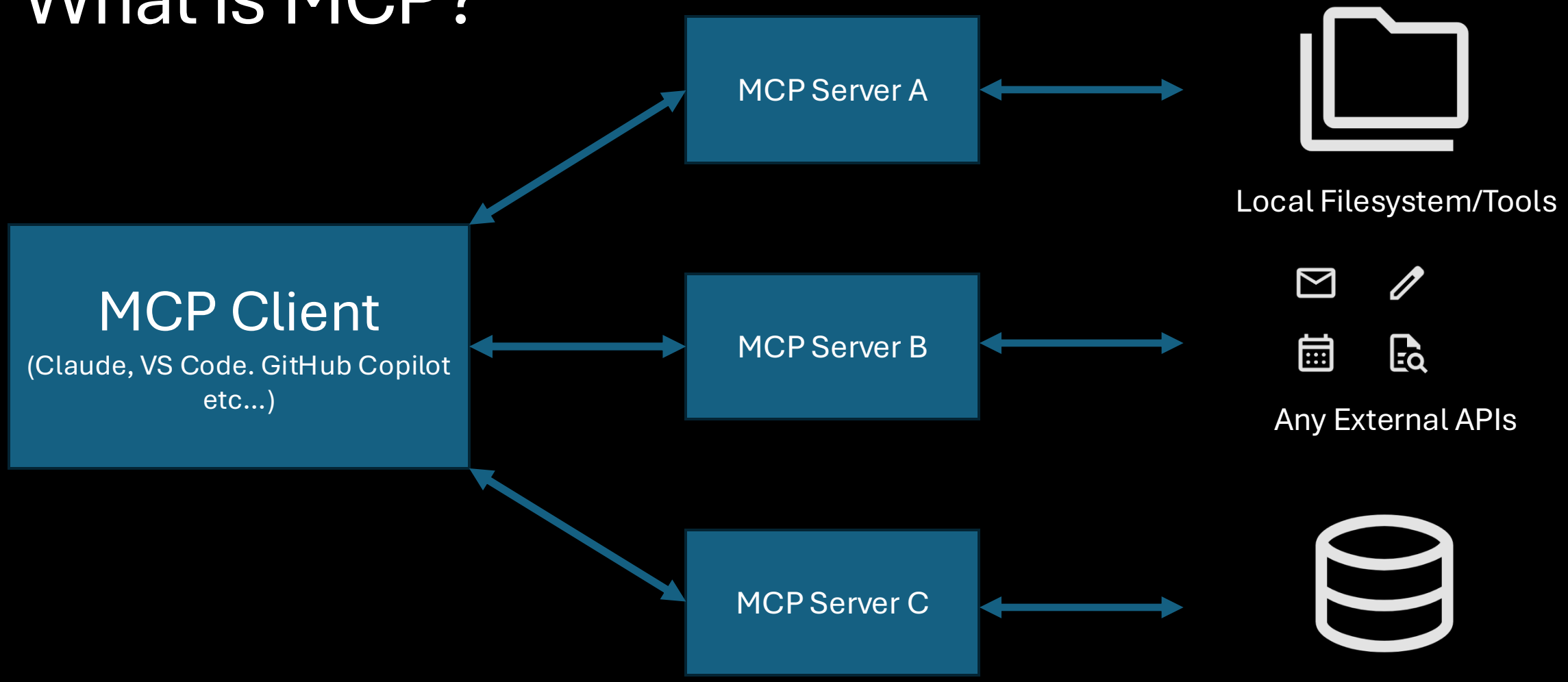
Open-Source Joule for Consultants: SAP Docs and CAP Data Unified with MCP

Marian Zeis, Independent Developer

What is MCP?

- Developed Anthropic (Claude.ai)
- Open Sourced in November 2024
- Model Contect Protocol is an open standard that lets an AI client call tools and read resources exposed by MCP servers.
- Someone called it a USB for AI

What is MCP?


MCP Client
(Claude, VS Code. GitHub Copilot etc...)
MCP Server A
MCP Server B
MCP Server C
Local Filesystem/Tools
Any External APIs
Remote Database

Why is MCP important?

- Outdated Information (GPT-5 latest info Oct. 2024)
- SAP in generell sparsely information in there
- Missing Context of private content
- Connection is missing to other contexts/tools

MCP Servers

- GitHub
- Jira
- Confluence
- Chrome DevTools
- AWS
- Lot of Open Source Community created MCP Server:
  - https://github.com/punkpeye/awesome-mcp-servers

What can be done today with SAP and AI?

- Joule For Developers
- Joule For Consultans
- Joule Studio
- GenAI in
  - Supply Chain Management
  - HR
  - Finance
  - Mostly for: Generating Texts, explain things, translate

Currently available MCP Server related to SAP

- From SAP:
  - CAP
  - UI5
  - Fiori tools
  - Mobile Development Kiot
- From Community
  - MCP Server for S/4 OData Services
  - MCP Server for CAP as Plugin
  - SAP Docs MCP Server (GitHub Docs, SAP Help, SAP Community)
  - SAP Notes MCP Server
  - HANA MCP Server
  - ADT MCP Server
  - SAP GUI MCP Server

Intro MCP Docs Server

- Docs available:
  - UI5, OpenUI5, UI5 Samples, UI5 Typescript, UI5 Tooling, wdi5
  - CAP, CAP Samples
  - ABAP Keyword Documentation
  - Clean ABAP Guidelines
  - Fiori Features Showcase
  - Cloud SDK, AI SDK, Cloud MTA Build Tool
  - SAP Community
  - SAP Help

