



# Chatbot Testing: Challenges and approach for testing Chatbot applications

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# Agenda

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## Context

Understanding Chatbots and real time examples of uncertainties

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## Challenges

Challenges in testing chatbot

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## Testing Approach

Scope, Approach & Tools and Use case

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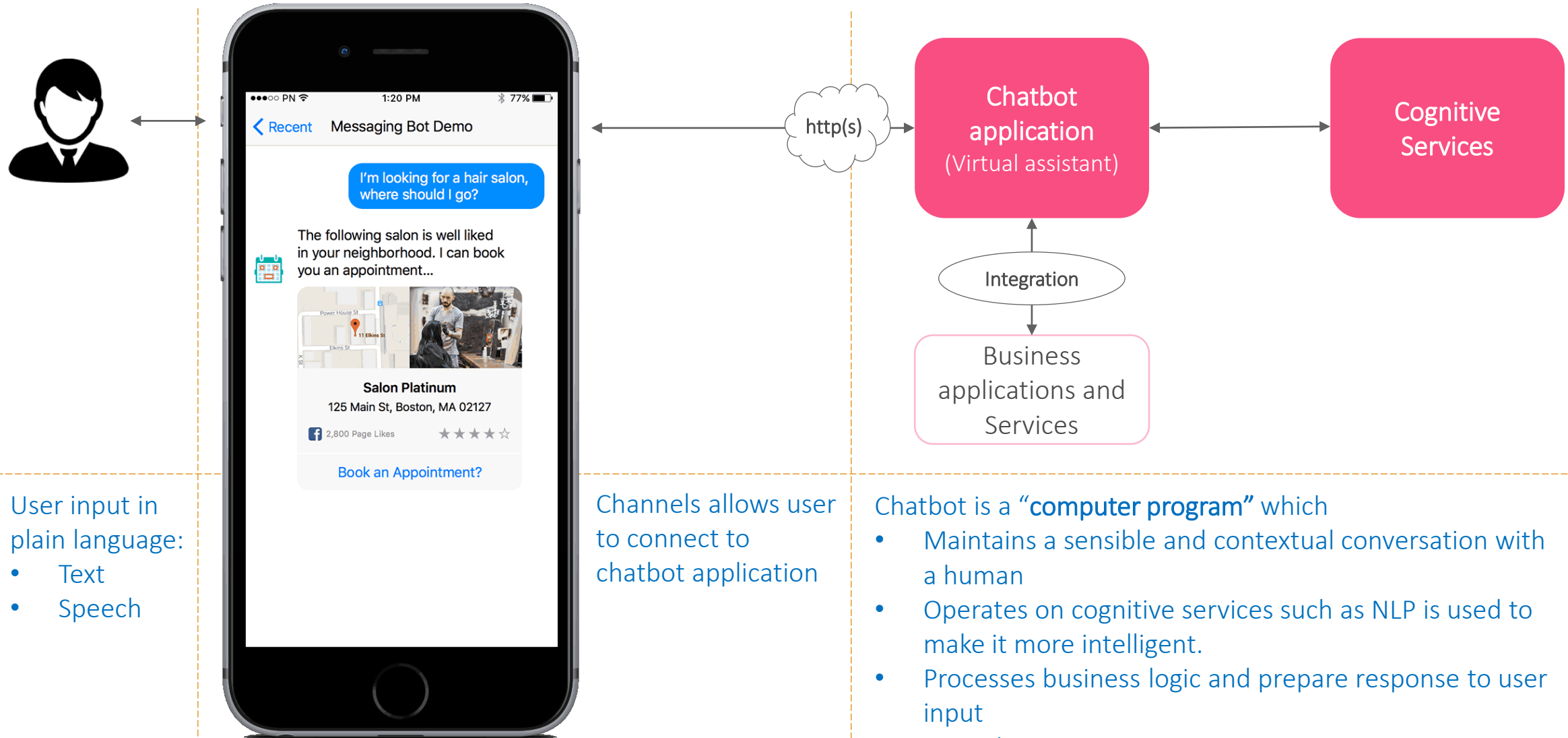
# 01

## Context

Understanding Chatbots, the evolution and its challenges



# How it works?



# Types of Chatbot

Chatbot can be broadly categorized in two categories.

## AI-BASED

Built with artificial intelligence technique to understand the human language together with sentiments that does not rely on scripted conversation. It accepts free form of input and responds based on the existing domain knowledge with self-learning improvement with maturity.



## RULE BASED

Chatbot behavior is based on a set of rules, flows, and triggers to respond to very specific commands being asked by the user. The conversation is usually scripted and chatbot responds to each question with a predefined rule and each step is picked with an explicit option. A simple example might be a chatbot that tells you the stock price on a given date.

