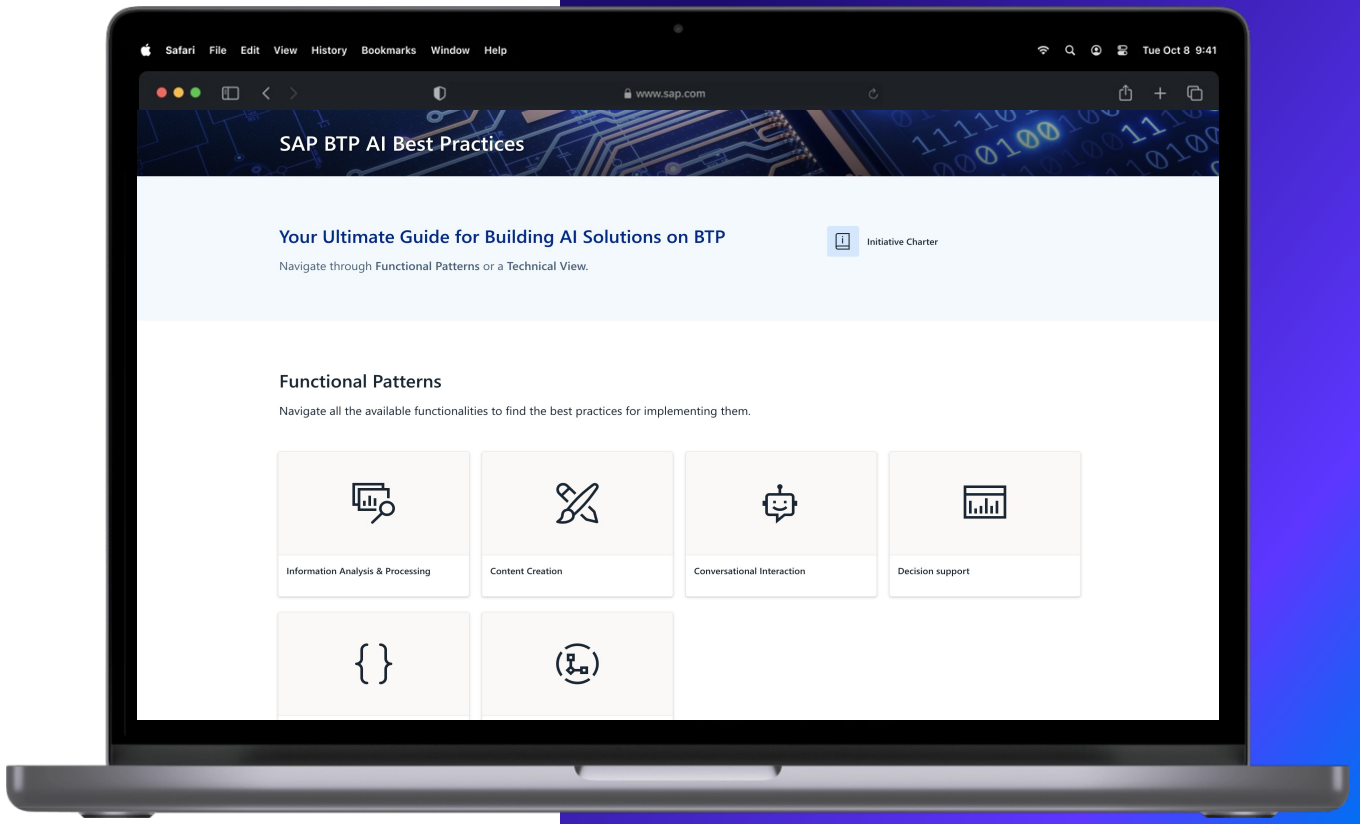
# SAP BTP AI Best Practices

## Access to Generative AI Models

A structured approach to efficiently **integrate AI models into business applications** using SAP AI Core.




**BTP AI Services Center of Excellence**

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# Steps

1 Overview

2 Pre-requisites

3 Key Choices and Guidelines

4 Implementation

# Access to Generative AI Models

Simple Consumption of Generative AI Models

Interacting with deployed Generative AI models involves **sending requests** to **retrieve generated responses**.