Demo MCP Docs Server

- Show in MCP Tester Tool
- Show in Cursor (CAP Project with FE App) using SAP MCP Server
- Show in Eclipse
- Show in Claude.ai --> what are the annotation for value help in rap

Intro MCP Server Notes/S4/CAP

- Direct Access to SAP Notes Content
- CRUD Access to OData Services on S4 System
- CRUD Access to CAP System

Compare to Joule for Consultans

Unmatched knowledge base

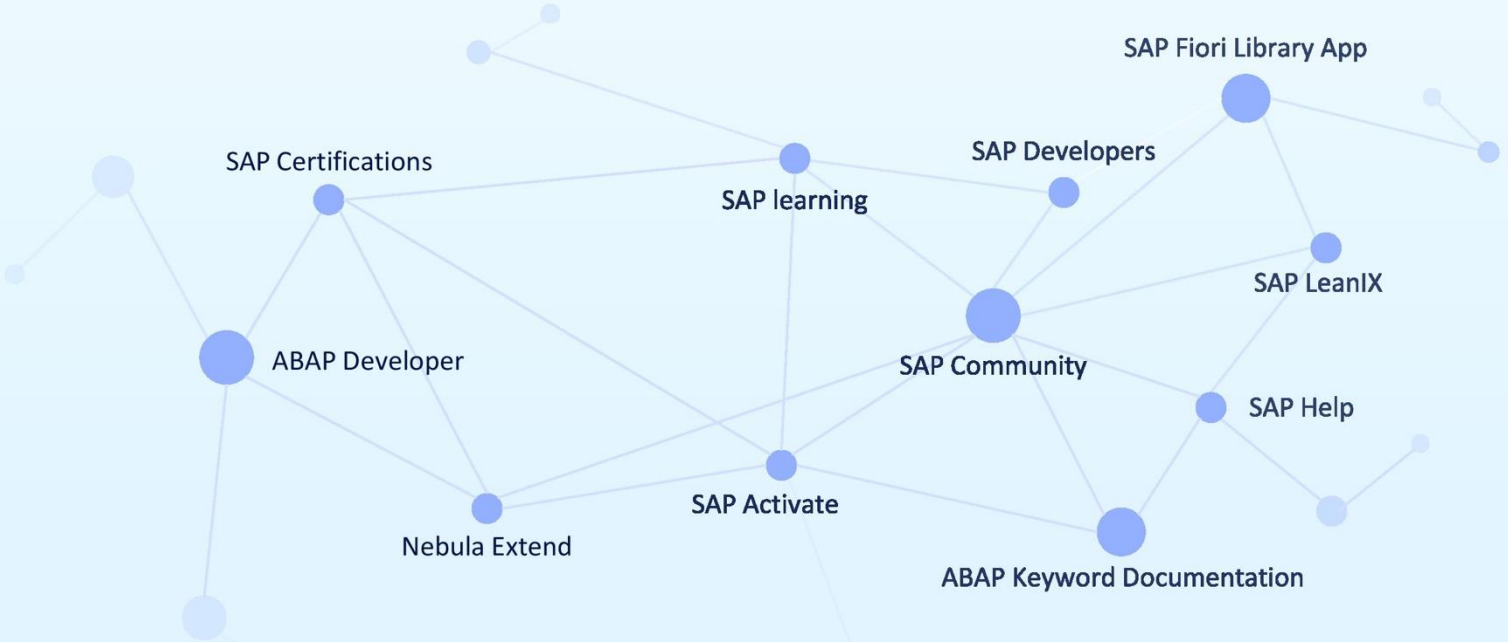
For unique guidance you can trust

Authoritative, exclusive, and expertly curated SAP content

Comprehensive content supports every phase of SAP projects — from discover to run

Unique access to SAP-exclusive knowledge such as SAP Notes, KBAs, implementation code, and more

Advanced content lifecycle management ensures SAP guidance stays accurate and current



