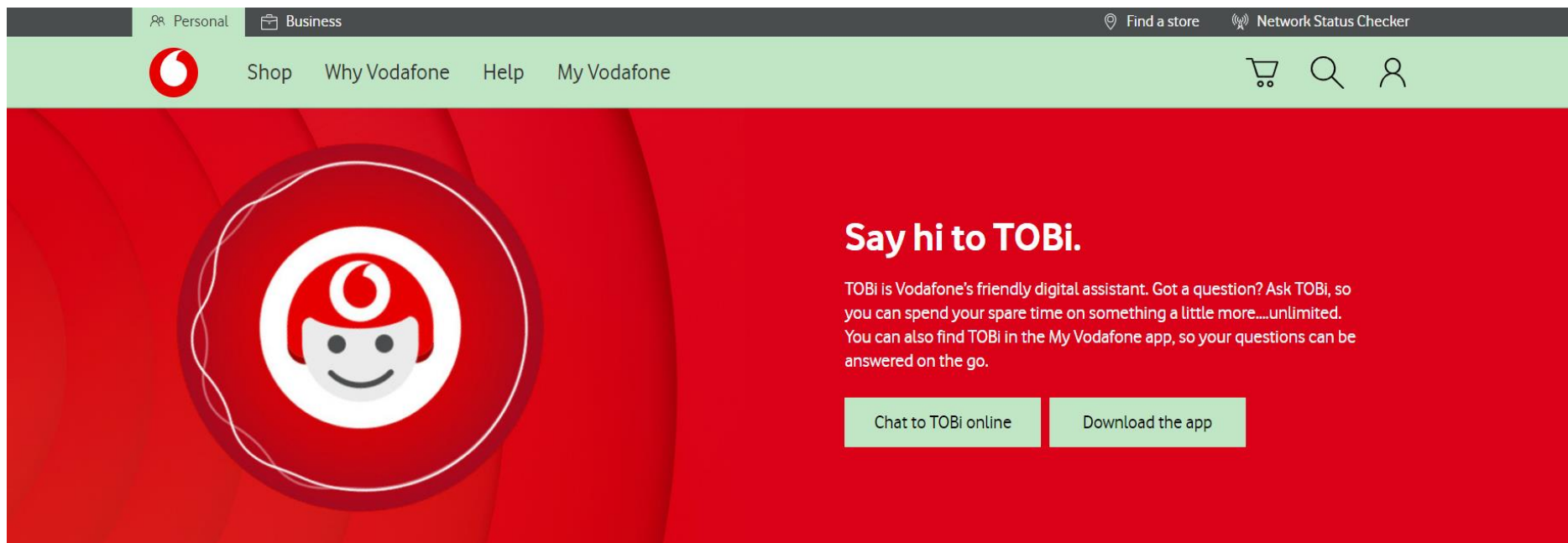
### Career Enquiry

If you have enquiries, comments and feedback on career opportunities with Singtel and / or your application experience, reach out to us by completing the form.

[Submit Your Enquiry](#)

