Module - 4

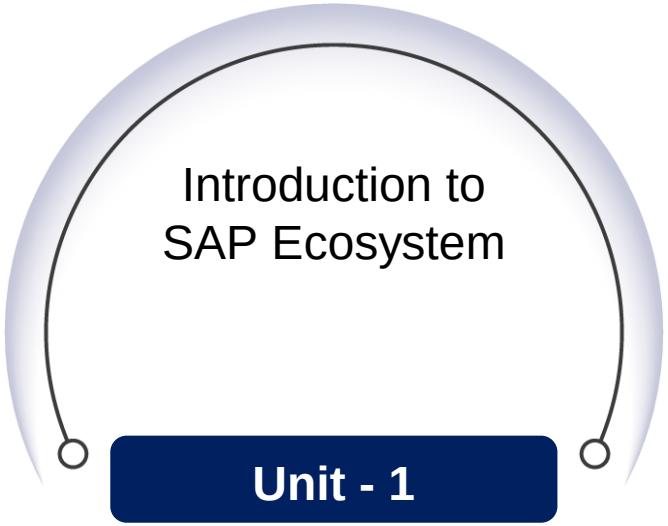
SAP

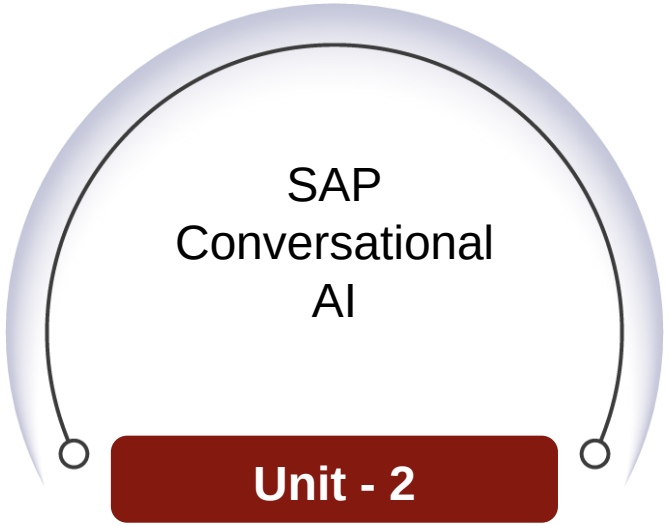
SAP

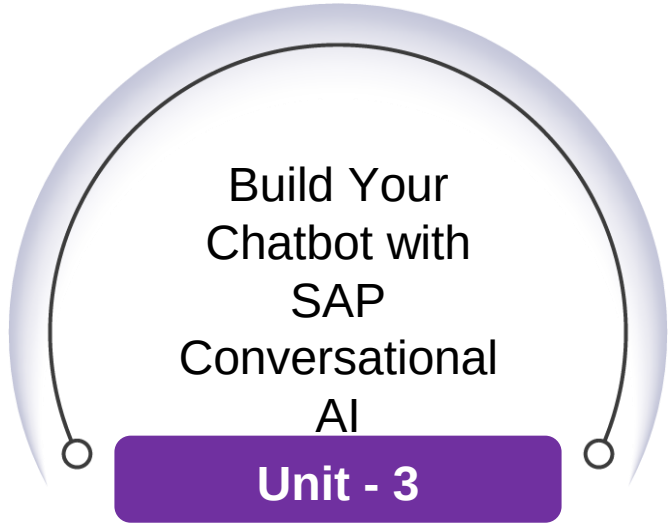
edunet foundation

code unnati

Units for Discussion







Unit - 2

SAP Conversational AI

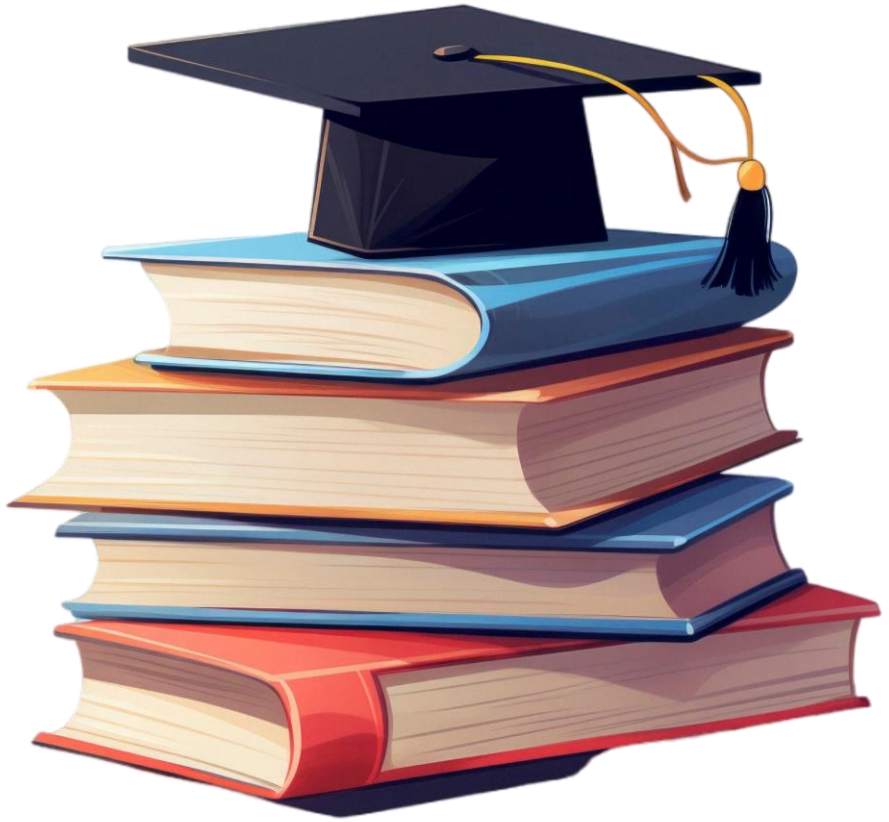
DISCLAIMER

The content is curated from online/offline resources and used for educational purpose only.

Play the Video

Learning Objectives

- Introduction to Conversational AI
- Bot Building Platform
- How does NLP work with ChatBot
- Intents, Expressions, Entities
- Skill and Conversational Flow
- Requirements
- WebChat
- Improve Development Landscape
- Forking Bots, Skills, Intents & Entities



Source :

www.freepik.com/

Introduction to Conversational AI

- **Transforming your business with Conversational AI**
- **What is Conversational AI ?**
- Conversational AI combines natural language processing (NLP) with traditional software like **chatbots**, voice assistants, or an interactive voice recognition system to help customers through either a spoken or typed interface.