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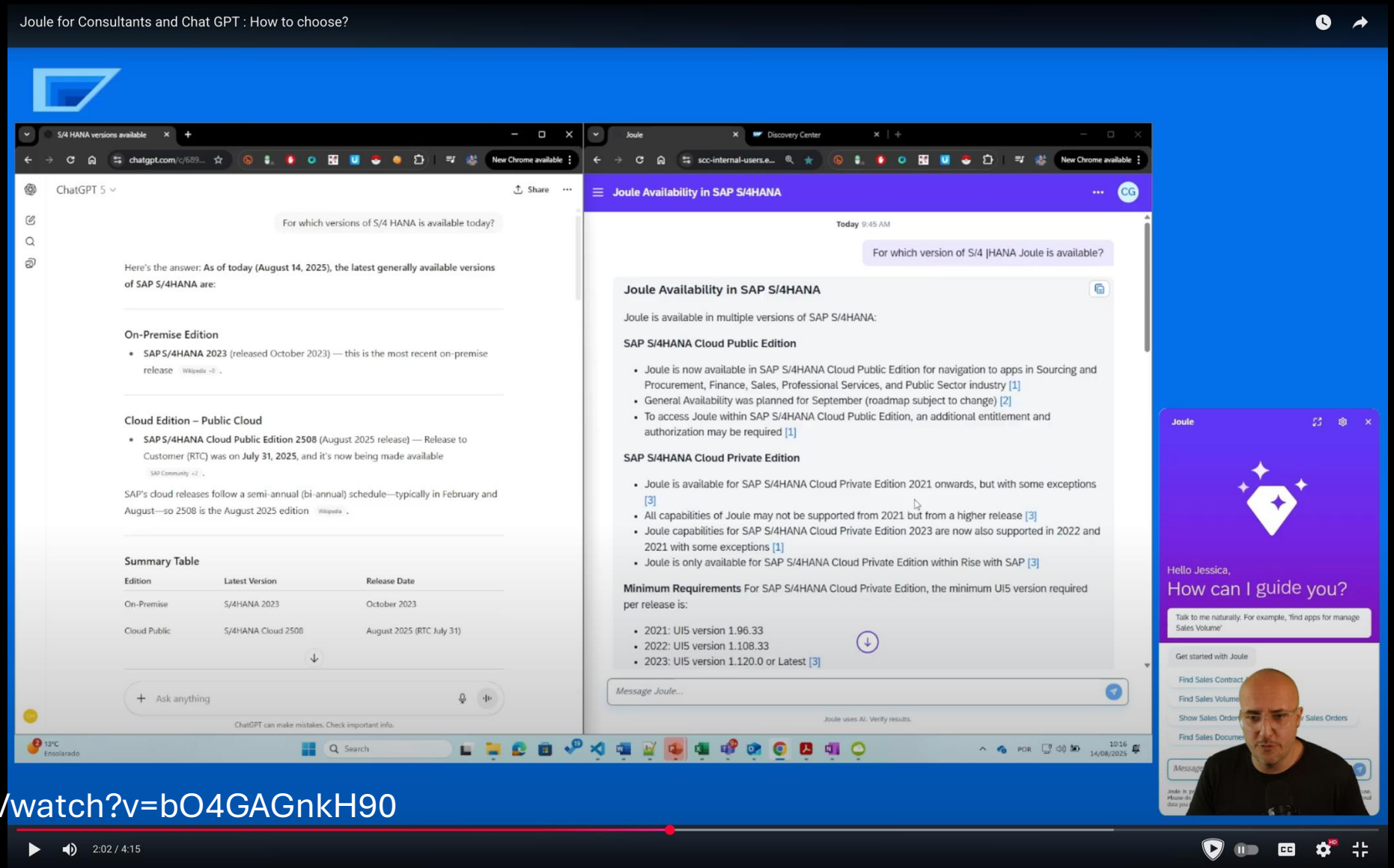

https://www.youtube.com/watch?v=bO4GAGnkH90

chatgpt.com/c/689...

New Chrome available

ChatGPT 5

Share

For which versions of S/4 HANA is available today?

Here's the answer: **As of today (August 14, 2025), the latest generally available versions of SAP S/4HANA are:**

On-Premise Edition

- **SAP S/4HANA 2023** (released October 2023) — this is the most recent on-premise release Wikipedia +8 .

Cloud Edition – Public Cloud

- **SAP S/4HANA Cloud Public Edition 2508** (August 2025 release) — Release to Customer (RTC) was on **July 31, 2025**, and it's now being made available SAP Community +2 .

SAP's cloud releases follow a semi-annual (bi-annual) schedule—typically in February and August—so 2508 is the August 2025 edition Wikipedia .

Summary Table

Edition	Latest Version	Release Date
On-Premise	S/4HANA 2023	October 2023
Cloud Public	S/4HANA Cloud 2508	August 2025 (RTC July 31)

Ask anything

ChatGPT can make mistakes. Check important info.

scc-internal-users.e...

New Chrome available

Joule Availability in SAP S/4HANA

CG

Today 9:45 AM

For which version of S/4 |HANA Joule is available?

Joule Availability in SAP S/4HANA

Joule is available in multiple versions of SAP S/4HANA:

SAP S/4HANA Cloud Public Edition

- Joule is now available in SAP S/4HANA Cloud Public Edition for navigation to apps in Sourcing and Procurement, Finance, Sales, Professional Services, and Public Sector industry [1]
- General Availability was planned for September (roadmap subject to change) [2]
- To access Joule within SAP S/4HANA Cloud Public Edition, an additional entitlement and authorization may be required [1]