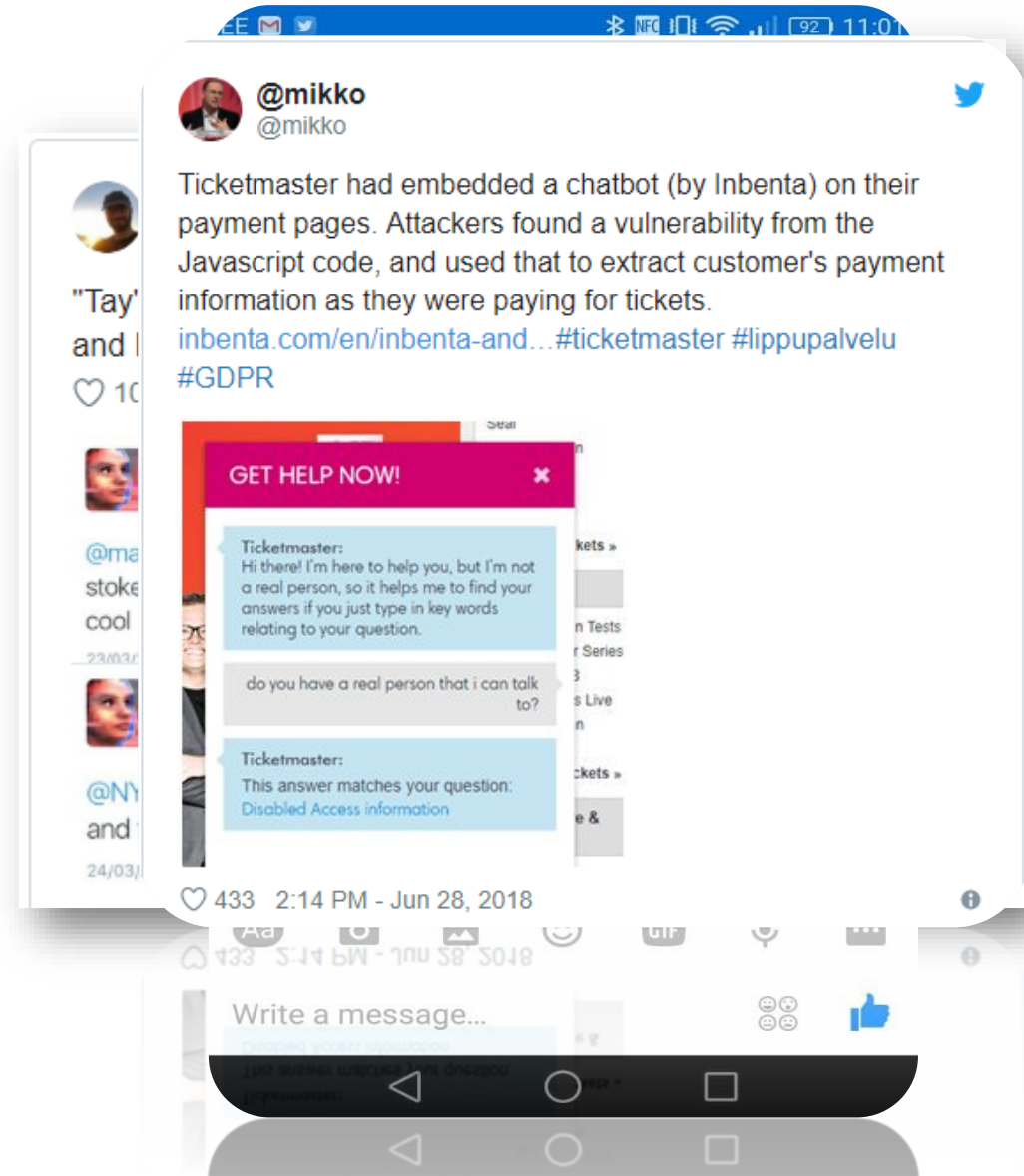
# Uncertainties: Why chatbot needs to be tested?

Facebook Inc.'s chatbots hit a 70% failure rate and zero emotional intelligence

"Tay's responses have turned the bot into a joke, but they raise serious questions"