# Vodafone TOBi

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# Shopee



## Hi, how can we help?

is there delivery fee

### Categories

Account Safety & Others

Selling & Billing

Shipping & Delivery

Shopee Mall

Returns & Refunds

Orders & Payments

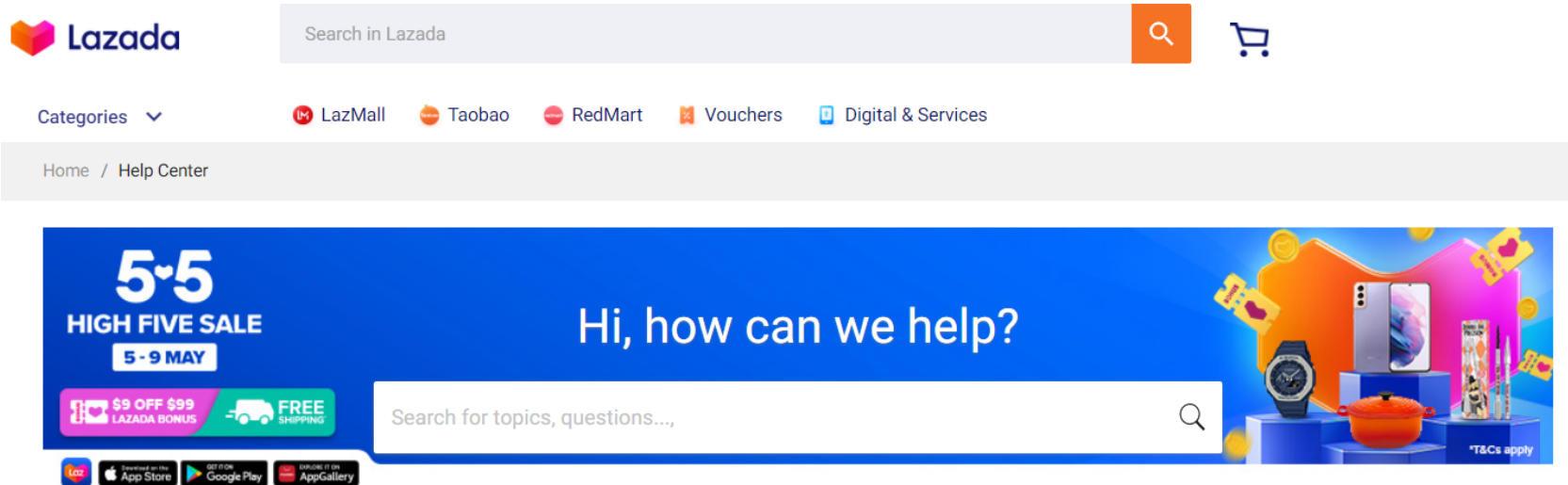
### Hot Questions

[Seller Basics] How Do I Start Selling On Shopee?

[Buyer Basics] Can I Cancel My Order Before It Is Shipped Out?

[Buyer Basics] What Payment Methods Are Supported By Shopee?

# Lazada



## Top questions

- What is Lazada's Refund Policy?
- Why did my payment fail?
- How do I return my order?
- What shipping options does Lazada offer?
- How do I place an order?
- What is Lazada's Return Policy?
- Why am I not able to place an order?
- How can I cancel my order?
- How to be a Smart Shopper

