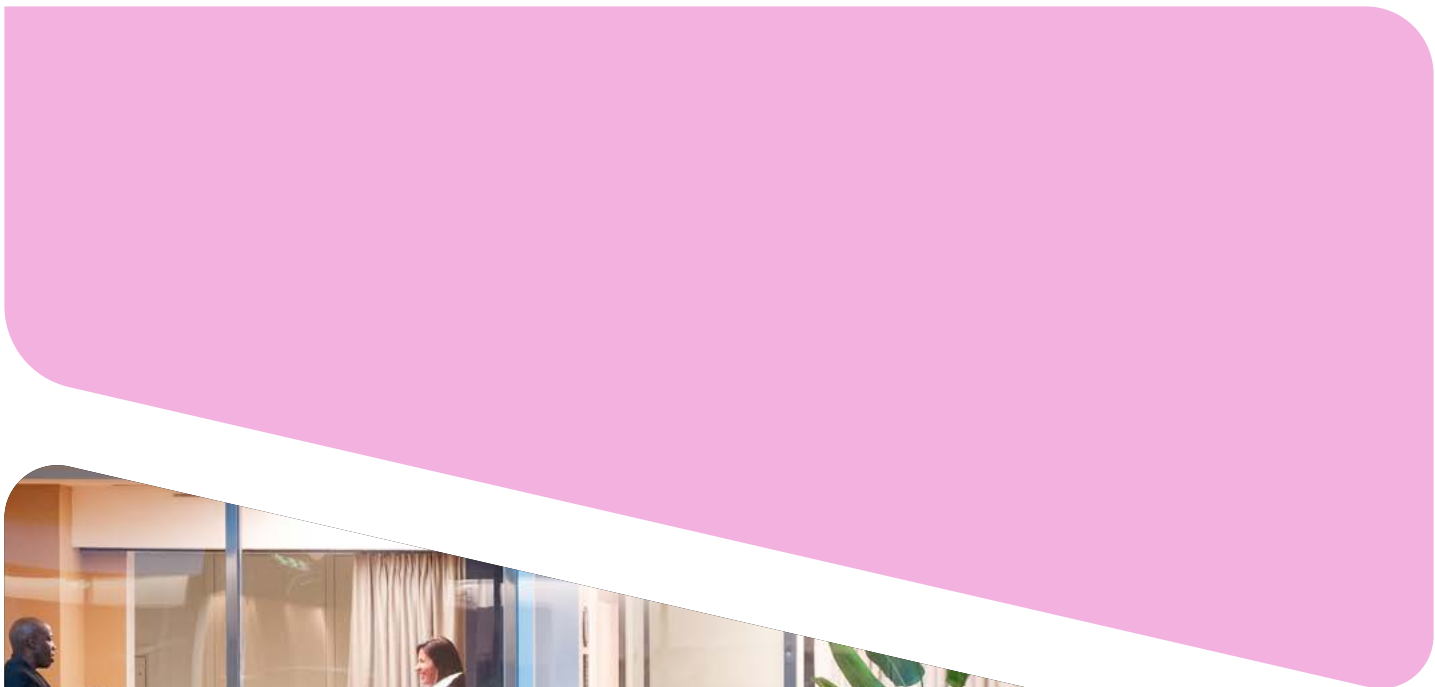




# Navigating the SAP AI Journey: Capabilities, Strategy, and Joule Copilot

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# Executive Summary

An SAP AI Journey refers to the strategic implementation of SAP AI technologies across the organization's operations, IT systems & data driven decision making processes. It helps streamline operations and encourages innovation, building competitive advantages for the organization. Business and IT leaders are now looking beyond the experimental use of these technologies in the form of PoCs and aspiring to implement them into the core business processes to drive business and IT transformation.