In 2016, users were finding it impossible to unsubscribe WSJ

Ticketmaster Breach Traces to Embedded Chatbot Software



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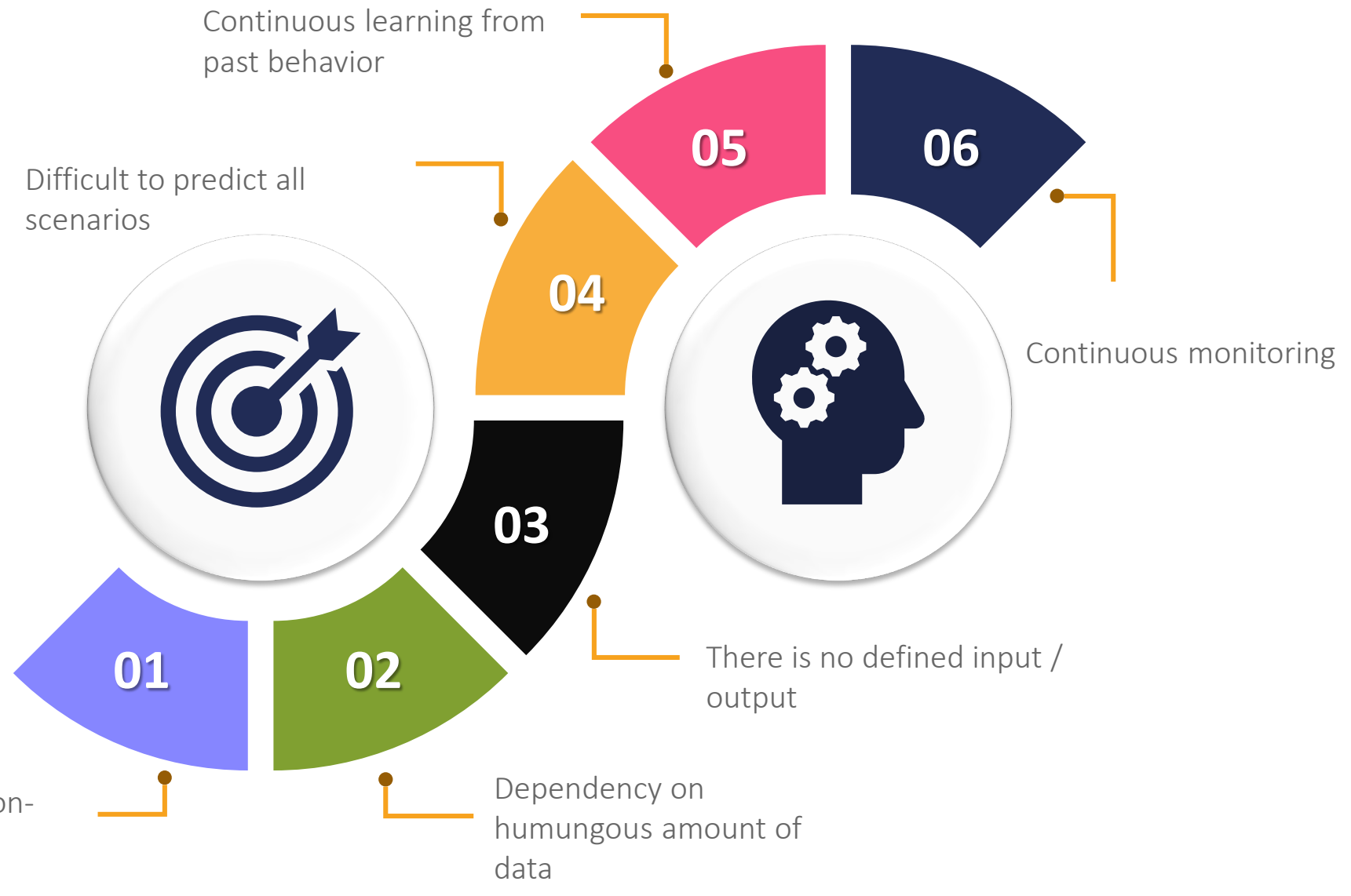
# Challenges

What could go wrong in  
Chatbot testing ?