# Discussion: Your Thoughts?

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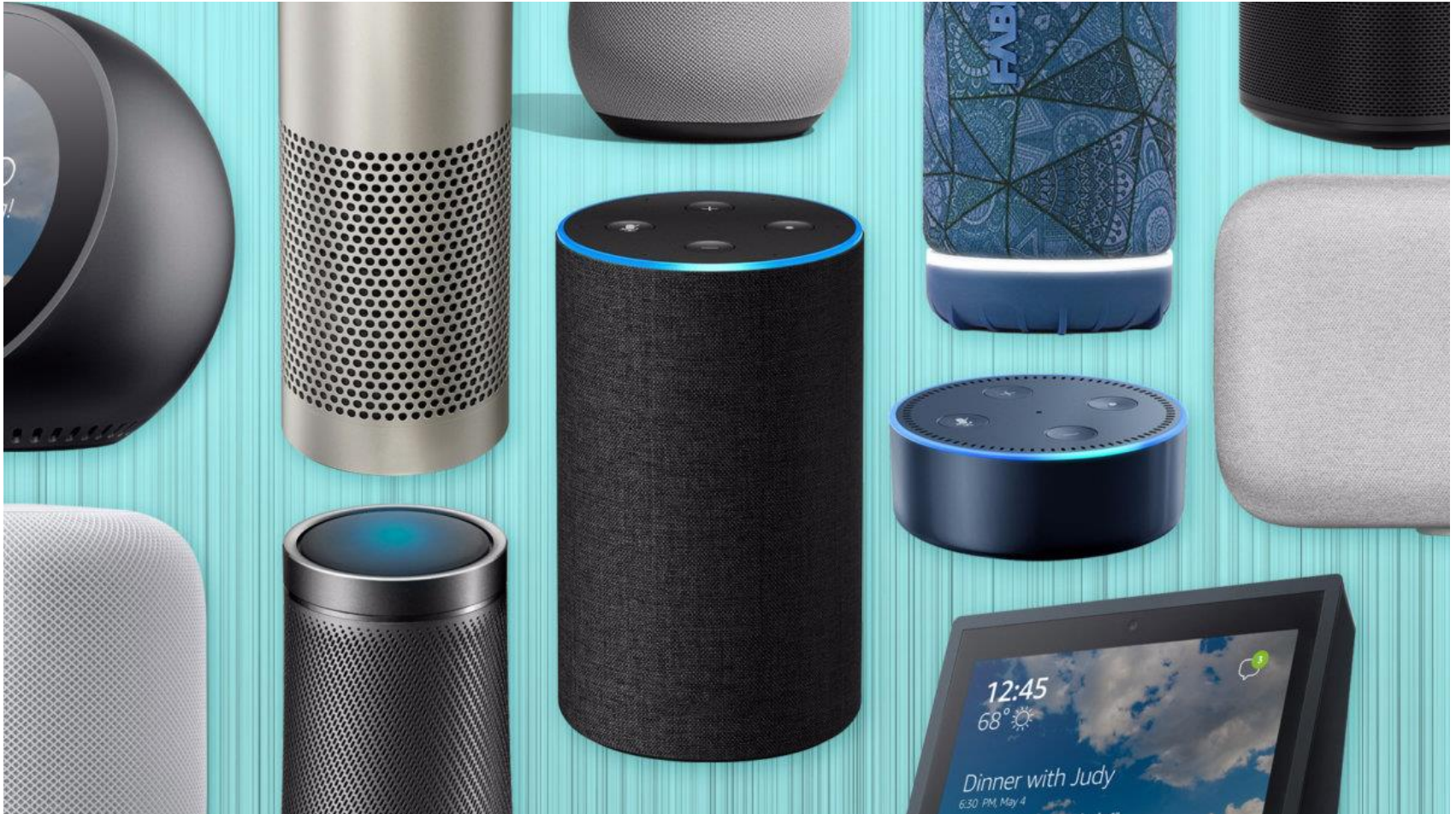
Do you think these chatbots are intelligent and smart?

Are they able to solve some of your problems?

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# Voice Bot Example

# Smart Speakers







Todd Haselton | CNBC

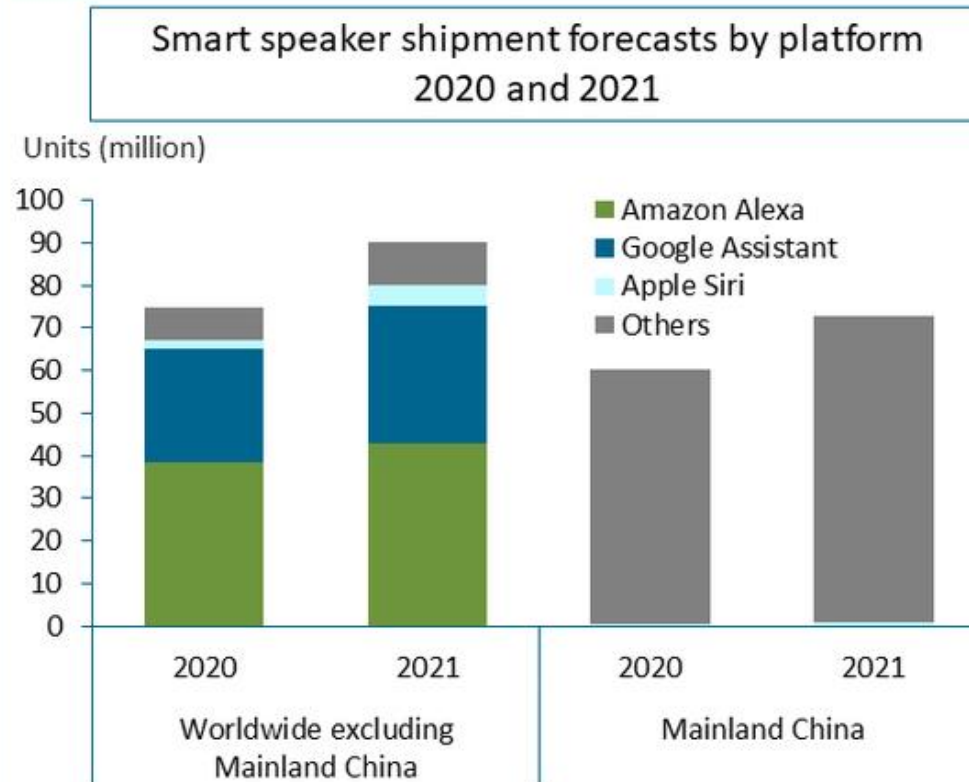
In order: The Echo, the Echo Plus and the original Echo