Two relevant supporting definitions:

- Machine Learning
- Natural Language Processing

Source :

www.freepik.com/

Deloitte Defines it as:

A programmatic and intelligent1 way of offering a conversational experience2 to mimic conversations with real people, through digital and telecommunication technologies3.

1. Informed by rich data sets
2. Providing customers and employees with informal, engaging experiences that mirror everyday language
3. Including software, websites and other services used by people

The World is Turning Conversational

25% of digital workers will use virtual employee assistants daily by 2021

Gartner

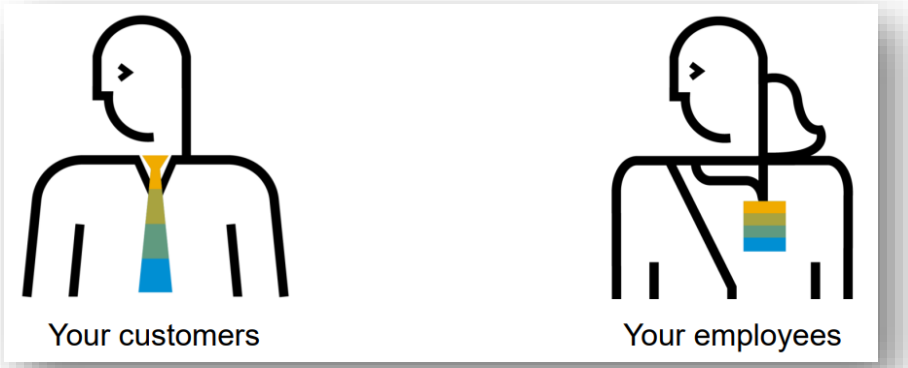
67% of people expect to message with businesses more over the next two years

Facebook Insights

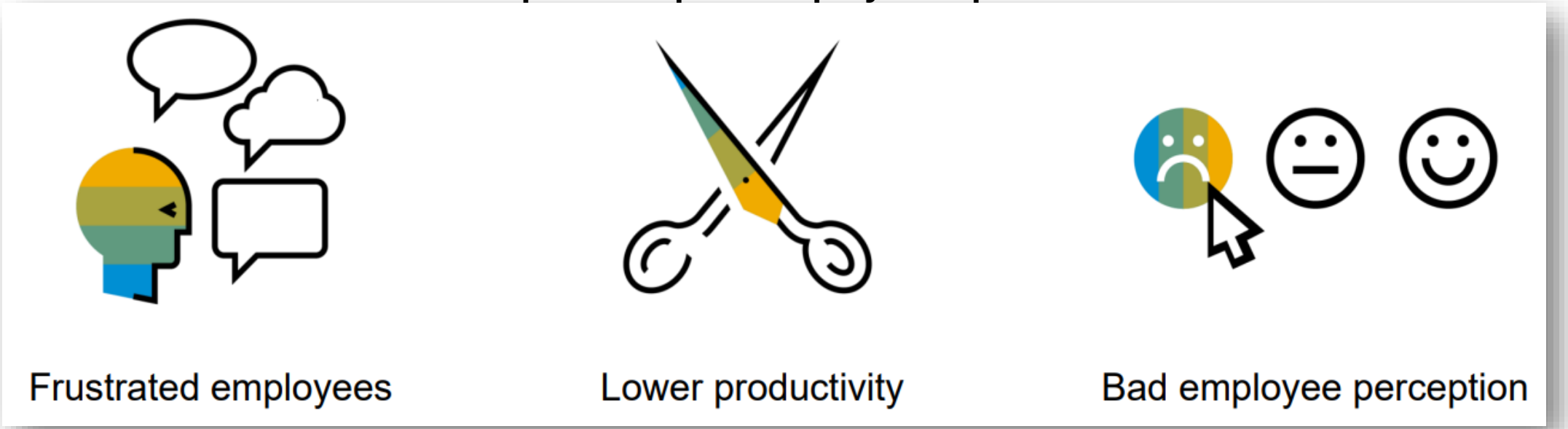
Source :

www.freepik.com/

Impact



Impact of a poor employee experience



Source :

www.freepik.com/

Use chatbots to support employees

With conversational interfaces in their workflows, employees are…

Source :

www.freepik.com/

With Chatbots, Companies are Augmenting

1. Their productivity
2. Their customer retention
3. Their revenue

What is SAP Conversational AI?

SAP Conversational AI helps corporations to transform their customer and employee experiences and deliver the Intelligent Enterprise, combining:

An enterprise **digital assistant** to offer a unified conversational experience for the entire SAP portfolio of products

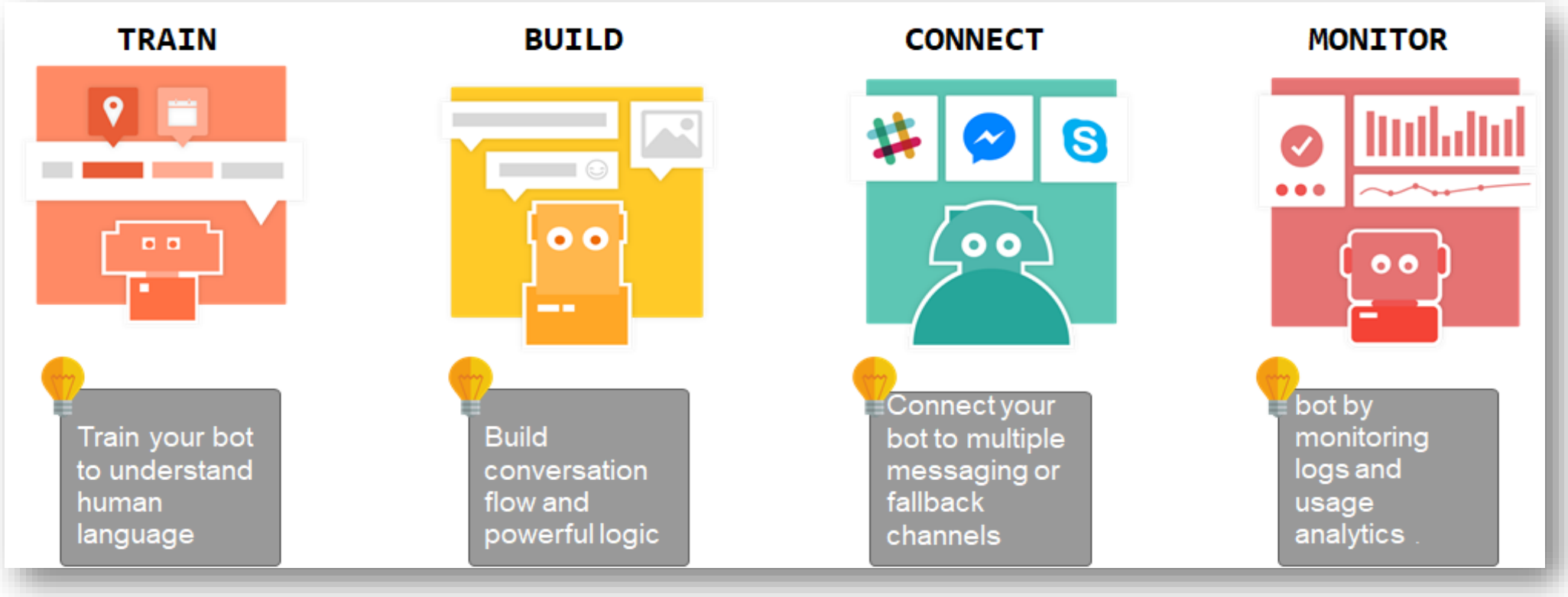
An end-to-end **bot-building platform** to train, build, connect and monitor enterprise-ready chatbots