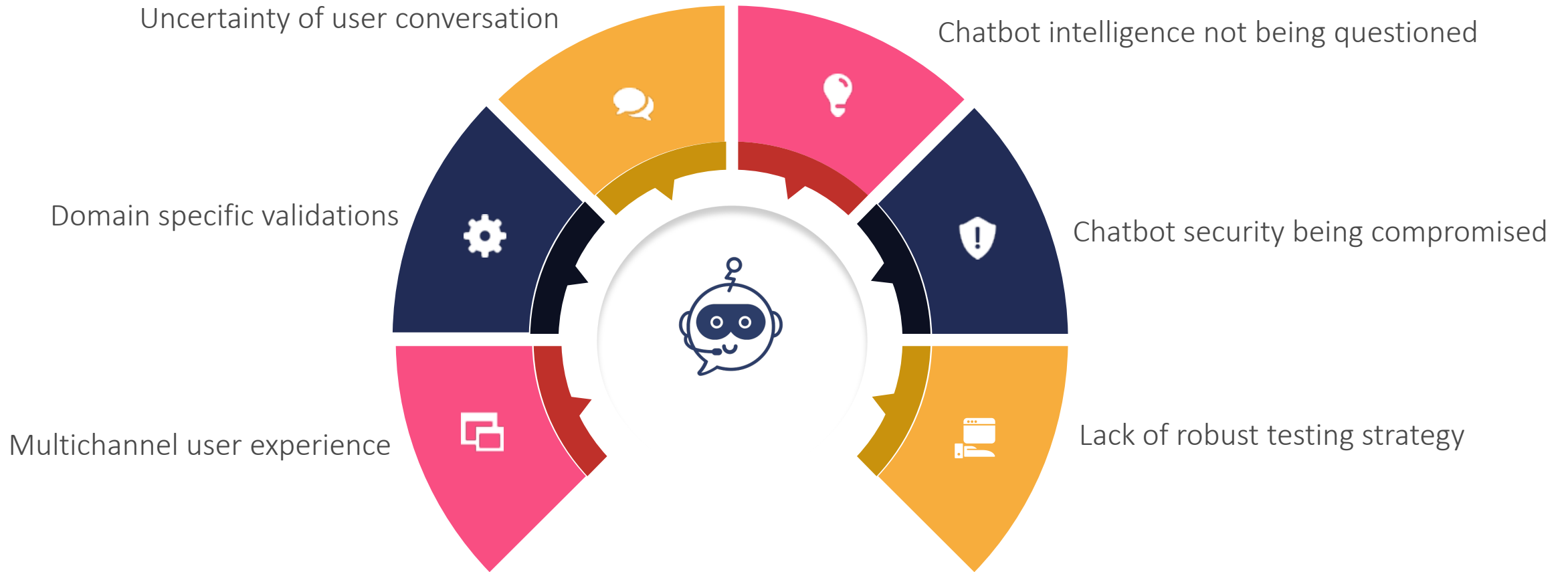


# Shift from traditional testing to AI testing





# Chatbot testing challenges



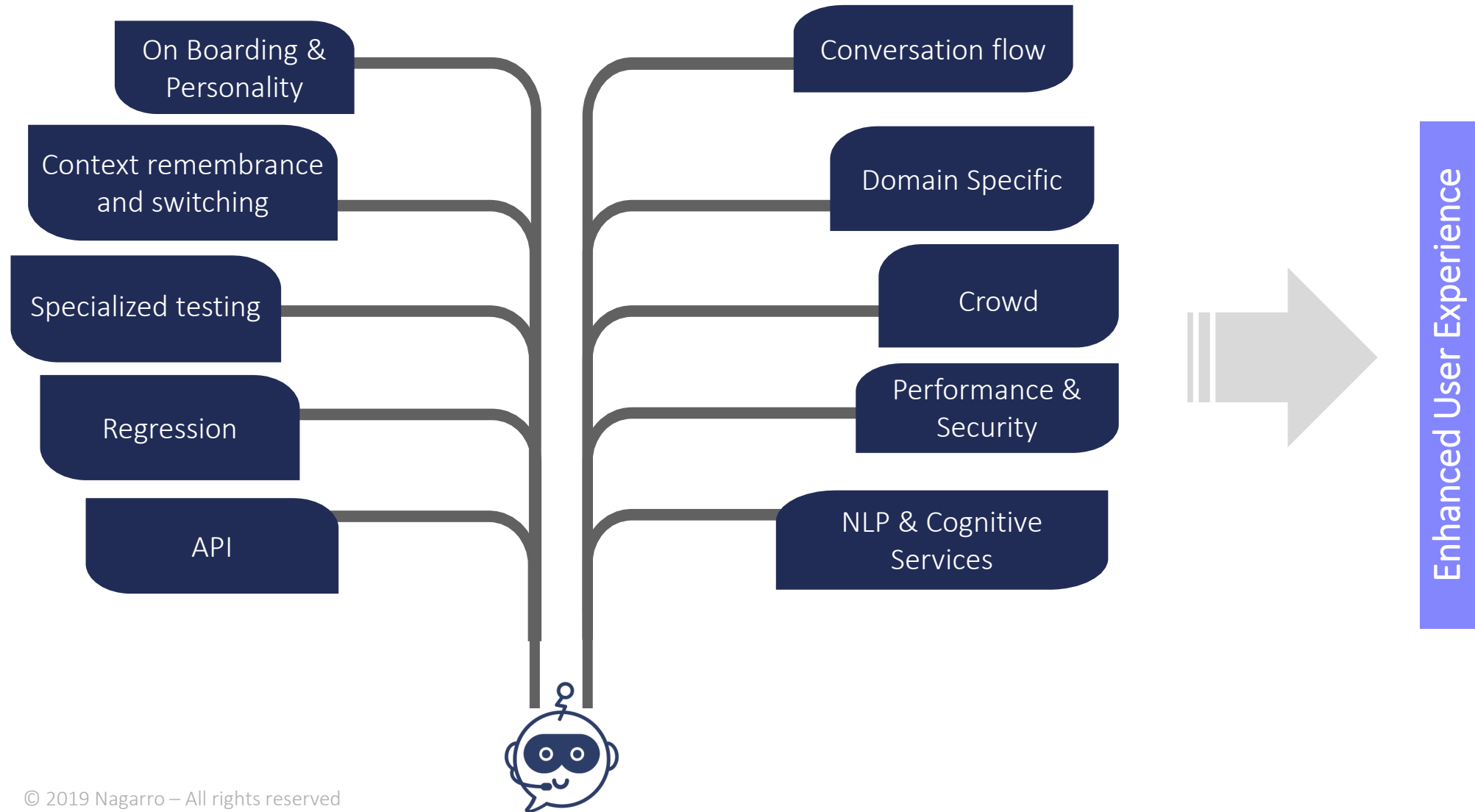
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# Approach