[Amazon](#) is doubling down on its Alexa-powered devices, with plans to release at least 8 new voice-controlled hardware devices before the end of the year, CNBC has learned.

The devices include, among others, [a microwave oven](#), an amplifier, a receiver, a subwoofer, and an in-car gadget, people familiar with the matter said. All of the devices will be Alexa-enabled, meaning they can easily connect to the voice assistant. Some of the devices will also have Alexa built in.

Amazon is expected to reveal some of these devices at an event later this month, according to an internal document describing the plans.

# Global Smart Speaker Shipment is surging



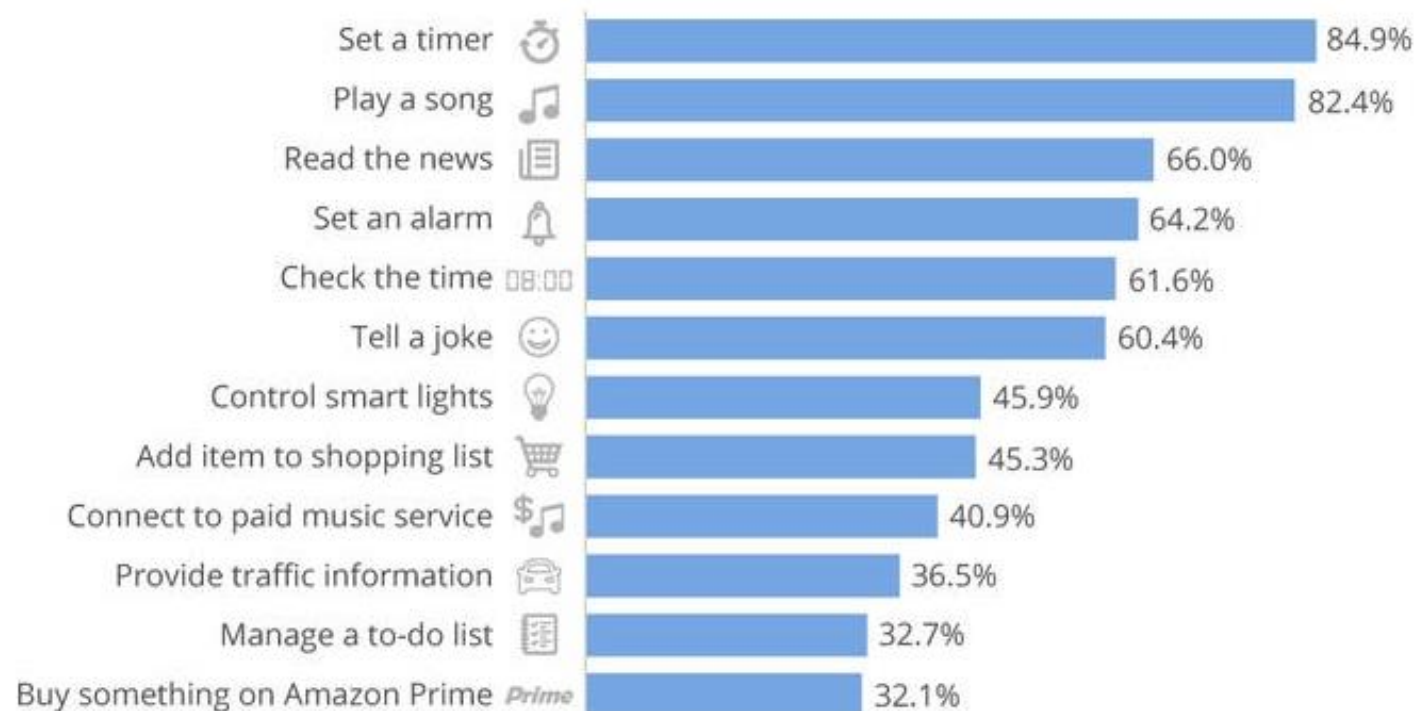
Source: Canals forecasts, Smart Speaker Analysis, September 2020