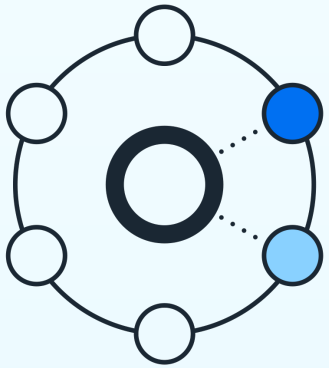
In the request, we can define the **prompt**, the **model**, and the **parameters** that control the response generation.

## Expected Outcome

- Provide secure and efficient access to Generative AI models.
- Enables applications to leverage the power of AI models and provide a wide spectrum of functionalities.

# Key Benefits

Why use BTP AI Core instead of direct access?



## Model Interchangeability

Easily switch between models with the same code and implementation to best suit your task.

## Out-of-the-box Features

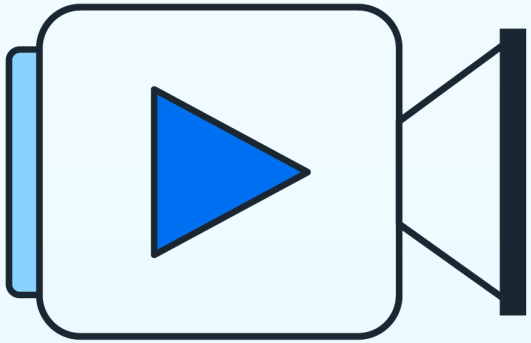
Supercharge your development built-in capabilities like Data Masking, Prompt Templating, Filtering, and more.

## Security & SAP Ecosystem

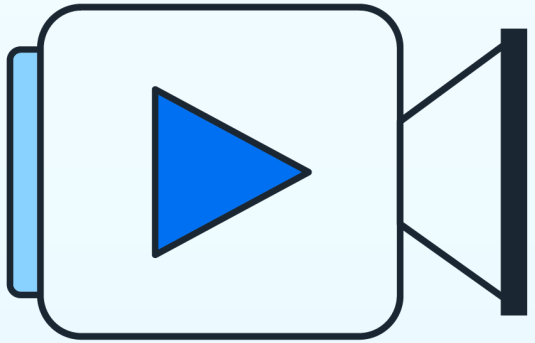
It's fully integrated into the SAP Ecosystem, leveraging the best of SAP technologies.

# Video Content

Access to Generative AI Models



## 1-minute Teaser



## In-depth Webinar

# Pre-requisites

## Business

- SAP AI Core with the “Extended” tier on SAP BTP (Pricing Information)

## Technical

- SAP Business Technology Platform (SAP BTP) subaccount (Setup Guide)
- SAP AI Core (Setup Guide)