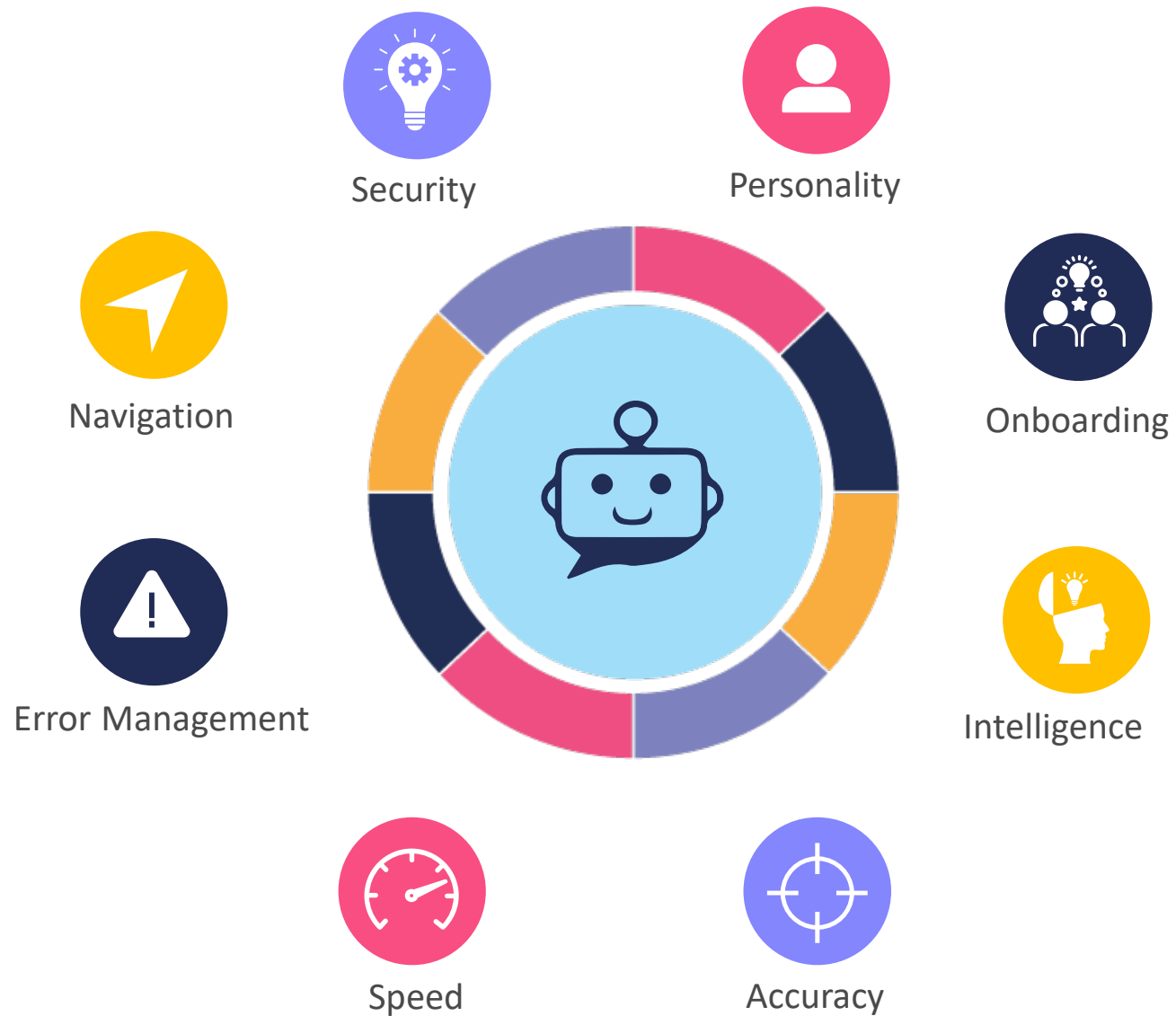
Scope, parameters, and  
testing tools



# Chatbot testing scope



# Parameters for testing



# Testing tools



NLP model test and real time monitoring



It includes tools for recording and replaying conversations and integrates with CT/CI/CD



Conversational flow testing



An open source guide that helps you identify chatbot's design issues under 7 different categories

# Meet Ginger

Our in-house customized  
personal assistant



# Ginger

## Ginger says:



- Notification about important event, conferences, announcement

## Ginger bytes:



- Actionable insight that is customized to your role

## Ask Ginger:



- Any question about Nagarro



# Ask Ginger

Ask Ginger



**Hello Rajni**

I'm taking my first tender steps as your virtual assistant. Ask me a question about Nagarro and I'll try and help you with whatever I've learnt so far.