Global smart speaker market is forecast to reach 163 million units in 2021; worldwide excluding Mainland China to hit 90 million

# Simple Daily Routine Tasks

## How People Use Amazon's Virtual Assistant

% of Amazon Echo users who have asked the device to do the following at least once



# Chatbot For Business

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## Customer Benefits

- Faster than real time
- Hyper personalized
- Convenience



# 3 Criteria For AI in Customers Services

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- **Faster than real time customer service:** the interaction is carried out by a machine which can translate customer questions and respond swiftly to any queries.
- **Hyper personalized:** Modern chatbots are capable of paring conversational data with the customer's profile thus enables company to customer the entire experience with the customer.
- **Convenience:** A chatbot can handle any number of chats provided the solution is scalable and supported by AI mechanism.

# Scenario Study

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Calling Customer Service for support



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“Your call is important to us. Due to unusually high call volume, you may experience a greater hold time than usual.”

“Your call may be recorded for quality and training purposes.”

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20 minutes later ...





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“Have you tried turning it off and on again?”

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## Chatbots can help us improve and scale customer service



# Class Discussion

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If you are a customer, what ways you like to talk to the companies if you have some questions:

1. Call the customer service hotline
2. Use live chat messenger and communicate with the customer service
3. Email: write email to the customer service
4. Others?

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**75% of Millennials  
Prefer Texting Over  
Talking**



# Why people like texts now?

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- Texts are “more convenient” and on their own schedule (76%)
- Texts are “less disruptive than a voice call” (63%)
- They “prefer to text vs. Call” in general (53%)
- They “never check voicemails” (19%)

# Customer Service Chatbots

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Bot + Conversation + Customer Support