SAP S/4HANA Cloud Private Edition

- Joule is available for SAP S/4HANA Cloud Private Edition 2021 onwards, but with some exceptions [3]
- All capabilities of Joule may not be supported from 2021 but from a higher release [3]
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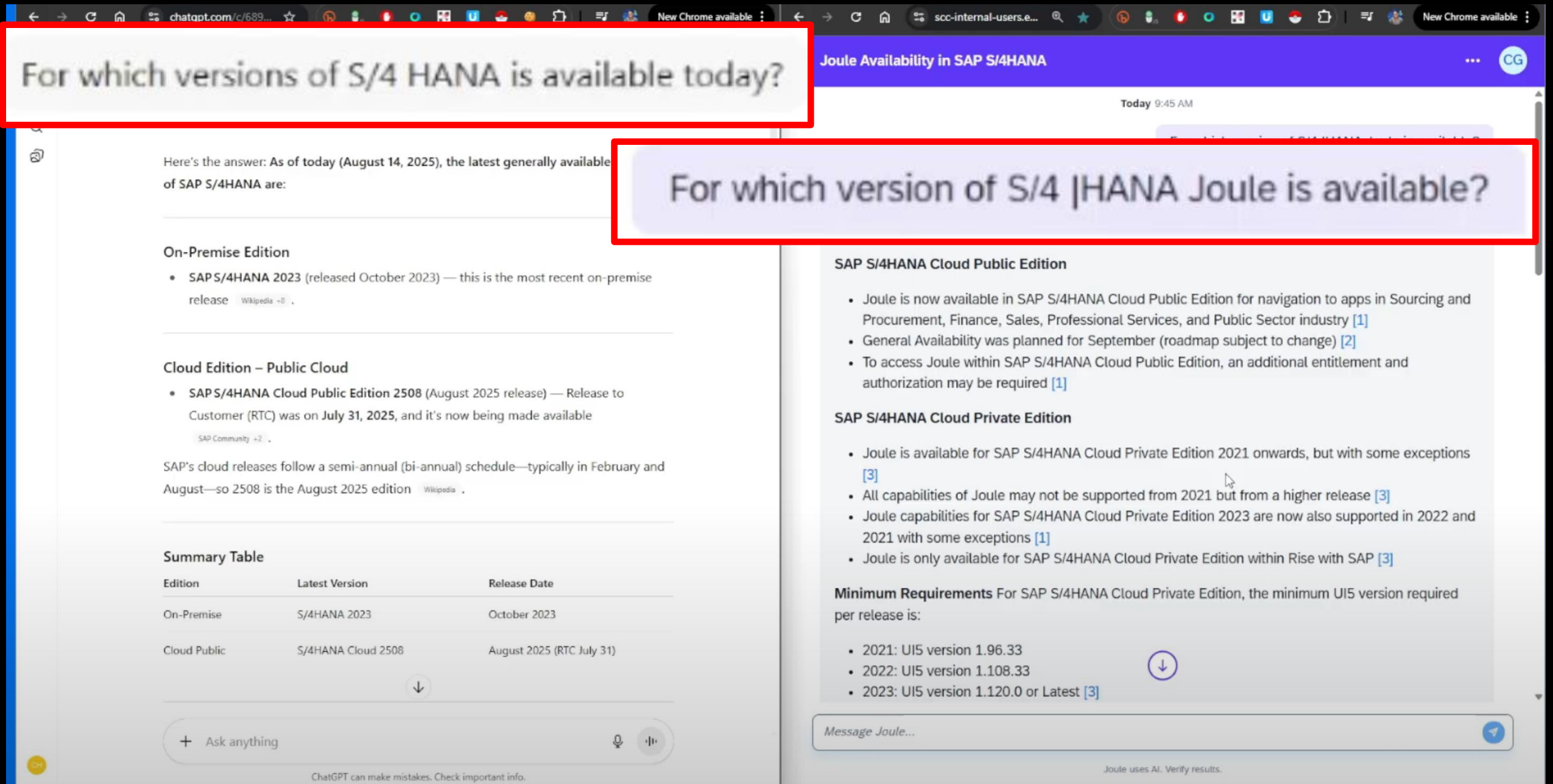
- Joule is only available for SAP S/4HANA Cloud Private Edition within Rise with SAP [3]

Minimum Requirements For SAP S/4HANA Cloud Private Edition, the minimum UI5 version required per release is:

- 2021: UI5 version 1.96.33
- 2022: UI5 version 1.108.33
- 2023: UI5 version 1.120.0 or Latest [3]

Message Joule...

Joule uses AI. Verify results.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Message Joule...
Joule uses AI. Verify results.

Compare to Joule for Consultans

for which version of S/4HANA is Joule available

"Joule" (the SAP AI copilot) is supported starting with **SAP S/4HANA Cloud Private Edition 2023 FPS01** (or higher) for integration with S/4 systems. SAP Community +2

Additionally, Joule has been made available in **SAP S/4HANA Cloud Public Edition** (as of the November 2024 release) SAP News Center +1

Note: As of now, Joule is **not supported** for on-premise editions of S/4HANA. mindsetconsultin...

If you like, I can check whether any later on-premise support is planned.

Compare to Joule for Consultans

- ChatGPT – Without Thinking
- ChatGPT – With Thinking
- Claude.ai

Compare to Joule for Consultans –Claude.ai

Based on my search of SAP Help Portal and SAP Notes, here's what I found about Joule availability for S/4HANA:

Joule Availability by S/4HANA Version

SAP S/4HANA Cloud Private Edition

Joule is available for SAP S/4HANA Cloud Private Edition starting from version 2021 onwards, but with some exceptions. Not all capabilities of Joule are supported from 2021 - some are only available from higher releases.

Key Requirements:

- Joule is only available for SAP S/4HANA Cloud Private Edition within RISE with SAP and in SAP managed data center setups

Minimum UI5 Versions Required:

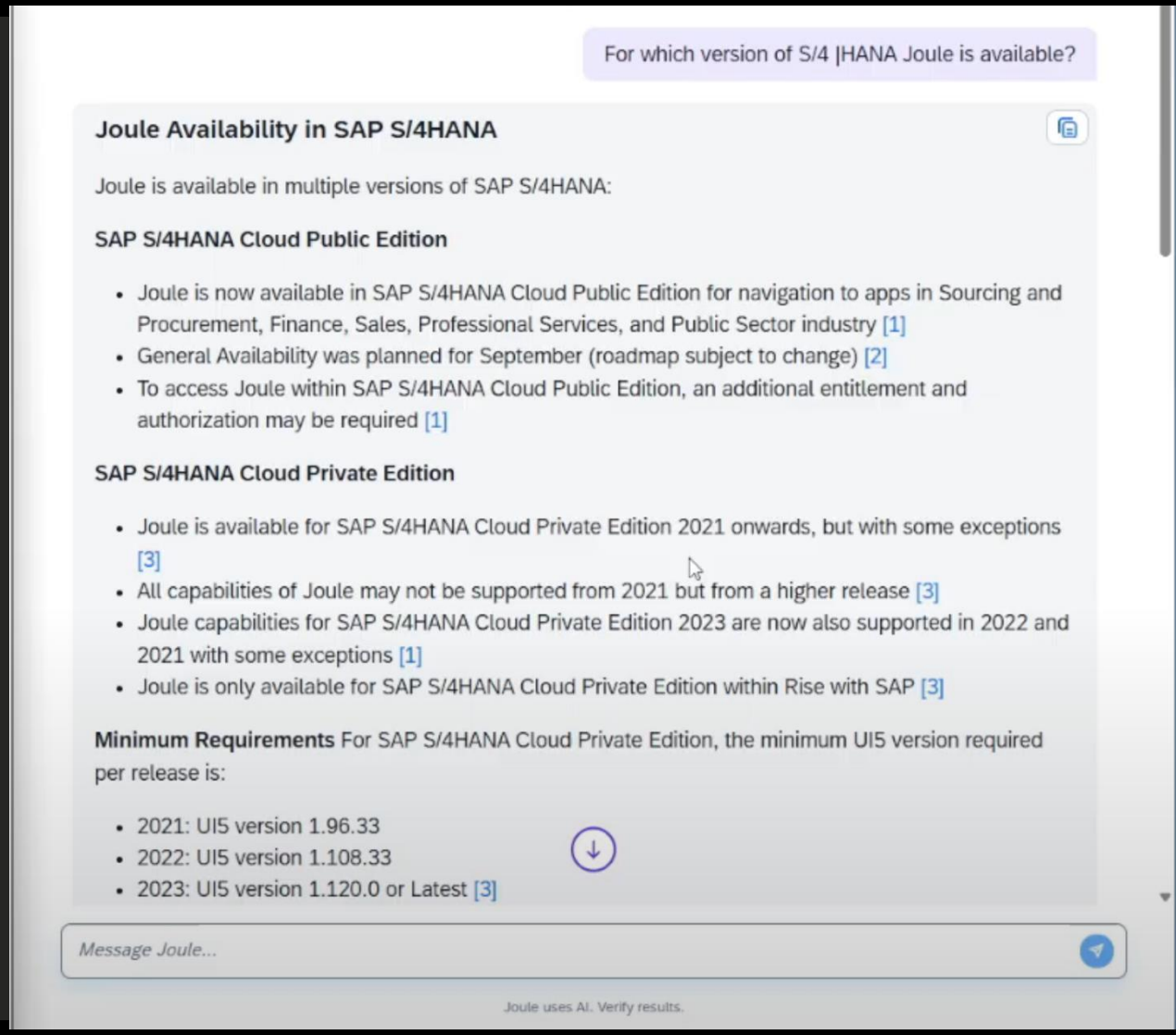
- **2021**: UI5 version 1.96.33
- **2022**: UI5 version 1.108.33
- **2023**: UI5 version 1.120.0 or Latest

Capability Overview

Joule provides both navigational and transactional capabilities across various areas including Finance, Sales, Procurement, Manufacturing, Asset Management, R&D Engineering, and Cross-area functions.

For detailed information about:

- Specific capabilities per release: Refer to SAP Note 3523238 which contains detailed lists of navigational and transactional capabilities
- AI functionalities (separate from Joule): SAP Note 3558794 provides an overview of AI functionalities in S/4HANA Cloud Private Edition, noting that Joule cases are documented separately



Compare to Joule for Consultans – ChatGPT

According to the official **SAP Help Portal**, Joule — SAP's generative AI copilot — is:

- **Available in SAP S/4HANA Cloud Public Edition** (from version **2408**)
  🔗 Features for Joule in SAP S/4HANA Cloud Public Edition (2508.06) ↗
- **Available in SAP S/4HANA Cloud Private Edition** (starting with **2021 release and later**)
  🔗 Constraints for Joule in SAP S/4HANA Cloud Private Edition ↗

So, summarizing:

> 🟢 **Joule is available for SAP S/4HANA Cloud (Public and Private Editions).**
> 🔹 **Private Edition:** Supported from **S/4HANA 2021** onward.
> 🔹 **Public Edition:** Supported from **S/4HANA Cloud 2408** onward.

Let's now confirm this with relevant SAP Notes for official support statement and release scope.

Suche nach verfügbaren Tools abgeschlossen
{≡} Tool aufgerufen

Here's the confirmation from **SAP Notes** and **SAP Help Portal**:

✅ Joule Availability for SAP S/4HANA

Edition	Availability	Reference
SAP S/4HANA Cloud Private Edition	Available **from S/4HANA 2021** release onward	SAP Help – Constraints for Joule in Private Edition ↗
SAP S/4HANA Cloud Public Edition	Available **from release 2408** and enhanced in **2508**	SAP Help – Features for Joule in Public Edition ↗

🔍 Supporting SAP Notes

- 3558794 ↗ – *AI Functionality in SAP S/4HANA Cloud Private Edition*
  > Confirms Joule availability and implementation guidance.
- 3661736 ↗ – *Navigational and Transactional Capabilities for Manufacturing with Joule*
  > Details current Joule features for S/4HANA Cloud Private Edition.
- 3545050 ↗ – *List of Business Objects Enabled for Joule in S/4HANA Cloud Public Edition*
  > Documents public edition business object coverage.