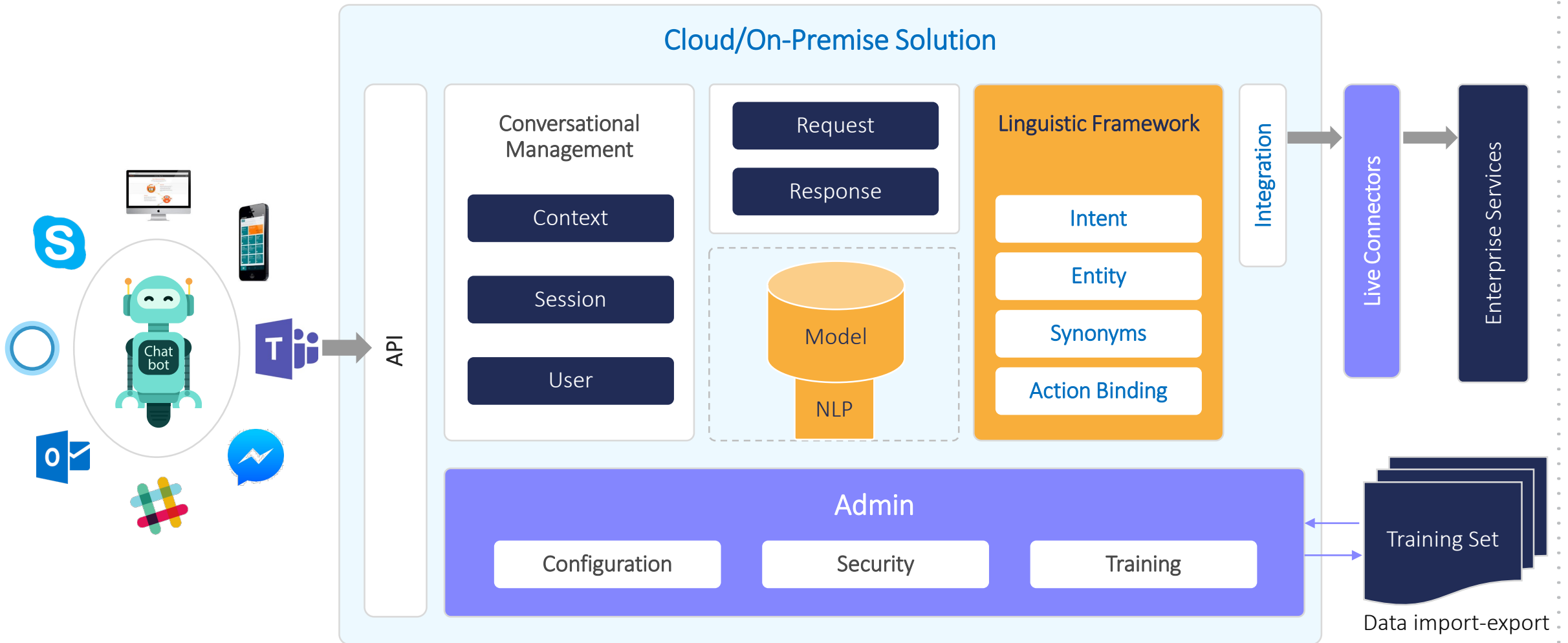
Type your message



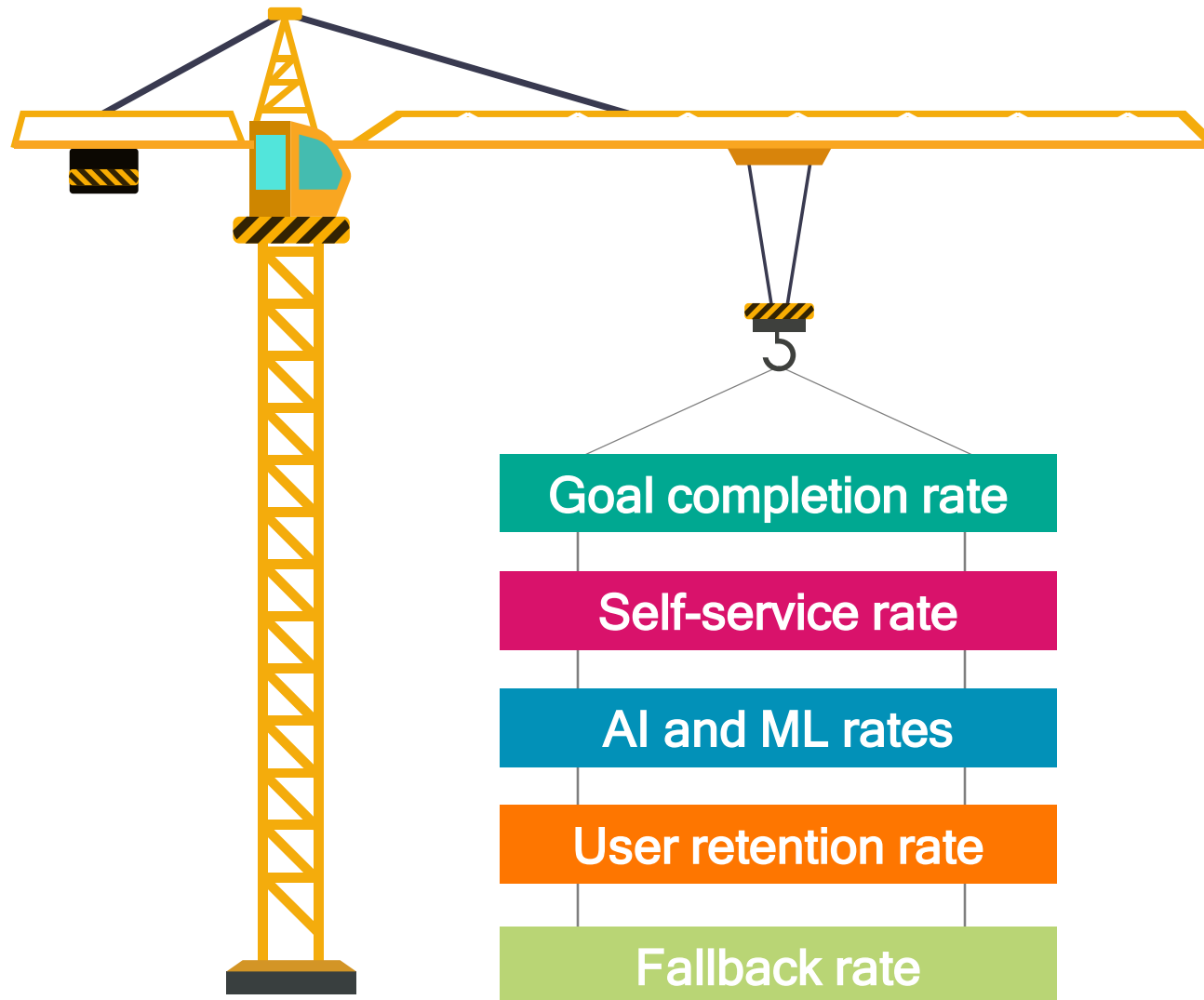
# Beyond traditional testing for AI-infused Chatbots