Source :

www.freepik.com/

Bot Building Platform

Train, build, connect and monitor chatbots in a single interface



Source :

Reference

Bot Building Platform

Enterprise Digital Assistant

1

Unified User Interface

2

Support for everyday business tasks

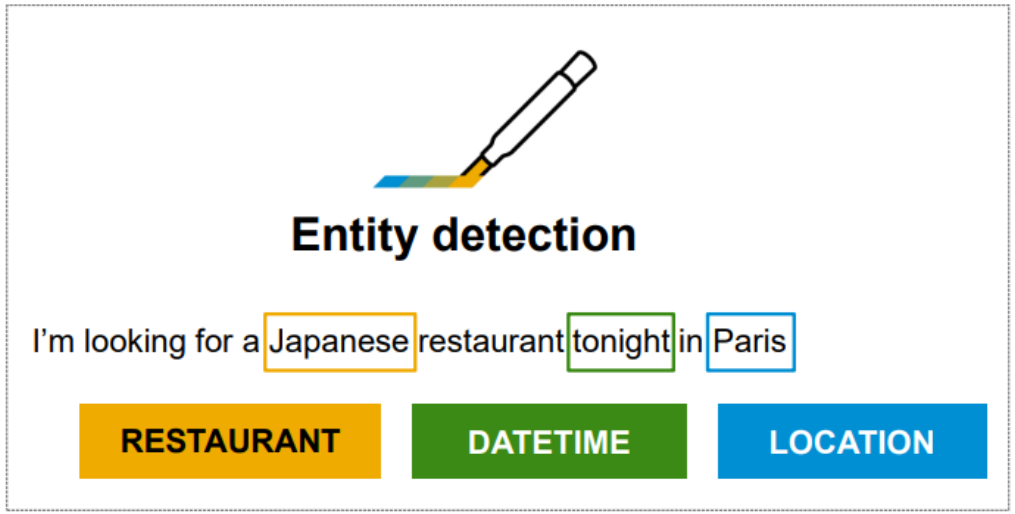
3

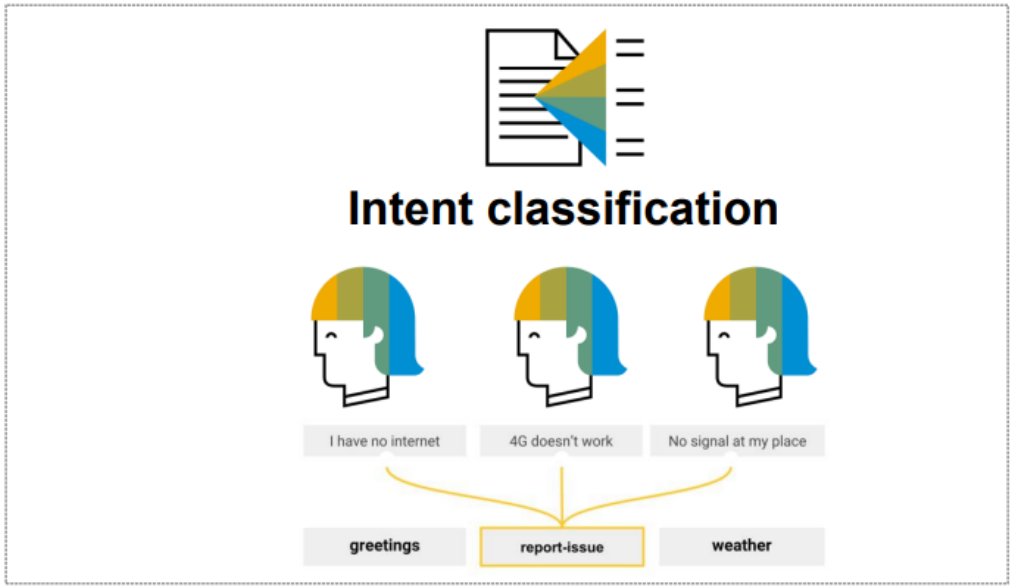
Always on-conversational interface

Source :