For which version of S/4 |HANA Joule is available?

Joule Availability in SAP S/4HANA

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Message Joule...

Joule uses AI. Verify results.

Compare to Joule for Consultans – ChatGPT

Here's what I found (using the MCP connections to SAP Help and SAP Notes, no web search):

Short answer

- **S/4HANA Cloud – Public Edition:** Joule is integrated and available (see "Integrating with Joule" for 2508 and the "Joule in SAP S/4HANA Cloud Public Edition" guide).
- **S/4HANA Cloud – Private Edition (PCE):** Joule is available **from the 2021 release onward**; specific capabilities vary by release.
- **S/4HANA (On-premise):** Evidence shows **select availability starting with the 2025 release** in certain areas (e.g., Utilities "Conversational Search"); most generic Joule items in the on-premise library still list availability as PCE.

Evidence from SAP Help (via MCP)

- **"Integrating with Joule"** (S/4HANA Cloud Public Edition, version 2508): explicitly states Joule is integrated in the Public Edition and notes additional entitlement/authorization may be required.
- **"Joule in SAP S/4HANA Cloud Public Edition"**: details navigational, informational, and transactional capabilities in Public Edition.
- **"Joule in SAP S/4HANA Cloud Private Edition"**: states Joule offers capabilities for **S/4HANA Cloud Private Edition 2021 onwards**; availability is release-specific and points to a release-specific list and an SAP Note.
- **"Conversational Search for S/4HANA Utilities"** (in the S/4HANA on-prem 2025 library): **Availability = SAP S/4HANA and SAP S/4HANA Cloud Private Edition; Valid as of 2025** — indicating on-prem adoption (at least for Utilities) begins with **S/4HANA 2025**.
- **"Joule Conversational Search"** items in the same on-prem 2025 library often list **Availability = S/4HANA Cloud Private Edition**, which suggests some topics are PCE-only even though they appear in the on-prem doc set.

(You should see these pages listed in the panel from the SAP Help MCP search and the subsequent "get" calls I ran.)

Evidence from SAP Notes (via MCP)

- **SAP Note 3523238** — *"Navigational and Transactional capabilities with Joule in SAP S/4HANA Cloud Private Edition"* (2025-09-01). Confirms Joule navigational/transactional use cases for **PCE**.
- **SAP Note 3558794** — *"AI Functionality in SAP S/4HANA Cloud Private Edition"* (2025-06-17). Says SAP offers AI functionality in **PCE starting with the 2021 release** and references 3523238.
- **SAP Note 3632506** — *"Joule Provides Informational Content Sourced from the SAP Help Documentation"* (2025-07-18). Describes Joule informational behavior in **PCE**.

One-look matrix

Edition	Available?	Earliest version indicated	Notes
S/4HANA Cloud — Public Edition	**Yes**	2408 ("Joule Now Supported in SAP S/4HANA Cloud" in What's New list) and confirmed in 2508 integration docs	Entitlement/authorization may be required.
S/4HANA Cloud — Private Edition	**Yes**	**2021 onward** (per Help + Notes 3558794, 3523238)	Capabilities (navigational/transactional/informational) are **release-specific**.
S/4HANA (On-premise)	**Partial / scoped**	**2025** (e.g., Utilities "Conversational Search" page lists availability for S/4HANA)	Many generic Joule items still marked as **PCE-only** despite being in the on-prem library.

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Joule Availability in SAP S/4HANA

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Message Joule...

Joule uses AI. Verify results.

Demo Microsoft Copilot Agent Studio

Create new football data

FE app

export data from the all football clubs from s4 system from football service to this excel file create or data in the file including header