Most SAP customers today want to leverage SAP AI capabilities in their IT environment. Leaders frequently encounter fundamental questions in choosing the right SAP capabilities, especially when the implementation strategy remains unclear. The introduction of SAP Joule Copilot has generated significant excitement among business leaders, motivating them to implement it; however, the specific business benefits and real value drivers are not yet fully understood, limiting its widespread adoption.

The key concerns this paper will attempt to address are:

01

**Should you leverage AI capabilities within SAP ecosystem or other enterprise solutions and platforms for broader impact?**

02

**With the wide range of SAP AI tools and capabilities available, how can organizations and IT managers determine which is best suited for a given scenario?**

03

**How do we ensure that AI initiatives align with your overall business strategy and long-term growth objectives?**

04

**Are these SAP AI tools scalable and trustworthy and will you need to depend upon multiple technology experts to implement them?**

This white paper will provide insights on the SAP AI capabilities, strategy, and a Joule Copilot introduction for executives, business users and IT managers to help align priorities and define a future SAP AI roadmap.

Business Leaders are looking for solutions and directions to infuse AI into their organizations. Adopting AI capabilities helps business leaders and users to be proactive in decision-making, using data driven insights across the enterprise: effectively enabling them to respond faster to changing situations. AI powered SAP systems, in particular, bring capability to automate complex processes and reduce operational costs, boosting efficiency and innovation.

SAP AI provides strong capabilities through various tools and services on different SAP platforms and SAP products. These capabilities are mostly available on SAP Cloud products as embedded capabilities. Various terms, such as SAP AI services, SAP Embedded machine learning, SAP GenAI and SAP Joule Copilot, are being used by experts to explain the product capabilities based on relevancy. To navigate these different capabilities, you need sound understanding and a clear roadmap, keeping your business goals and objectives in mind. This paper will try to balance the business and technical view around SAP AI capabilities and place particular emphasis on strategy and SAP Joule.

# Introduction

First, will directly get into the subject of how SAP AI is poised to become your preferred enterprise AI tool.

An enterprise AI tool must include the following building blocks to finalize it. Although our focus is not to prove SAP AI as the preferred enterprise AI tool, the below table will showcase the alignment of SAP AI capabilities with these building blocks. It provides an assurance that it's a reliable choice. In further sections we will see where SAP AI fits within the overall ecosystem.

In broader terms, there are 7 building blocks of enterprise AI. Let's start with taking a look at SAP alignment with those building blocks.



SAP AI Alignment with Enterprise AI Building Blocks:



## Data Foundation

SAP has an ecosystem to manage the AI needs of the future with products like DataSphere, Databricks, knowledge graph.



## AI infrastructure

As part of BTP services SAP has provided the SAP AI Core and SAP AI launchpad to manage the AI Lifecycle which integrates with opensource and partner ecosystem



## Pre-Built AI Capabilities

It provides ISLM (Intelligent scenario lifecycle management) machine learning capability on SAP S/4HANA and Data analytics as well as embedded AI capabilities on Public and private cloud solutions along with SAP AI services Capabilities on BTP.



## Extensibility & Integration

SAP AI Core, SAP AI Launchpad & SAP GenAI hub enable the extensibility and API generation to extend the AI to application development.



## Governance & Compliance

SAP has developed its own ethical AI framework, called Responsible AI, to address the governance and compliance concerns.



## UX & Democratization

SAP Joule Copilot is extended to SAP Build which is available for developers for code building support including UI&UX. Joule Copilot assistance democratizes the use of AI across business roles and daily workflows, it is not restricted to key decision makers.



## Change Management & Skills

SAP AI enables workforce upskilling through Joule Copilot democratization. It serves as an enabler for existing users, not a replacement, enhancing overall user efficiency.

As we have now outlined how SAP AI capability is relevant to organizations along with other SAP Product capabilities, Partner capabilities, and open-source ecosystem capabilities – let's dig deeper into the specific features and abilities of these products.