www.freepik.com/

How does NLP work with Chatbots





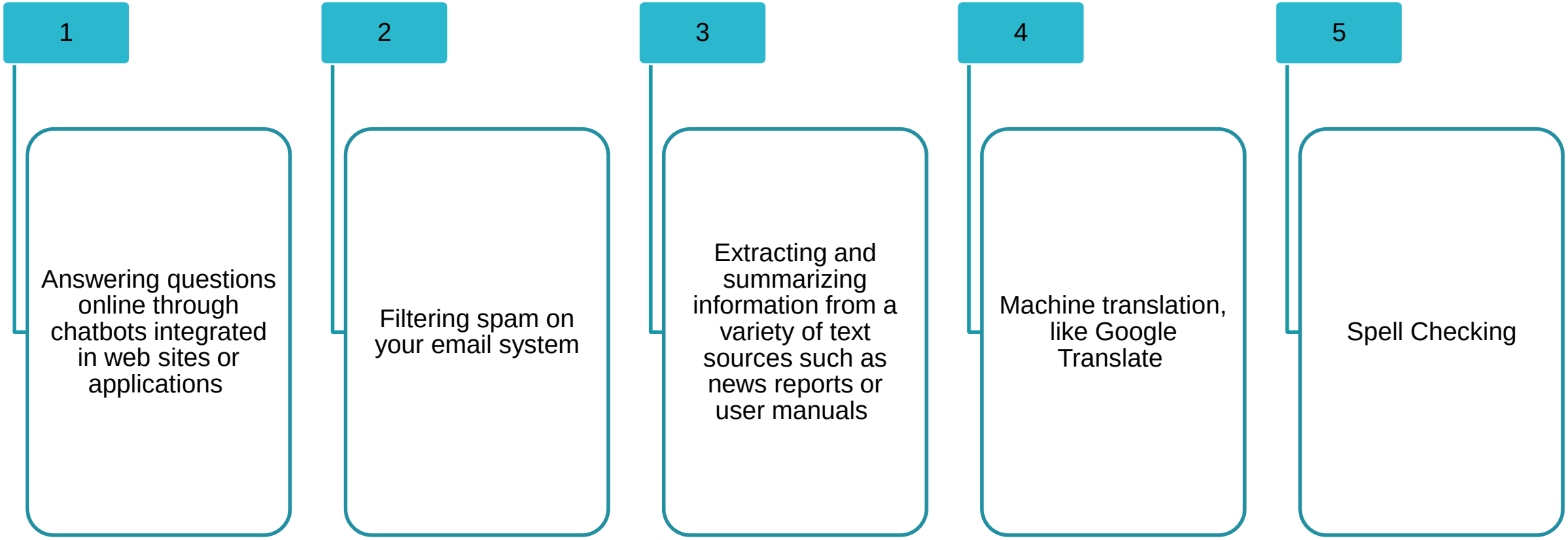
Source :

www.freepik.com/

Train Your Chatbot

Natural Language Processing (NLP)

For example, here are some applications of natural language processing:



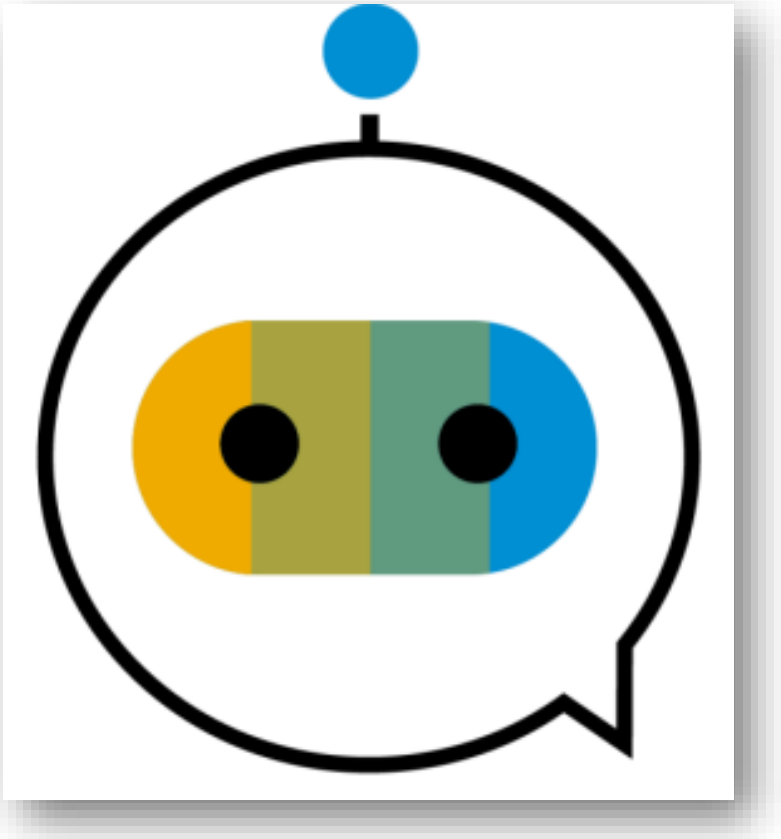
Source :

www.freepik.com/

Do I need NLP in SAP Conversational AI to build my Chatbot?

Consider using NLP to improve the efficiency of your chatbot if:

- Your chatbot is facing a significant number of questions and responding poorly
- You'd like your chatbot to be highly conversational and see it as having a question-and-response style, instead of a button-driven chatbot



Source :

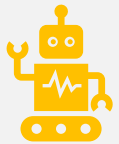
www.freepik.com/

Intents

An intent is a set of expressions that mean the same thing but are constructed in different ways.

Intents are central to your bot's understanding.

Each one of your intents represents an idea that your bot can understand.



You can add as many intents to your bot as you wish.

Expressions

An expression is a sentence that your bot can understand – it's basically something that a user might say to your bot.

Example:

- If you've added the languages English, French, German, or Spanish to an intent, and enter a new expression for the intent in any of those languages, SAP Conversational AI automatically suggests additional expressions in those languages.
- You can then easily add the suggested expressions to the intent and quickly build up the training dataset for your bot.

Expressions

Key	Required	Value	Description
expression	Yes	String	A sentence or word group
language	Yes	String	The ISO code for the language

Format the CSV file as follows:

Sample Code

```
"expression";"language"
"I want to travel to NYC";"en"
"Let's travel to New York!";"en"
```

Source :

www.freepik.com/

Invalid Link

Entities

- An entity is a keyword that is extracted from an expression.
- We automatically detect 28 different entities such as Datetime, Location, Person, and so on. We call them gold entities.

Source :

www.freepik.com/

Gold Entities

All gold entities are detected automatically. This means that you can’t deactivate them and train them.

- To provide a precise service with true added value, we enrich each gold entity with essential core information.
- For example, when the gold entity tomorrow is detected in a sentence, a formatted version of the datetime that you can use as a reply is returned.

Sample Code

```
{
  "formatted": "Thursday, 06 October 2018 at 09:00:00 AM",
  "iso": "2018-10-06T09:00:00Z",
  "accuracy": "day",
  "chronology": "future",
  "raw": "tomorrow",
  "confidence": 0.92
}
```

Custom Entities

You don’t have to tag everything in your expressions. Just annotate what really needs to be extracted. You can use custom entities for three different reasons:
You want to detect all possible occurrences of something in a sentence.

For example, you’re building a transport bot and you want to detect all subway stations.