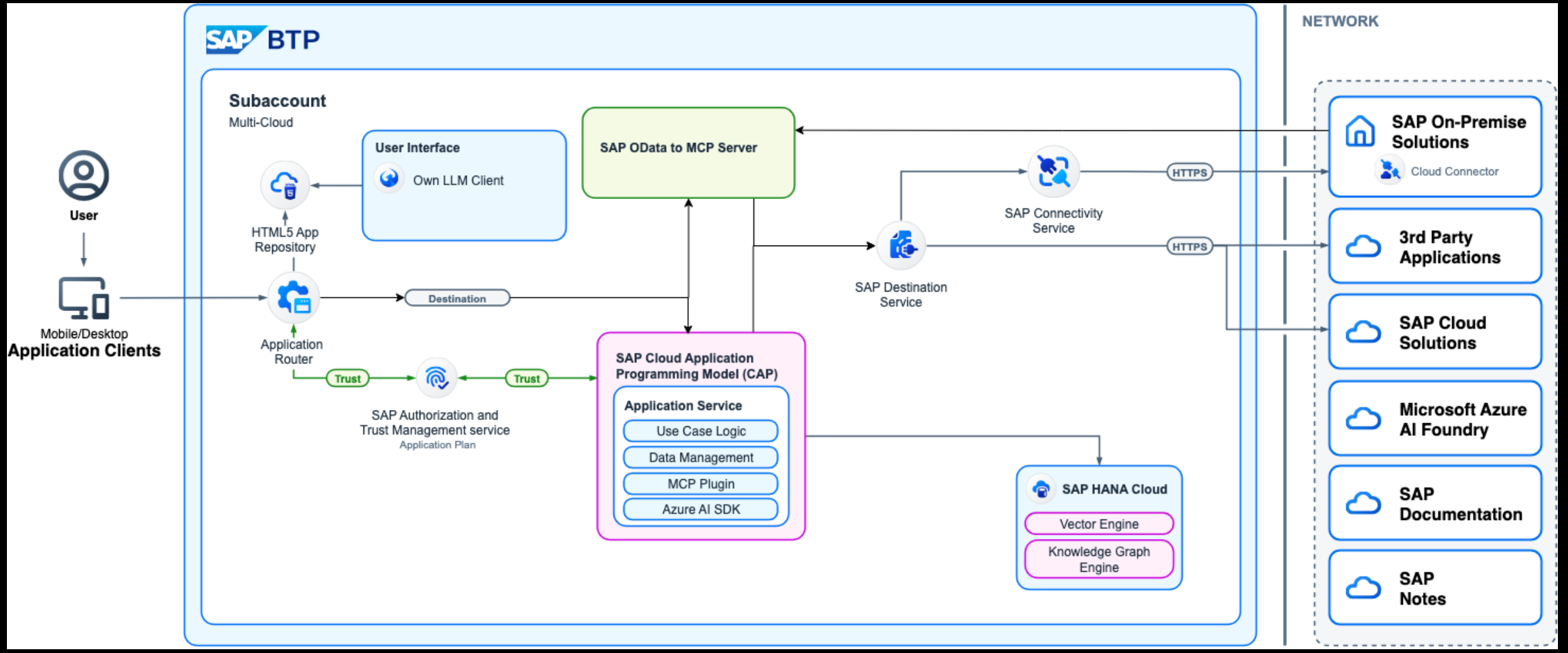
Create new clubs from real data

Question from the SAP Community:

please answer this with mcp server using help and notes mcp server, if notes are mentionend get the details of the notes
We are in an environment where we use standard costs for all materials during the month and perform actual cost calculations for the previous month in the following month.Therefore, we plan to migrate the initial stock quantity using migration cockpit on the 1st of the system opening month and migrate the actual valueof initial stock through Debit/Credit Material in the middle of the opening month.However, the problem is that there is no function to batch upload using an Excel file in the Debit/Credit Material function.For companies in our environment, I would like to know how to migrate the actual amount of initial stock.

Demo CAP Plugin in Claude

Setup own LLM Client in BTP



MCP Security

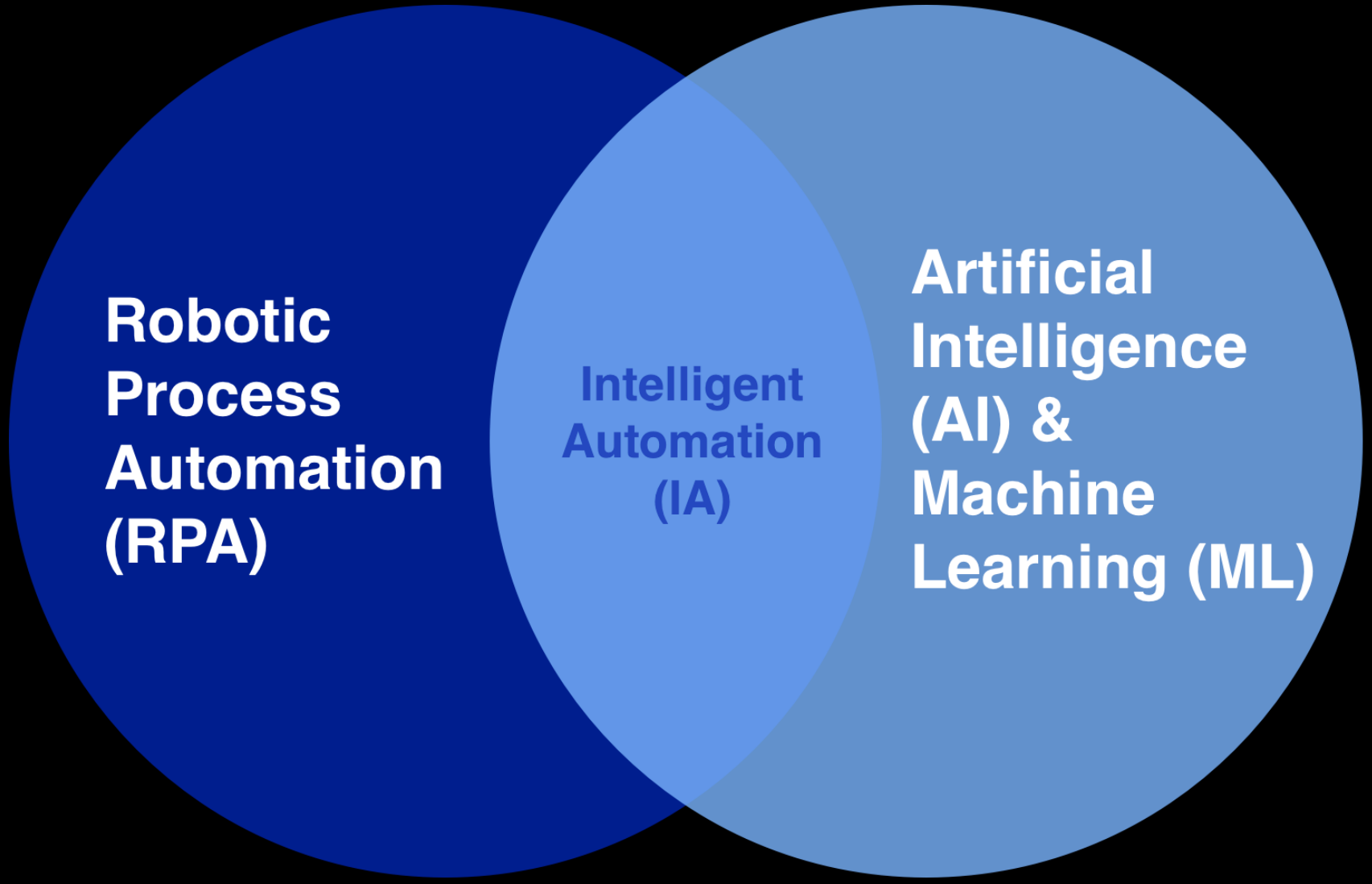
Artificial intelligence: Vibe coding service Replit deletes production database