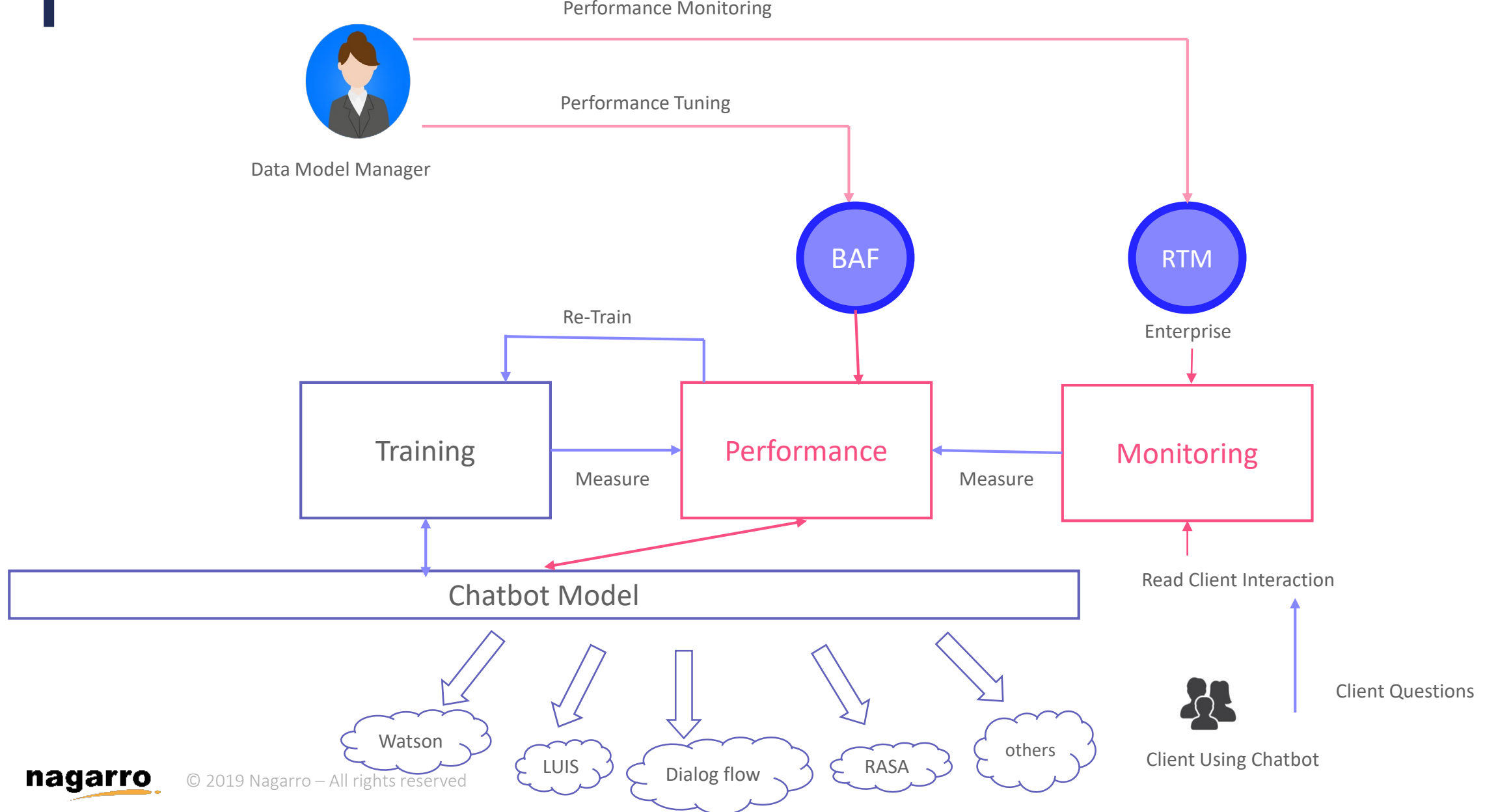
# End-to-end automation testing framework