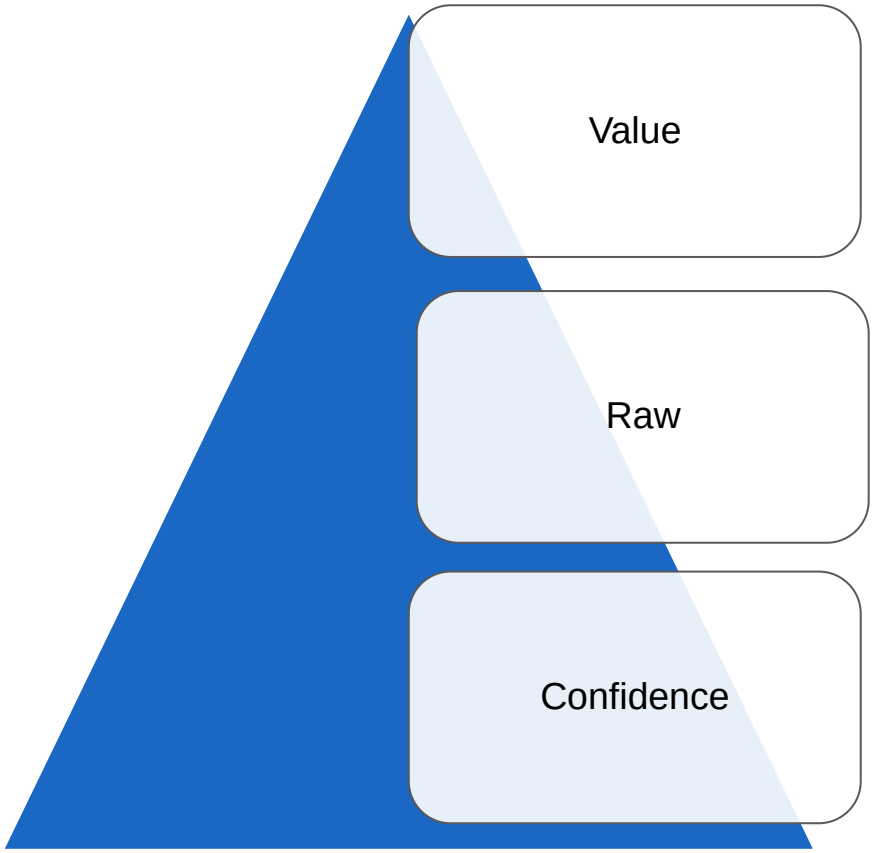
- You want to understand if something is present or not in a sentence.

- Entities have an influence on intent detection.

Enrichments

Custom Enrichments

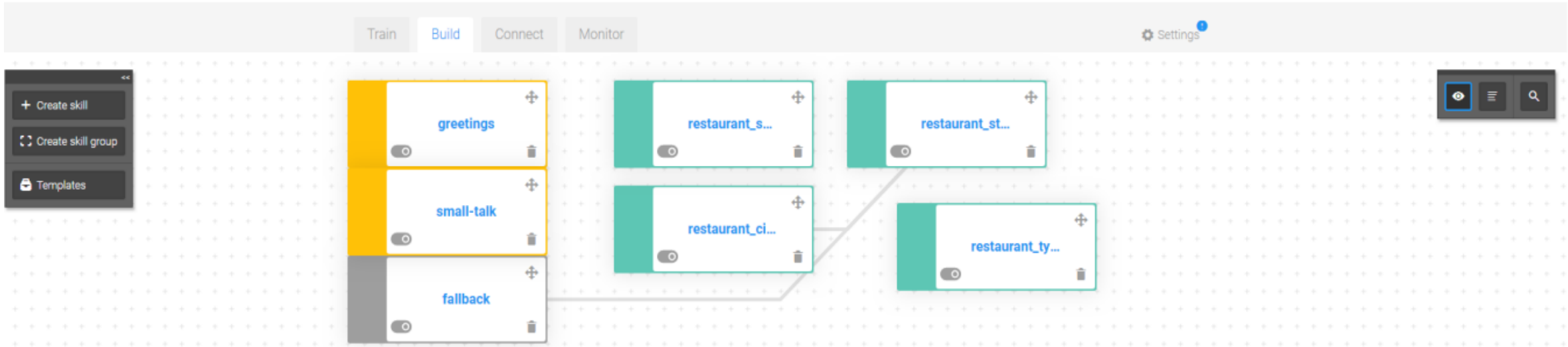
- You can create custom enrichments for custom entities.
- By default, when you create custom entities, they have only three keys:



Skills and Conversational Flow

Skill

It can be as simple as the ability to greet someone, but it can also be more complex, like giving the status of a delivery based on information provided by the end user.



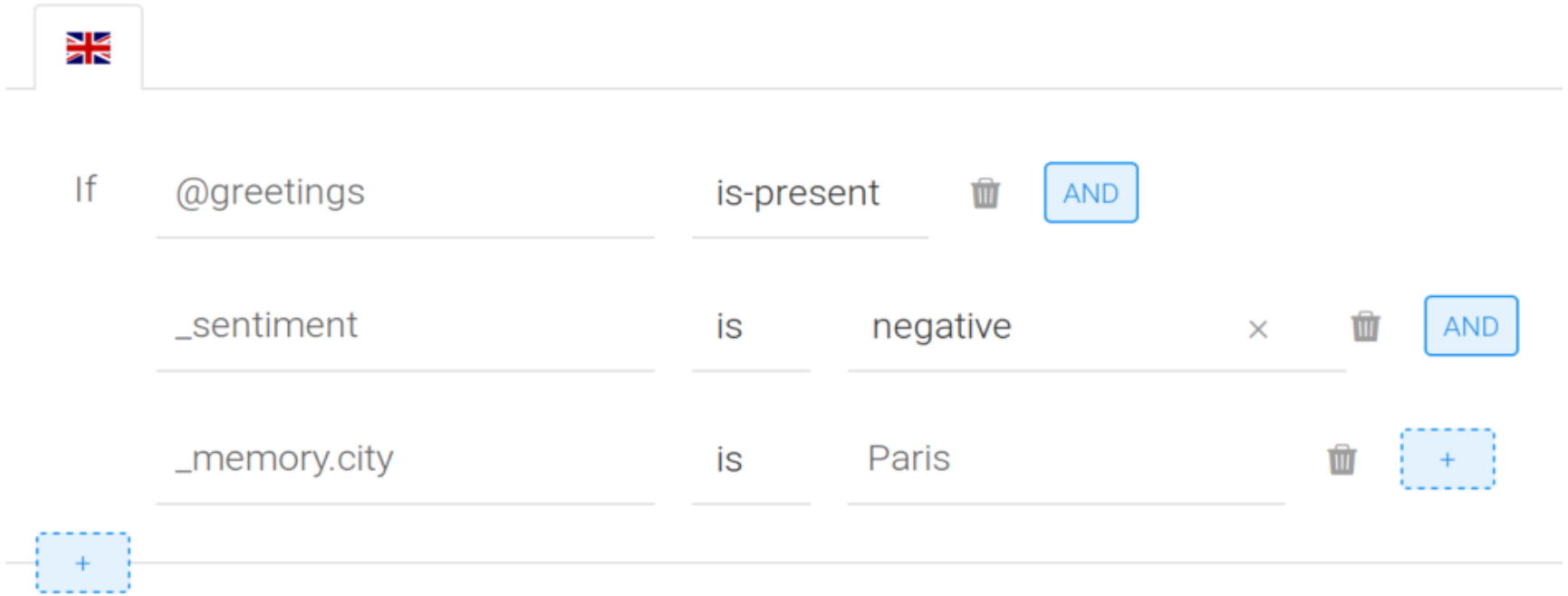
Composition of a Skill

A skill is made up of three distinct parts:

Triggers	Requirements	Actions
Triggers are conditions that determine whether the skill should be activated.	Requirements determine the information that the chatbot needs to retrieve from the user and how to retrieve it.	Actions are performed by the chatbot (for example, send a message) when all requirements are complete.

Conditions and Triggers

- A condition is a test that can be evaluated to be either true or false.
- You can find conditions in the following different parts of a skill, which are:
  - Triggers
  - Requirements
  - Actions



Source :

www.freepik.com/

Invalid link

Composition of a Condition

A condition is made up of three parts:

Example:

In the condition if **#location.raw is Paris**

The left operand is **#location.raw**
The operator is **is**
The right operand is **Paris.**

What is a Requirement ?

A requirement is made up of the following:

1. Data to retrieve (that is, entity ot intent)
2. Key to store the retrieved data into bot's memory
3. Optional actions to execute to retrieve the information
4. Optional actions to execute when the information is retrieved, and the requirement is completed

Triggers

- Triggers are conditions that determine whether the bot should execute the current skill or not. If the triggers for the skill are validated, the bot executes this skill over other skills.

- You define the triggers for a skill by clicking the skill on the Build tab and then opening the Triggers tab.

Note : If a skill has no triggers, it will never be executed by a user input. In this case, it will only be executed if it is at the end of a redirection by another skill.

Actions

An action is something that your bot executes at a specific point when executing a skill.

- To add actions to a skill, Build tab and then go to Actions and click ADD NEW MESSAGE GROUP.

Categories of Actions

Send message to the user Various formats exist, enabling you to build an awesome user experience for your bots.

Connect external service

Fallback (that is, redirect the conversation to a human agent)

Messages Format Supported

Format	Description
Text	Great for simple informative messages.
Card	Very useful for presenting a product because you can include an image, title, subtitle, and so on.
Buttons	Practical if you want to guide the user in the conversation with a few limited choices.
Quick replies	Appear as buttons in the chat with predefined user responses, but disappear once clicked.
Carousel	A succession of cards that you can scroll from right to left, usually used for presenting multiple products.
List	Same purpose as a carousel, but presented as a vertical list.
Image	How else could you post entertaining GIFs?!

Source :

www.freepik.com/

Connecting your Chatbot to communication channels

Deploying on Webchat

What is Webchat?

- The Webchat channel is a light and customizable channel to fit to any chatbot built for a web page.

- The Webchat channel is an open-source project on GitHub.

- You can use the default version of the Webchat that we provide on the platform or customize the opensource version on GitHub by forking it and deploying it on your side.

Add the following script to your web page to get Webchat:

```
<script src="https://cdn.cai.tools.sap/webchat/webchat.js"
channelId="CHANNEL_ID"
token="TOKEN_ID"
id="cai-webchat"
></script>
```

Monitor the usage of your Chatbot

Log Feed

The Log Feed shows all the conversations that users have with your chatbot and classifies them to one of your bot's intents.

Source: https://open.sap.com/courses/cai1/items/1QVUzxYmRI1n3aG5l970u

Usage Metrics

Components of Usage Metrics

Conversations	Users	Message Received
A conversation is a sequence of interactions between your bot and your users.	A user can have several conversations with a bot.	All messages sent by your users are considered as messages received when the users type a sentence, but also when they click on a button or quick reply.

Benchmark Score I

Precision

A metric that is calculated per intent. For each intent, it measures the proportion of correct predictions out of all the times the intent was declared during the benchmark.

Benchmark Scores II

Recall

A metric calculated per intent. For each intent, it measures the proportion of correct predictions out of all the entries belonging to this intent. It answers the question Out of all the times my bot was supposed to detect this intent, how many times did it do so?

Benchmark Scores III

F1 Score

- The harmonic mean of precision and recall. It's a good indication of the performance of each intent, ranging from 0 (bad performance) to 1 (good performance).
- The F1 scores for each intent can be averaged to create a global indication for the performance of your bot.
- For your bot users, a low F1 score means: This is completely useless!

Improve your Development Landscape

Organization and Teams
Create an organization

Your user account (which is your identity on SAP Conversational AI) can be a member of any number of organizations.

From your profile, you can create private and public organizations.

Public organizations, their public bots, and members are visible to all.