According to a Replit user, the service has deleted its production database, made false statements about it and ignored instructions. The manufacturer responds.

MCP Security

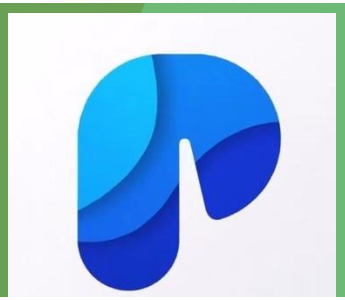
- MCP Server must use Oauth 2.1 or signed API Keys
- Prefer self-hosted MCP Server
- Review Code
- Prefer official sources/connectors
- Strict allow-lists, default only read
- Prompt Injections
- Human-in-the-loop
- Data is just sent “away“

MCP Alternatives



Process Automation

AI & LLM



SAP Build Process Automation

MCP Usage

- MCP good for AI-assisted dev and contextual tool calls
- Automation platforms shine for standardized business flows and approvals

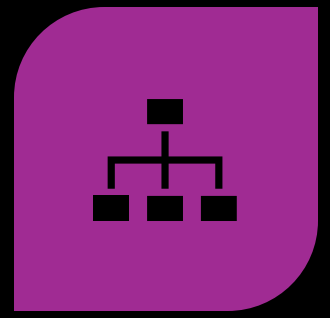
MCP can be used everywhere where LLM are used

Final Thoughts

„THERE IS NO FREE LUNCH“

ANOTHER TOOL IN THE TOOLBOX

GREAT ADDITION TO DEVELOPMENT PROCESS



FOR BUSINESS PROCESSES, ACCESS MUST BE EVALUATED MORE THOROUGHLY.

Questions?

Presentation Download

Contact: marian@zeis.de Linkedin: https://www.linkedin.com/in/marianzeis/

Links

SAP & MCP servers

- UI5 MCP Server — https://github.com/ui5/mcp-server
- Fiori MCP Server — https://github.com/SAP/open-ux-tools/tree/main/packages/fiori-mcp-server
- CAP MCP Server — https://github.com/cap-js/mcp-server
- CAP-MCP Plugin (GAVDI) — https://github.com/gavdilabs/cap-mcp-plugin
- SAP Docs MCP — https://github.com/marianfoo/mcp-sap-docs
- SAP Notes MCP — https://github.com/marianfoo/mcp-sap-notes
- OData → MCP (Wouter) — https://github.com/lemaiwo/btp-sap-odata-to-mcp-server

Joule

- Joule for Developers (free offer info & FAQs) — https://www.sap.com/products/artificial-intelligence/joule-for-developers.html
- Joule for Consultants - https://www.sap.com/germany/products/artificial-intelligence/ai-assistant/sap-consulting-capability.html

Links

Clients & setup

- VS Code + MCP — https://code.visualstudio.com/docs/copilot/customization/mcp-servers
- GitHub Copilot + MCP (Agent Mode) — https://docs.github.com/copilot/customizing-copilot/using-model-context-protocol/extending-copilot-chat-with-mcp
- Eclipse: GitHub Copilot plugin (Agent Mode + MCP) — Eclipse Marketplace
- Cursor + MCP — https://cursor.com/docs/context/mcp
- Claude Connectors (remote MCP) — https://support.claude.com/ (Connectors)
- MCP Inspector — https://github.com/modelcontextprotocol/inspector

BAS

- Install VS Code extensions (Open VSX) in BAS — https://help.sap.com/docs/bas/sap-business-application-studio/explore-and-install-vs-code-extensions
- Remote Access for BAS (VS Code extension) — https://marketplace.visualstudio.com/items?itemName=SAPOSS.app-studio-remote-access

Links

Copilot Studio

- Extending agents with MCP — Microsoft Learn (extensibility overview): https://learn.microsoft.com/en-us/microsoft-copilot-studio/agent-extend-action-mcp

Chrome MCP (bonus demo)

- Chrome DevTools MCP — https://github.com/ChromeDevTools/chrome-devtools-mcp
  Use it to script navigation, inspect DOM, capture screenshots of UI5/Fiori apps from your AI client.

Security

- MCP Security & Authorization (spec + best practices) — https://modelcontextprotocol.io
- Trend analysis: Network-exposed MCP servers risk — https://www.trendmicro.com/vinfo/us/security/news/cybercrime-and-digital-threats/mcp-security-network-exposed-servers-are-backdoors-to-your-private-data
- OAuth 2.1 (overview) — https://oauth.net/2.1/
- OWASP Top 10 for LLM Applications (prompt injection, data exfil) — https://owasp.org/www-project-top-10-for-large-language-model-applications/