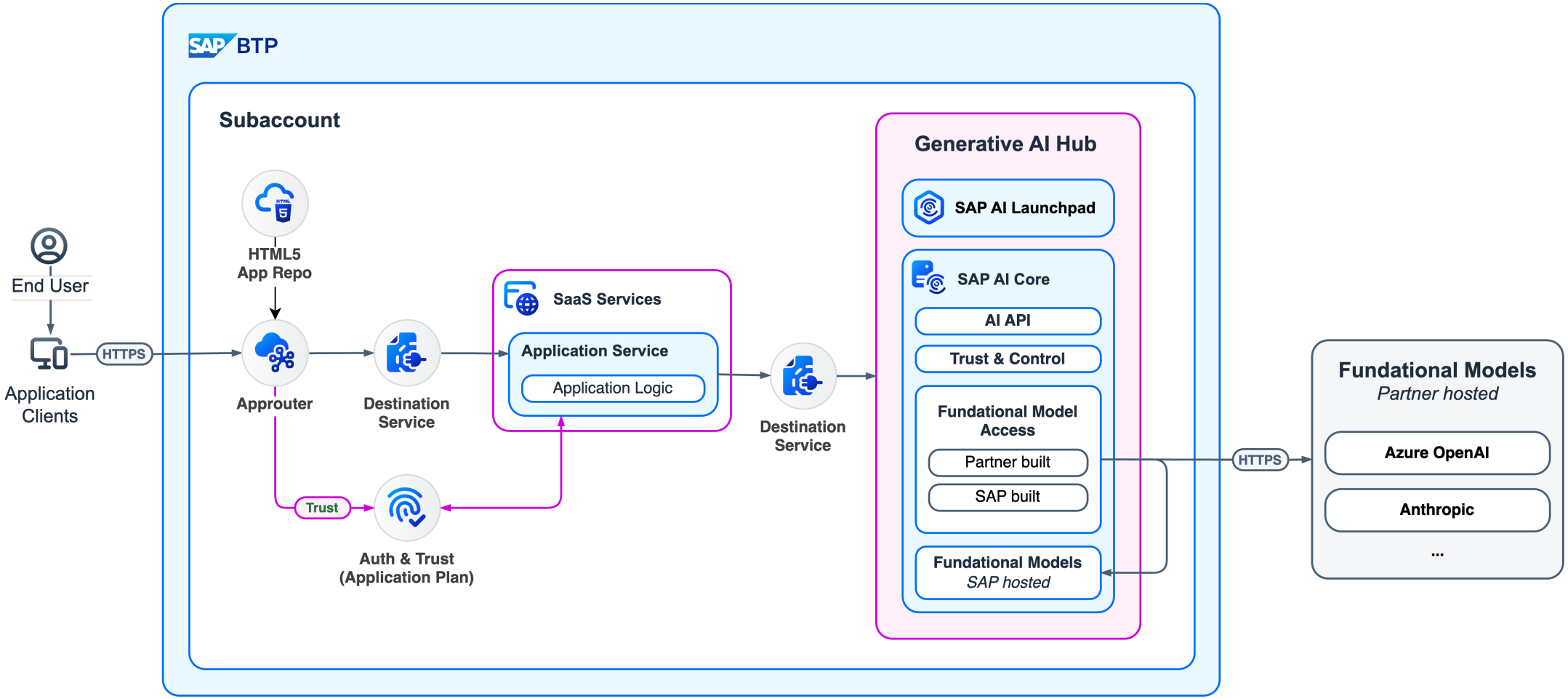
## SAP Business Technology Platform (SAP BTP)

- SAP Business Technology Platform (BTP) is an integrated suite of cloud services, databases, AI, and development tools that enable businesses to build, extend, and integrate SAP and non-SAP applications efficiently.

## SAP AI Core

- SAP AI Core is a managed AI runtime that enables scalable execution of AI models and pipelines, integrating seamlessly with SAP applications and data on SAP BTP that supports full lifecycle management of AI scenarios.

# High-level reference architecture



# Key Choices and Guidelines

Decisions that impact the performance and utility of the application

## Model

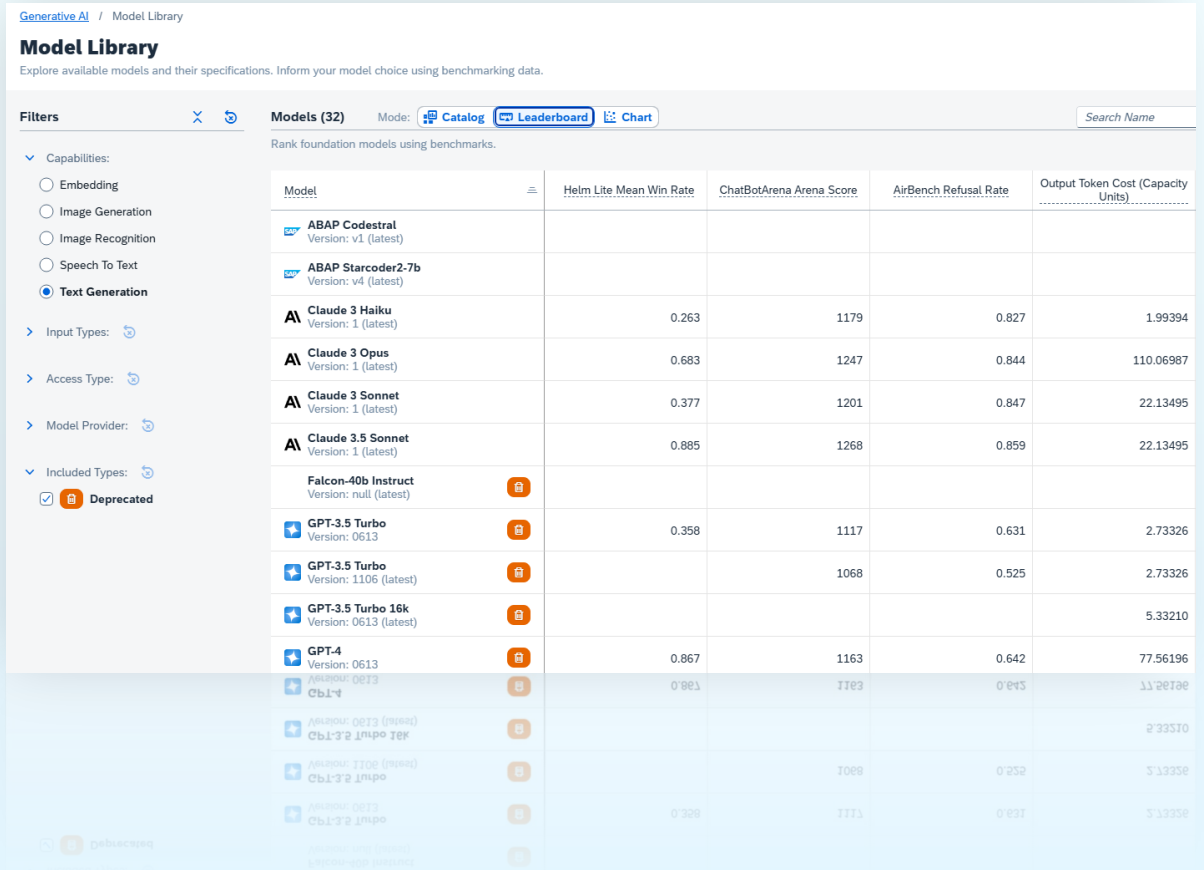
- The choice of model is critical to the **accuracy** of the answer, **operating costs**, **language**, and **context window**.
- Larger models are usually better for more complex tasks involving reasoning, longer context window, and better inference.