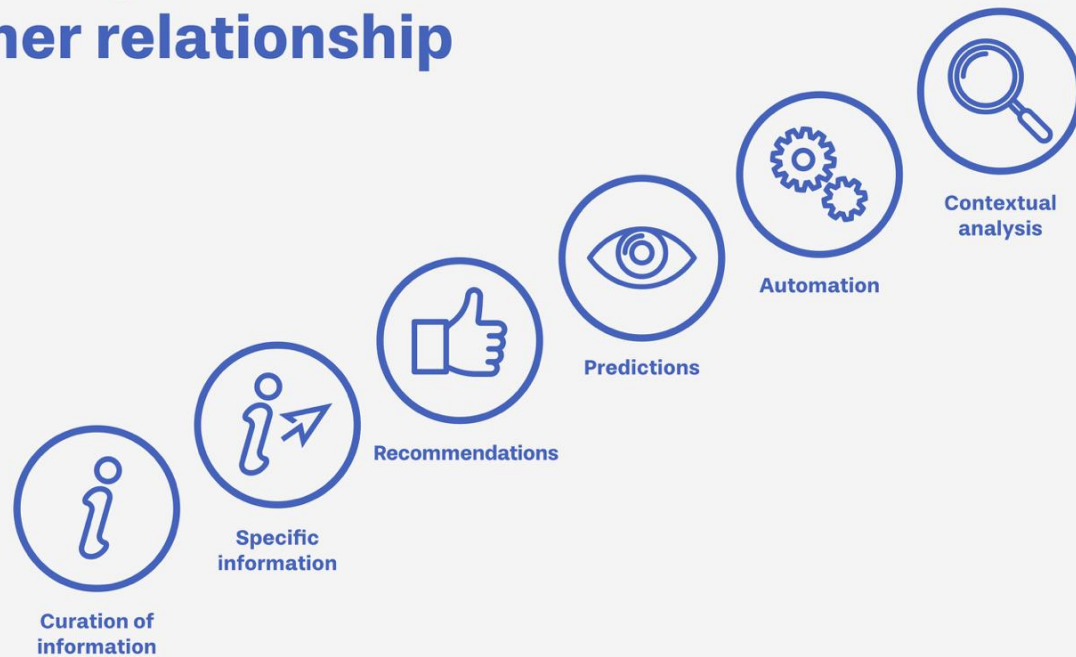
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# Future?