# Core Competencies of SAP AI: Introduction to SAP AI Tools

SAP AI is represented by multiple AI tools within the SAP ecosystem, which can understandably seem confusing. To provide clarity, I will first go through the SAP AI offerings before tackling the concerns described in the executive summary.

## ✦ SAP ISLM (Intelligent Scenario Lifecycle Management)

SAP Intelligent Scenario Lifecycle Management (ISLM) is a framework within SAP S/4HANA (on-premise and Cloud solutions) that enables the integration and operationalization of machine learning models, bringing predictive AI into daily business transactions to support data-driven decision-making. It allows business users and IT teams to manage, deploy, and monitor ML scenarios directly within transactional processes.

**Technical Implementation:** The implementation of these ISLM Scenarios requires activation, training and deployment on SAP S/4HANA. This framework can also be implemented in a side-by-side implementation approach with SAP BTP. It uses the SAP HANA cloud APL and PAL libraries for Machine learning.

## ✦ SAP AI Core & SAP AI Launchpad

SAP AI Core and SAP AI Launchpad are two different tools with different features. However, both offerings together can be utilized to build custom AI/ML scenarios. SAP AI Core offers run time environment to train, deploy and scale AI models which is seamlessly integrated with business processes and data. The custom application built within SAP or external ecosystem could then leverage the APIs directly. SAP AI Launchpad provides the unified platform for managing, governing, and

monitoring AI initiatives which includes these custom AI Core scenarios or even the external non-SAP AI scenarios across an organization.

**Technical Implementation:** SAP AI Core and SAP AI launchpad are BTP based services and need subscription to the plan. Once available we can configure SAP AI core in SAP AI Launchpad to start defining scenarios.

## ✦ SAP GenAI Hub

SAP GenAI Hub is primarily used to embed the foundational AI models into business applications through a secure interface. These applications can be SAP or Non-SAP external applications. SAP provides access to many LLM models including partner developed e.g. Azure, OpenAI, and OpenSource AI Model such as MistralAI, Meta etc. it also has models for embeddings, vector AI models available. Also, SAP GenAI Hub

provides the prompt management offering. In short if you want to build an AI enabled app you can use the APIs for deployed app in SAP GenAI Hub.

**Technical Implementation:** It is also a BTP based activation service with subscription to the plan. It is configured within SAP AI Launchpad.

## ✦ SAP AI Services

SAP AI Services are the pre-built AI offerings from SAP. There are four services currently available on SAP BTP.

1. Document information extraction – uses Optical characteristic recognition (OCR) capability to read through PDF and Excel documents using AI.
2. Data Attribute Recognition – uses predictive Machine learning models trained on historical data to predict the field value.
3. Business entity recognition – similar to data attribute recognition uses the ML model trained on historical data. This service is used for identifying the organizational units, e.g. sales office, plant etc. during transaction posting.

## ✦ SAP Joule Copilot

SAP Joule Copilot is a digital assistant integrated into SAP applications. It empowers users to complete tasks more efficiently by interpreting commands, surfacing relevant data, and automating routine workflows within enterprise systems. By integrating seamlessly across SAP S/4HANA and other cloud applications, it offers a unified, conversational interface for business operations.

Key features of SAP Joule – Joule has the following capability types:

- Transactional: Helps with day-to-day tasks. Update business data complete tasks
- Navigational: Helps you open Apps or functionality

## ✦ SAP Joule Studio

SAP Joule Studio is a development environment that enables enterprises to create, customize, and deploy generative AI applications tailored to their business needs within the SAP ecosystem. It allows developers and business users to collaborate on designing AI workflows, leveraging pre-built templates and domain-specific data models.

## ✦ Vector Engine (RAG)

The Vector Engine with Retrieval-Augmented Generation (RAG) enhances AI response accuracy by combining real-time data retrieval with generative models. This approach allows systems to query a vector database for the most relevant contextual information before generating a response, making the output more grounded and precise.