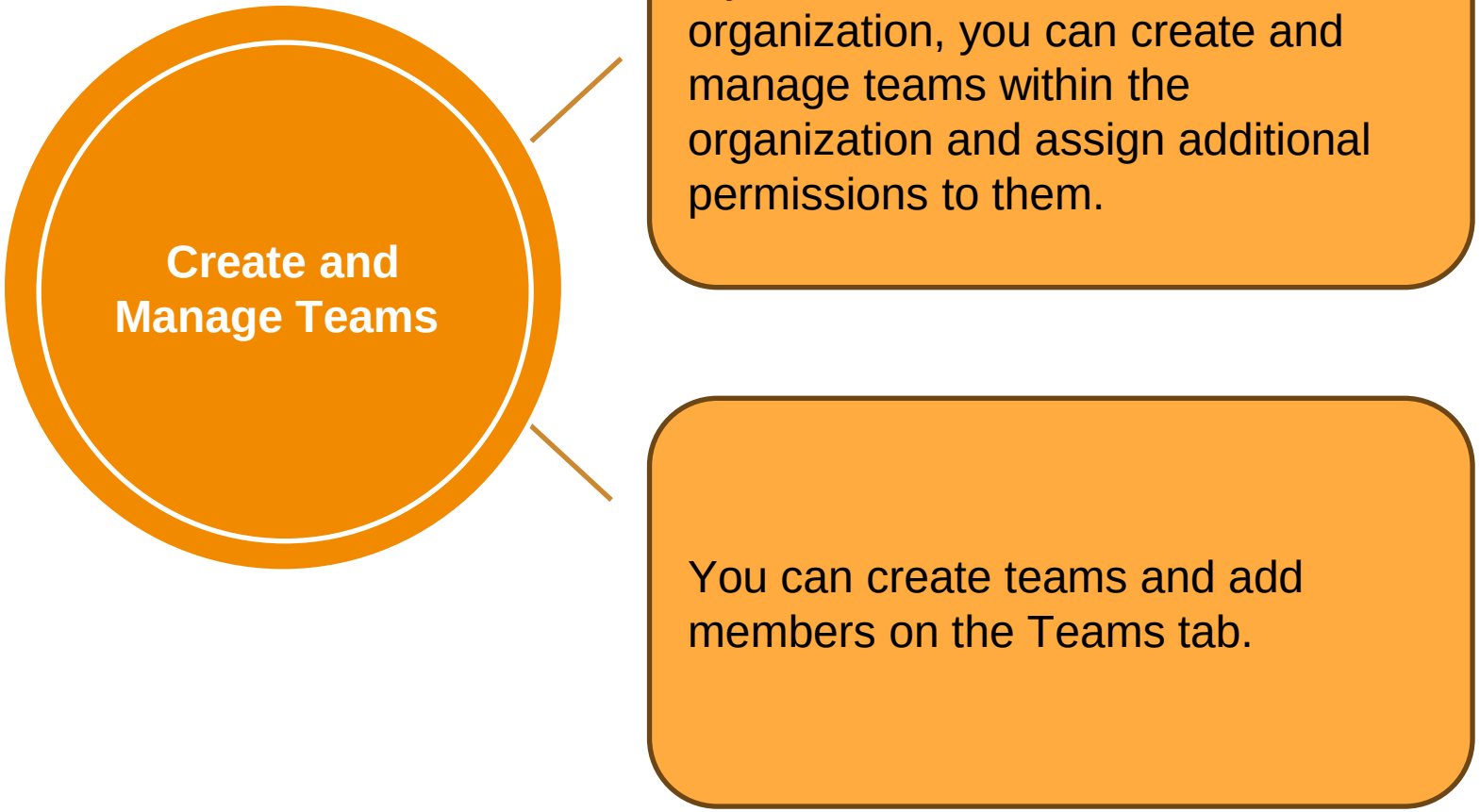
Private organizations, their bots, and members are visible only to the members of the organization.

Manage an Organization

An organization must always have at least one administrator.

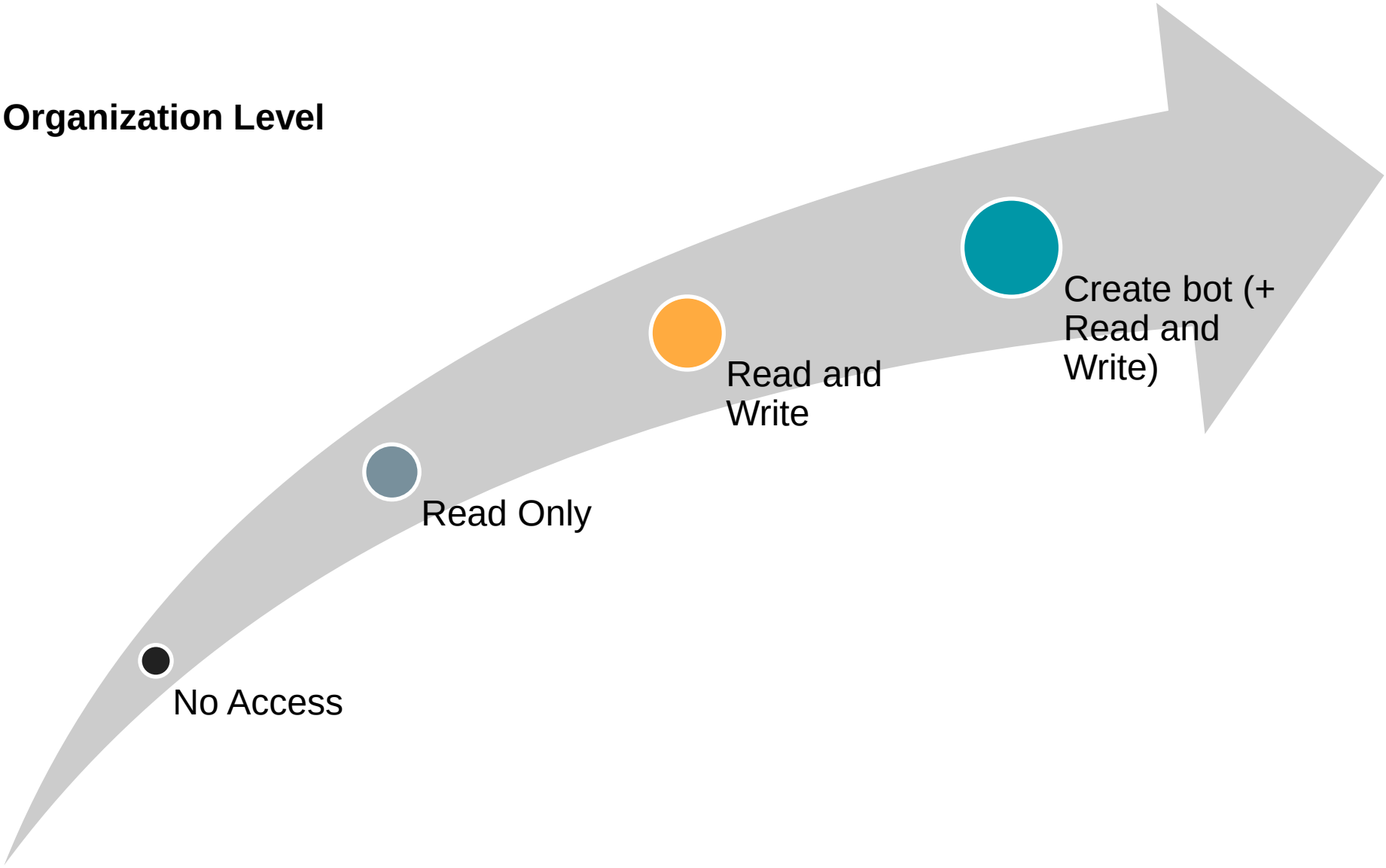
1. Add or Remove Members
2. Change the Organization's Settings

Manage an Organization



Permissions

Permission at Organization Level



Forking Bots, Skills, Intents and Entities

Define the concept of forking

- When you start using SAP Conversational AI, you may want to use someone else's bot as a starting point to get up and running quickly.
- As you use SAP Conversational AI more frequently, you may want to reuse previous bots and customize them for particular use cases.