### How to choose the model?

- Use the Model Library to inform your model choice using benchmarking data.

### Relevant Links

- List of available models
- AI Core Endpoint



# Key Choices and Guidelines

Decisions that impact the performance and utility of the application

## Settings

- Picking correct values for temperature, max tokens, frequency penalty, and presence penalty is crucial to the quality of the inference.

### Model Parameters

**Frequency Penalty** (Reduces repetition of frequent words)

- High – **Summarization**: Reduces redundancy in reports or articles.
- Low – **Poetry/Mantras:** Encourages repetition for stylistic effect.

**Presence Penalty** (Discourages reuse of any previous words)

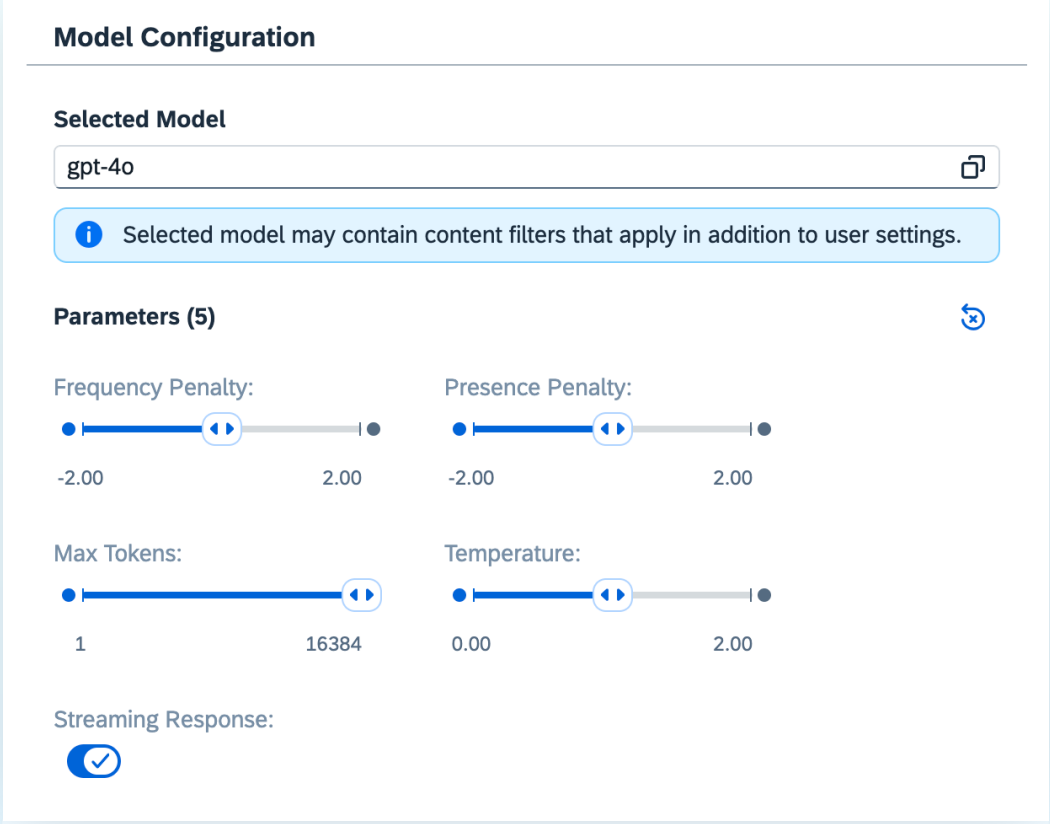
- High – **Idea Brainstorming:** Promotes diverse, non-repetitive topics.
- Low – **Themed Storytelling:** Reinforces a central topic or character.