4. SAP Translation – as the name suggests, it uses LLM for translation.

**Technical Implementation:** Activate service through plan subscription on BTP. Once activated you can then call the APIs and infuse their functionality into your business logic with low code or pro code application development.

- Informational: Enables conversational search into SAP help documents and own knowledge base
- Analytical insights: Access user data and gain insights. Powered by SAP Analytics Cloud

**Technical Implementation:** As part of the prerequisite SAP BTP is required for the cloud solutions. However, for public cloud solutions it is an embedded capability. This Joule Copilot can be accessed via SAP workzone and SAP AI Launchpad and integrates with backend system seamlessly.

**Technical Implementation:** Technical implementation includes utilizing SAP AI Core for model orchestration, integrating SAP HANA Cloud for data access, and deploying solutions through SAP BTP.

**Technical Implementation:** To implement the RAG architecture, it needs to be integrated into the database with Vector capabilities. SAP HANA now has vector capabilities. There are several approaches to achieve RAG.

# SAP AI Architecture Support & Approach Selection Cheat Sheet

Now that we have familiarized ourselves with the various SAP AI Capabilities available within the SAP ecosystem, let's focus on the key concern: choosing the right SAP AI tools.

The table below shows the SAP AI tools available within the ecosystem and their relevance to the Sap Deployment model. At a high level, it provides clarity to business, IT leaders, architects, consultants and developers to align their architecture and choose the correct SAP AI tool for the scenario at hand.

Table 1: SAP AI tools and Deployment scenario

SAP AI Tools	SAP DEPLOYMENT TOOLS					
	SAP S/4HANA On-Premise	SAP S/4HANA Private Cloud	SAP S/4HANA Public Cloud	SAP Public Cloud Apps (e.g. SF/CRM)	SAP BTP Build / Code Apps	External Apps
SAP ISLM (Embedded ML)	Full support	Full support	No support	No support	No support	No support
SAP AI Core	No support	Limited	Full support	Full support	Full support	Full support
SAP AI Launchpad	No support	Limited	Full support	Full support	Full support	Full support
SAP GenAI Hub	No support	No support	Full support	Full support	Full support	Full support
SAP Business AI Services	No support	Limited	Full support	Full support	Full support	Full support
SAP Joule Copilot	No support	Limited	Full support	Full support	No support	No support
SAP Joule Studio	No support	No support	Full support	Full support	Full support	No support
Vector Engine (RAG)	No support	No support	Full support	Full support	Full support	Full support

While the table helps architectural decisions, business alignment is the next step.

Once a business use case is identified, an analysis should be carried out to bridge the gap between technical capabilities and business value. The cheat sheet below helps decision makers choose the right SAP AI tool.

Table 2: Business use case navigation cheat sheet for selection of right SAP AI capability

SAP AI Tools	Supported Deployment/BTP	Best Suited for	Preferably use for	Use case examples
SAP ISLM (Embedded ML)	<ul style="list-style-type: none"> <li>SAP S/4HANA On prime/Cloud deployment</li> <li>SAP Public cloud solutions</li> </ul>	<ul style="list-style-type: none"> <li>Standard business process</li> <li>Activate Pre-delivered Scenarios</li> <li>Operational Decision making</li> </ul>	<ul style="list-style-type: none"> <li>Historical data available</li> <li>Minimum to no code</li> <li>Self-learning machine learning is expected</li> </ul>	<ul style="list-style-type: none"> <li>Goods issue delay prediction at the time of Sales order creation</li> </ul>
SAP AI Launchpad & SAP AI Core	<ul style="list-style-type: none"> <li>SAP BTP Subscription</li> </ul>	<ul style="list-style-type: none"> <li>Custom Machine learning scenarios</li> <li>Data available from multiple sources</li> <li>Python expertise available</li> </ul>	<ul style="list-style-type: none"> <li>Infuse Predictive AI into custom applications</li> <li>Complex scenarios including image processing etc.</li> </ul>	<ul style="list-style-type: none"> <li>Predict Quality defect realtime during the manufacturing process based on Sensor data</li> <li>Predict Department for root cause analysis based on customer email defect description</li> </ul>
SAP GenAI Hub	<ul style="list-style-type: none"> <li>SAP BTP Subscription and SAP AI Launchpad</li> </ul>	<ul style="list-style-type: none"> <li>Conversational AI requirements</li> <li>Foundational Models</li> <li>RAG Architecture</li> <li>Embedding models</li> </ul>	<ul style="list-style-type: none"> <li>Infuse conversational AI in custom applications</li> <li>RAG Architecture</li> <li>Deploy embeddings model &amp; integration with Vector Database</li> </ul>	<ul style="list-style-type: none"> <li>Q&amp;A capability with Plant maintenance knowledge base and SoP documents (Pdfs etc.)</li> <li>Covert PDF documents into vectors using embedding model</li> </ul>