## Where are things heading

# AI Evolution in CRM

## The six steps of AI in the customer relationship



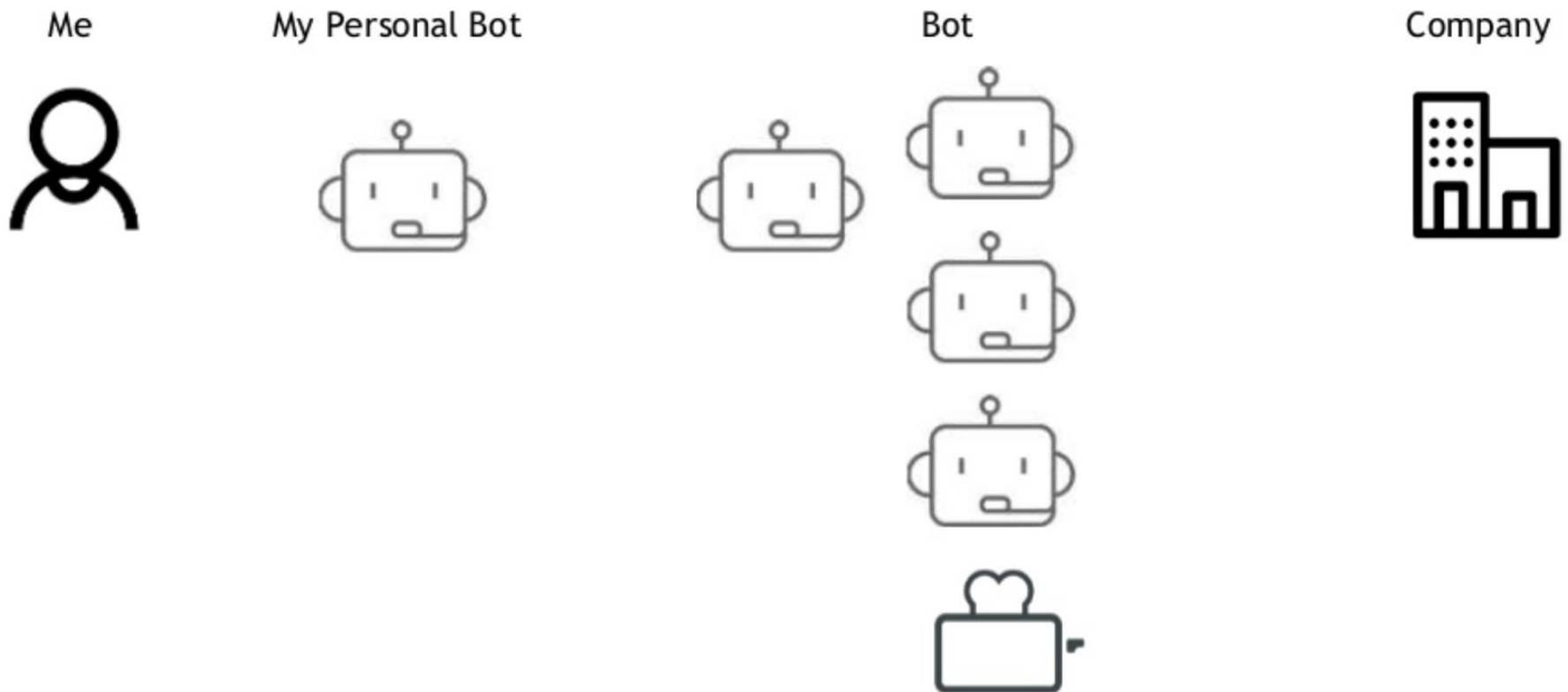


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“Chatbots are the new websites ...  
and messaging platforms are the  
new browsers”

# My bot vs. your bots (and all the data exchange)

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# Impact on companies?

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- Chatbots please your customers
- Branding – meet customer expectations and boost brands
- Business model – chatbots offer progressive avenues for marketing and sales
- Significant cut down on operational costs
- ...

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# Case Study

## Chatbot for retail business

# AI Chatbot for Retail Service Innovation

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- Provide personalized customer experience
- Provide customer's lifestyle advisor
- Increase understanding each customer's needs & wants
- Real time CRM
- Customer royalty maximization
- Target customer marketing
- Maximize customer recognition
- Mobile online-offline shopping integration

# AI Chatbot Use Cases: Travel Industry

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Automating Booking Request for Travel Agency via Chatbot

Sources:

<https://www.youtube.com/watch?v=A8TVLIE1A9k>

# AI Chatbot Use Cases: Food & Beverage Industry

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A chatbot based reservation system is a better way to have a conversation with your customers

Sources:

[https://www.youtube.com/watch?v=Y84M\\_7AiJto](https://www.youtube.com/watch?v=Y84M_7AiJto)

# AI Chatbot Use Cases: Retail & Fashion Industry

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Experimenting for the best use cases to enhance customer experience

Sources:

<https://www.youtube.com/watch?v=1622Dtyi5T8>



# Discussion

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Is your company currently using chatbot to serve internal employees or external customers?

If not, how do you imagine you can use chatbot to improve the business?

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# Chatbots are trending

## Chatbots And VR Lead This Season's Top Tech Trends In Retail



Rachel Arthur, CONTRIBUTOR

I write about the intersection of fashion, business and technology. [FULL BIO](#) ✓

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MUST READ [BLACK FRIDAY 2017: ALL THE BEST DEALS, SALES, AND ADS ON LAPTOPS, DESKTOP PCs](#)

## Chatbots gain more sophistication and popularity for business applications

Chatbots have enjoyed wide adoption already, but with new developments in artificial intelligence and other technology, they will become even more useful to businesses.



By Bob Violino | November 10, 2016 -- 17:31 GMT (09:31 PST) | Topic: Innovation

“By 2020, customers will manage 85% of their relationship with the enterprise without interacting with a human.”  
Gartner Predicts”

Now, more than nine months on, the team is finding those who use the chatbot are nearly three times more likely to do so to ask questions on specific products versus browsing eBay's inventory for inspiration and discovery – suggesting both engagement and retention are high.

BRIEF

## Study: Chatbots gain popularity with consumers, especially millennials

## 80% of businesses want chatbots by 2020



BI Intelligence

🕒 Dec. 14, 2016, 10:15 AM 🔥 8,741

# Conclusion

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- Chatbot: A new technology with great future potential.
- Chatbot will be extremely useful to both personal user and business.
- However, Still in incubation phase