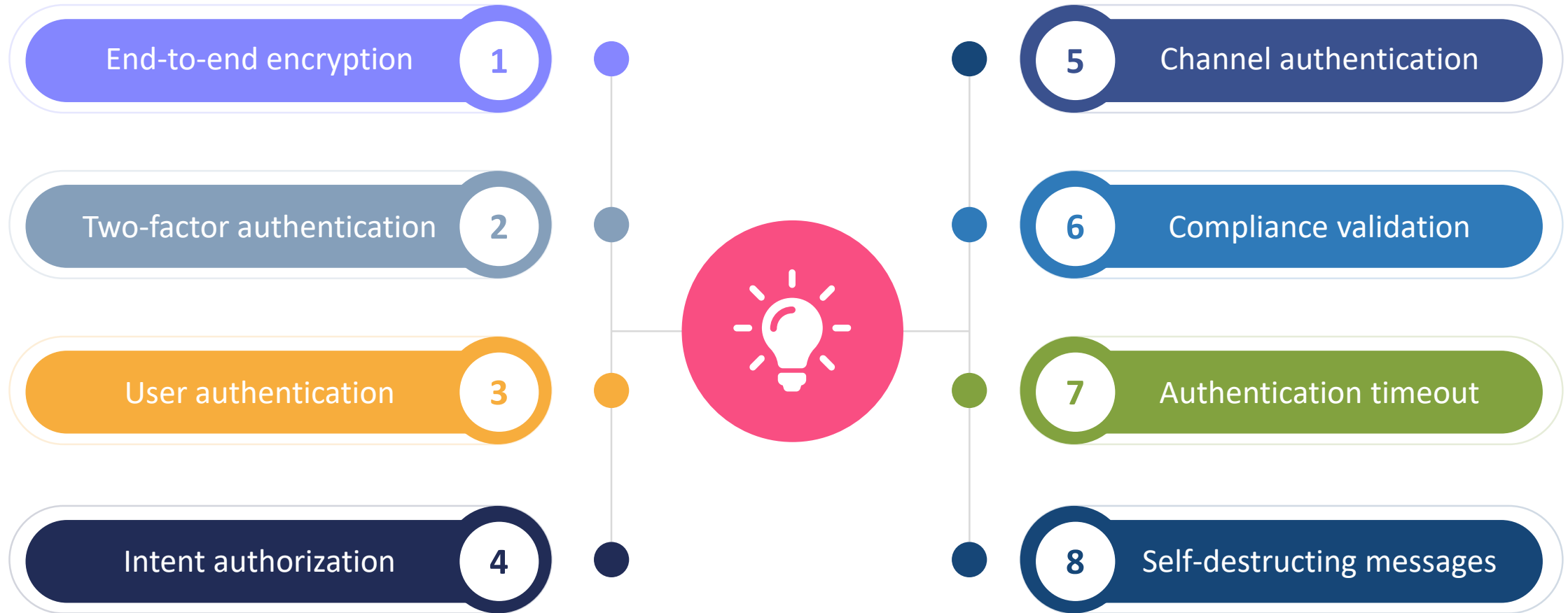
# Measure the performance of the bot



# NLP-based model life-cycle of the Chatbot



# Advanced security testing



# Domain-specific testing

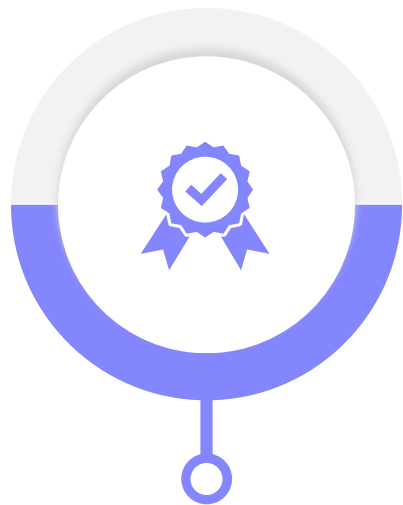
This testing should start with identifying the domain of the chatbot and then identify the keywords of that domain.

A Chatbot built for IT should treat the word “Selenium” as an automation tool while a chatbot built for pharma industry should treat the “Selenium” as chemical.





# Recommendations



Monitor, measure  
and update  
(NLP, conversational  
etc.)



Automate end to  
end  
(text, voice, etc.)



Domain-specific  
testing



Non-functional  
testing



HELPING YOU CREATE AN  
INTELLIGENT ENTERPRISE

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**Thank You**