<b>SAP AI Services</b>	<ul style="list-style-type: none"> <li>• BTP Subscription</li> </ul>	<ul style="list-style-type: none"> <li>• Standard business Processes</li> </ul>	<ul style="list-style-type: none"> <li>• Low code &amp; Pro code Extensions</li> <li>• Real time data processing</li> <li>• SAP Build Process automation and SAP Build Apps extensions</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of Sales order based on PDF PO attachment email received from Customers</li> <li>• Purchase info records creation based on supplier excel email attachment</li> <li>• Sales office determination during Sales order creation</li> </ul>
<b>SAP Joule Copilot</b>	<ul style="list-style-type: none"> <li>• SAP BTP for private cloud or Embedded capability for public cloud</li> </ul>	<ul style="list-style-type: none"> <li>• Natural language interaction &amp; productivity gain</li> </ul>	<ul style="list-style-type: none"> <li>• Analytical insights from backend SAP system</li> <li>• Navigations</li> <li>• Task completion</li> </ul>	<ul style="list-style-type: none"> <li>• Provide the sales trend analysis for last quarter</li> <li>• Open Manage Sales order app</li> <li>• Release order XXXXXX</li> </ul>
<b>SAP Joule Studio</b>	<ul style="list-style-type: none"> <li>• SAP BTP Subscription, SAP Build additional subscriptions</li> </ul>	<ul style="list-style-type: none"> <li>• Extending standard SAP Joule capabilities</li> </ul>	<ul style="list-style-type: none"> <li>• Build Agentic AI skills and Agent</li> <li>• Enterprise specific workflows and integrations</li> </ul>	<ul style="list-style-type: none"> <li>• Creation of Maintenance order by pulling data from IoT database</li> </ul>
<b>Vector Engine (RAG)</b>	<ul style="list-style-type: none"> <li>• SAP BTP subscriptions, SAP GenAI Hub</li> </ul>	<ul style="list-style-type: none"> <li>• Custom applications where end user needs to interact with document or text data</li> </ul>	<ul style="list-style-type: none"> <li>• Custom application business logic which depends upon unstructured data</li> </ul>	<ul style="list-style-type: none"> <li>• Supplier evaluation for best suppliers, financial negotiation strategies from supplier evaluation documentation</li> </ul>

# Strategic Approach for SAP AI Adoption Within an Enterprise

The journey toward enterprise-wide AI adoption requires a structured and scalable approach. We have created a framework that presents a three-tiered strategy to guide organizations from foundational capabilities to advanced, ecosystem-driven innovation.

**Focus Area 1** emphasizes leveraging standard ML and AI solutions embedded within SAP S/4HANA and SAP BTP. These pre-delivered capabilities, accessible via SAP ISLM, allow organizations to begin their AI journey with minimal disruption. By tapping into native functionalities, businesses can enhance operational efficiency and gain quick wins without extensive customization.