**Max-Tokens** (Limits response length)

- Low – **Chatbot Responses:** Short, to-the-point answers.
- High – **Long-Form Content:** Detailed articles or stories.

**Temperature** (Controls randomness of output)

- Low – **Technical/Legal Writing:** Precise, deterministic output.
- High – **Creative Writing:** More imaginative and random text.



# Implementation

Programming Model Selection Guidelines

## Backend-Only API

Use **Python** (well-maintained) or **JavaScript/TypeScript** (strong async capabilities, Node.js ecosystem).

## Full-stack Application (UI & Backend)

Use **CAP App** for optimized performance, scalability, and seamless SAP integration.

### Python

**SDK**

- SAP Generative AI hub SDK (For building apps)
- SAP AI Core SDK and AI API Client SDK (AI Core lifecycle)

**Reference Code**

- SAP BTP AI Best Practices - Sample Code
- BTP Gen AI Hub SDK Samples (sample #2)

**Learning Journeys**

- Consumption of GenAI models Using Orchestration - A Beginner's Guide

### JavaScript/TypeScript

**SDK**

- SAP Cloud SDK for AI

**Reference Code**

- SAP BTP AI Best Practices - Sample Code
- SAP Cloud SDK for AI - Sample Code (orchestration file)

**Learning Journeys**

- Consumption of GenAI models Using Orchestration - A Beginner's Guide

### CAP App

**SDK**

- SAP Cloud SDK for AI (Recommended)
- CAP LLM Plugin

**Reference Code**

- SAP BTP AI Best Practices - Sample Code
- SAP Cloud SDK for AI - Sample Code (orchestration file)

**Learning Journeys**

- Consumption of GenAI models Using Orchestration - A Beginner's Guide

### Java

**SDK**

- SAP Cloud SDK for AI (for Java)

**Reference Code**

- SAP BTP AI Best Practices - Sample Code
- Sample Spring App example (Service file and Controller file)

**Learning Journeys**

- Consumption of GenAI models Using Orchestration - A Beginner's Guide

# Code Sample

JavaScript/TypeScript

```
const orchestrationClient = new OrchestrationClient({
  // Define the language model to be used
  llm: {
    model_name: 'gpt-4o',
    model_params: {
      max_tokens: 1000, // Maximum number of tokens to generate in the response. This limits the length of the generated text.
      temperature: 0.6, // Lower values make the output more deterministic, while higher values make it more random.
      n: 1 // Number of responses to generate.
    }
  },
  // Define the prompt
  templating: {
    template: [{ role: 'user', content: 'What is the capital of France?' }]
  }
});

// Execute the request
const result = await orchestrationClient.chatCompletion();

console.log(result.getContent());
```

# Contributors

 Marques, Luis

 CIGAINA, MARCO

 Rzhaksynskyi, Andrii

SV Stoyanov, Velizar

 Rodriguez, Joel

 Chopra, Aman

 Bartler, Felix

RF Robledo, Francisco

 Schulz, Robert

 Antonio, Dan

HI Humphries, Ian

 Lange, Joerg

# Thank you