When to fork	When to version
You want to import a third-party bot for testing and modification	You want to make a change to a deployed version
You want to try something out with a bot in which you only have **Read** access	You want to test something out in the same bot

Source: https://open.sap.com/courses/cai1/items/2ydkZiXL8Vbjhv3czr8et3

Forking a Bot

- Forking a bot creates a personal copy of all resources that belong to the bot: intents, entities, skills, skill groups, and body/header templates in every language.
- A public bot can always be forked. A private bot in a public organization can be forked within the organization for which you are a member.

Bot visibility	Environment	Status	Can it be forked?	Condition
Public	Organization/Account	Owner/Member/Collaborator	Yes	None
Private	Public/Private Organization	Owner/Member	Yes	Can be forked within the organization
Private	Public/Private Organization	Collaborator who is not a part of the organization	No	Not applicable
Private	Account	Owner	Yes	Into an organization you have **Read and write** permissions for

Source :

www.freepik.com/

Conclusion

- Conversational AI and its role in human-computer interactions.
- Bot Building Platforms as the foundation for creating conversational AI solutions.
- Define Intents as user intentions, Expressions as user inputs, and Entities as specific data within expressions.
- Describe Skills as the capabilities of the bot and how they enable conversation.
- Explain the concept of forking, enabling the reuse of existing components like bots, skills, intents, and entities.

Source :

www.freepik.com/

References

- https://open.sap.com/courses/cai1/overview


Q&A
Let's Start

Quiz

1. **What is the fundamental role of a Bot Building Platform in Conversational AI development?**

a) Data analysis

b) Simplifying bot development

c) Cloud hosting

d) Graphic design

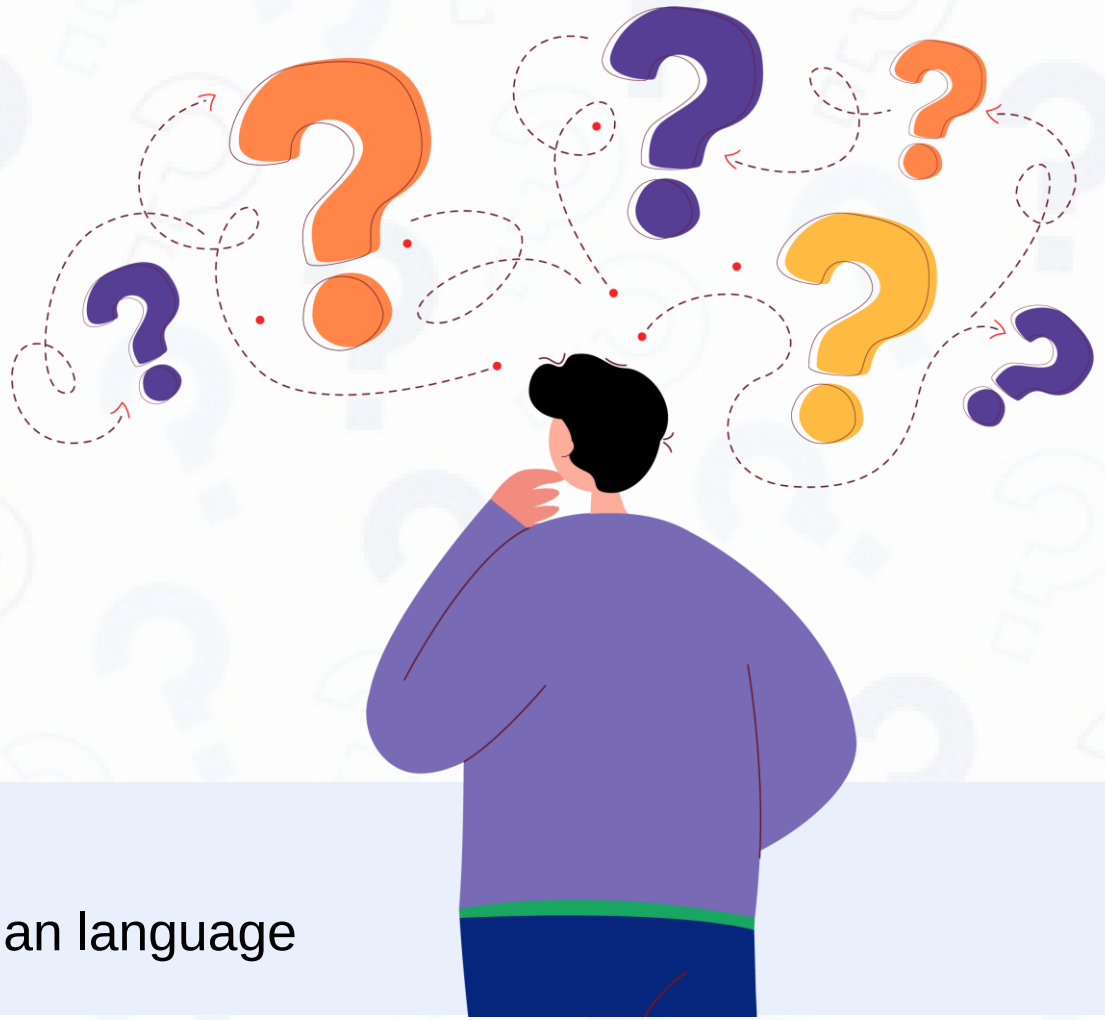
Answer: B

Simplifying bot development

Quiz

2. How does Natural Language Processing (NLP) work with ChatBots?

a) NLP helps ChatBots generate images.
b) NLP enables ChatBots to understand and generate human language
c) NLP makes ChatBots faster in processing data.
d) NLP helps ChatBots play music.



Answer: B

NLP enables ChatBots to understand and generate human language

Quiz

3. What are Intents, Expressions, and Entities in the context of Conversational AI?

a) Types of programming languages
b) Components of chat interfaces
c) Key concepts for understanding user inputs
d) Web design elements

Answer: C

Key concepts for understanding user inputs

Quiz

4. What do Skills represent in Conversational AI?

a) A bot's ability to understand any language
b) A bot's ability to perform tasks or answer questions
c) A bot's appearance and design
d) A bot's memory capacity

Answer: B

A bot's ability to perform tasks or answer questions

Quiz

5. What is the role of Web Chat in Conversational AI?

a) It allows bots to chat with other bots
b) It is a platform for AI development
c) It enables bots to interact with users through web interfaces
d) It is a programming language used in bot development

Answer: C

It enables bots to interact with users through web interfaces

Thank You