## Focus area 1

SAP S/4HANA Standard ML & AI solutions. (ISLM)

Utilize Standard SAP Pre-Delivered content on SAP S/4HANA and BTP

SAP ISLM

SAP has provided inbuilt machine learning and SAP AI capabilities on SAP S/4HANA and SAP BTP already. We can start engagement with platform teams to see if those could be implemented. How can we integrate these capabilities into existing applications/Processes?

## Focus area 2

SAP AI Innovations based on BTP architectures and capabilities

Integrate Available BTP capabilities for clean core and extensibility requirements

Datasphere, Build, Process automation, Integration, API hub

How can we take other BTP capabilities (Datasphere, Build apps, build process automation etc) integrate those with AI & GenAI capabilities.

## Focus area 3

Larger ecosystem more strategic in nature (beyond SAP but influence customer outcomes)

- Generative AI Capabilities
- SAP Joule
- SAP Joule Agentic AI and Joule Studio

SAP AI Core, SAP AI Launchpad, SAP GenAI

SAP GenAI capabilities and Joule assistant will enable us to connect with other partner capabilities (foundation models) and building usecases along with it. How can we leverage Agentic AI and AI supporting tools such as knowledge graph etc in use.

Business Transformation

Business Value generation and Leveraging Tech capabilities

ALM Services

**Focus Area 2** shifts the attention to SAP AI innovations built on BTP architecture. This includes tools like Datasphere, SAP Build, Process Automation, and Integration Suite. These components support clean core principles and extensibility, enabling organizations to build intelligent workflows and integrate AI into broader business processes.

**Focus Area 3** expands the horizon to the larger AI ecosystem, incorporating tools such as SAP AI Core, AI Launchpad, and SAP GenAI. This strategic layer allows enterprises to connect with external foundation models and partner capabilities, fostering innovation beyond SAP boundaries and driving differentiated customer outcomes.

Supporting pillars like Business Transformation, Value Generation, and ALM Services ensure that AI adoption is aligned with enterprise goals, delivering measurable impact.



# Conclusion: SAP AI in the Broader Enterprise Context - A Practical View

In my experience, most large enterprises already operate on cloud platforms like Azure, AWS, or Google Cloud, which serve as foundational layers for hosting a wide range of technologies and applications often numbering in the hundreds. SAP is generally considered the backbone of the operations and finance business areas, yet it is not seen as a preferred technology for advanced capabilities.

Given this landscape, organizations rarely position SAP AI as their primary enterprise AI platform. There's often hesitation, not due to lack of capability, but because cloud platforms offer greater flexibility, scalability, and integration options across diverse business functions.

SAP AI tools have an advantage in a specific domain: tactical and operational insights. Their strength lies in leveraging structured ERP data to optimize processes like procurement, finance operations, supply chain execution, and HR workflows. These tools are deeply embedded in transactional systems, making them ideal for real-time decision support and automation.

However, when it comes to strategic, cross-functional insight – the kind that CXOs rely on for long-term planning – SAP alone may not suffice. Broader data aggregation, external sources, and advanced analytics often require integration with enterprise grade AI platforms.

With the introduction of Joule, Joule Studio, and SAP AI Core, the platform is moving toward Agentic AI, a paradigm where intelligent agents autonomously interact with enterprise data, orchestrate workflows, and deliver contextual insights across systems. These capabilities are designed to extend SAP's relevance beyond operational intelligence, enabling a more dynamic, responsive, and strategic decision-making system.

Balancing SAP's operational strengths with broader AI platforms is key to building a practical and scalable enterprise AI strategy – something I've consistently observed in large scale deployments. Based on my interactions with CIOs and IT heads, I am confident that the clear path is to establish a team which drives the AI initiatives centrally while analysing the use case, selection of platform, fitment to business goals, cost and expertise involved and scalability before finalizing the solution.

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The Vivicta logo is displayed on a teal-colored rounded rectangular background. The word "vivicta" is written in a lowercase, sans-serif font, followed by a small asterisk symbol.

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