

The Developer Advocates present

SAP CodeJam

2025

> Foundations of AI applications
with the SAP HANA Cloud



Porto, Portugal
Sep 26, 2025



SAP TechEd

Witalij Rudnicki

aka @Sygymundovych
aka Vitaliy Rudnytskiy
aka Віталій Рудницький

- 10 years **tech consultant** in SAP BI/BW
- 10+ years as SAP **Developer Advocate** in **SAP Community & Developer Relations**
- All things Data
<http://bit.ly/SAPDevsData>
- Based in **Wrocław, Poland**
- Ex-Organizer of local SAP Community meetups and **SAP Inside Track**

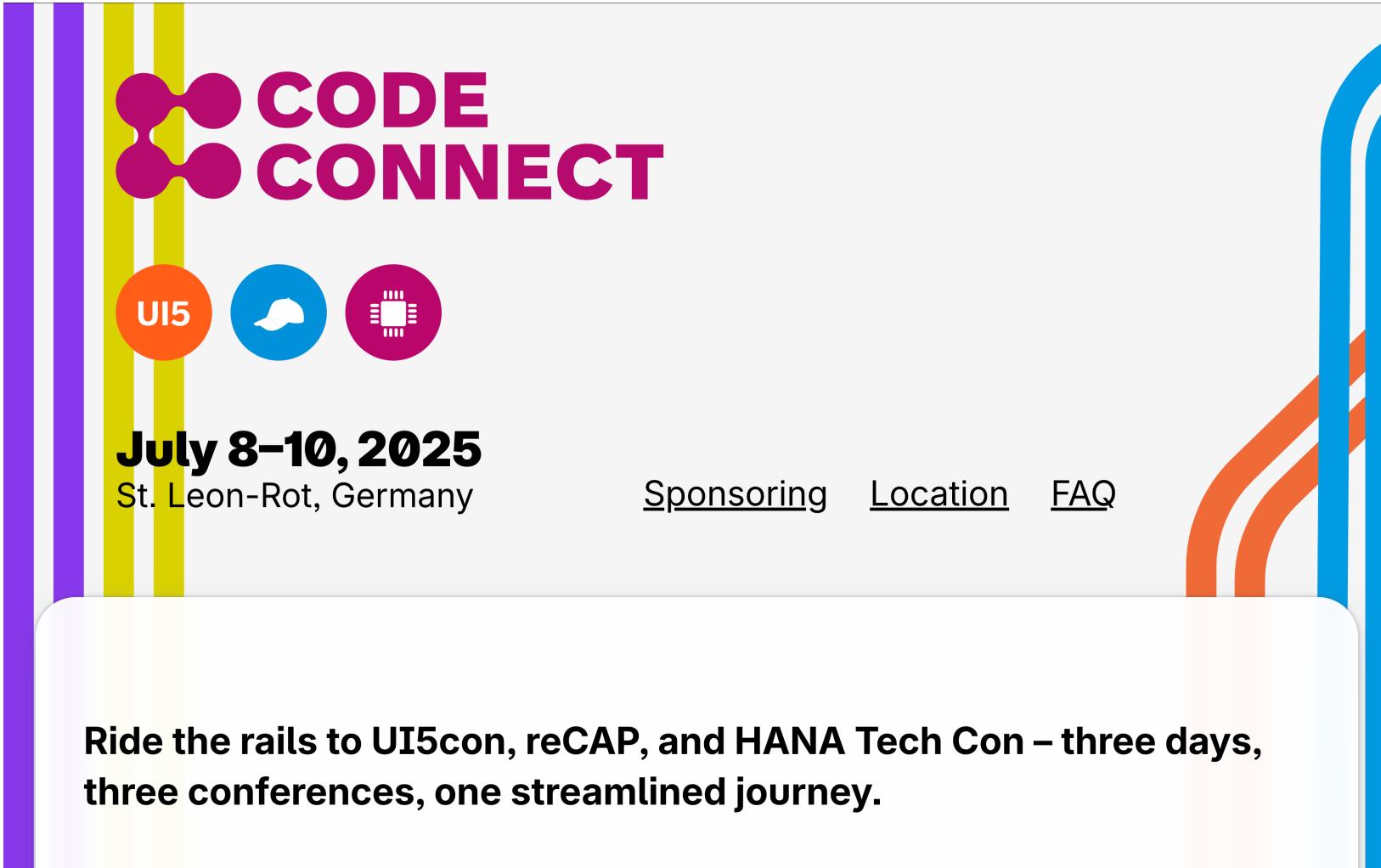


Events not be missed



Code Connect:

<https://code-connect.dev/>



The image shows the homepage of the Code Connect conference website. The header features the "CODE CONNECT" logo in large, bold, magenta letters, with a stylized icon of three interconnected circles to the left. Below the logo are three circular icons: an orange one with "UI5", a blue one with a head profile, and a purple one with a microchip. The main event details are prominently displayed: "July 8–10, 2025" in large black font, followed by "St. Leon-Rot, Germany". To the right of these details are navigation links for "Sponsoring", "Location", and "FAQ". A large, bold statement at the bottom reads: "Ride the rails to UI5con, reCAP, and HANA Tech Con – three days, three conferences, one streamlined journey." The background of the page features vertical stripes in purple, yellow, and blue.

**CODE
CONNECT**

UI5

July 8–10, 2025
St. Leon-Rot, Germany

[Sponsoring](#) [Location](#) [FAQ](#)

Ride the rails to UI5con, reCAP, and HANA Tech Con – three days, three conferences, one streamlined journey.

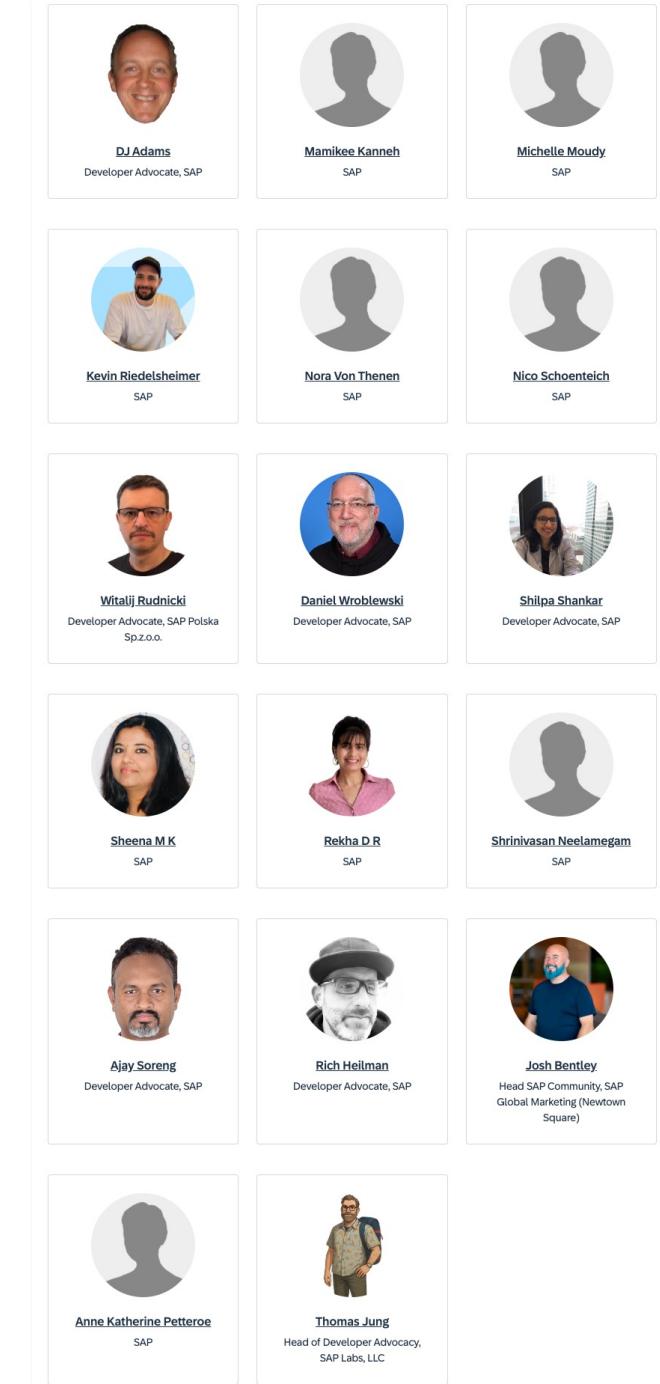
Join our Developer Keynote during SAP TechEd in Berlin or virtually

KEY101v | Draft day for developers: Turning new technology into real-world wins

Keynote

The picks are in, and developers, their tools, and frameworks are first-round talent. Get a front-row seat to SAP's latest innovations built to accelerate how you code, automate, and scale. Explore how you can use SAP's newest AI capabilities, generative agents, and enhanced tooling to build faster and smarter with less friction and more impact.

Favorite



Get ready for SAP TechEd with Devtoberfest

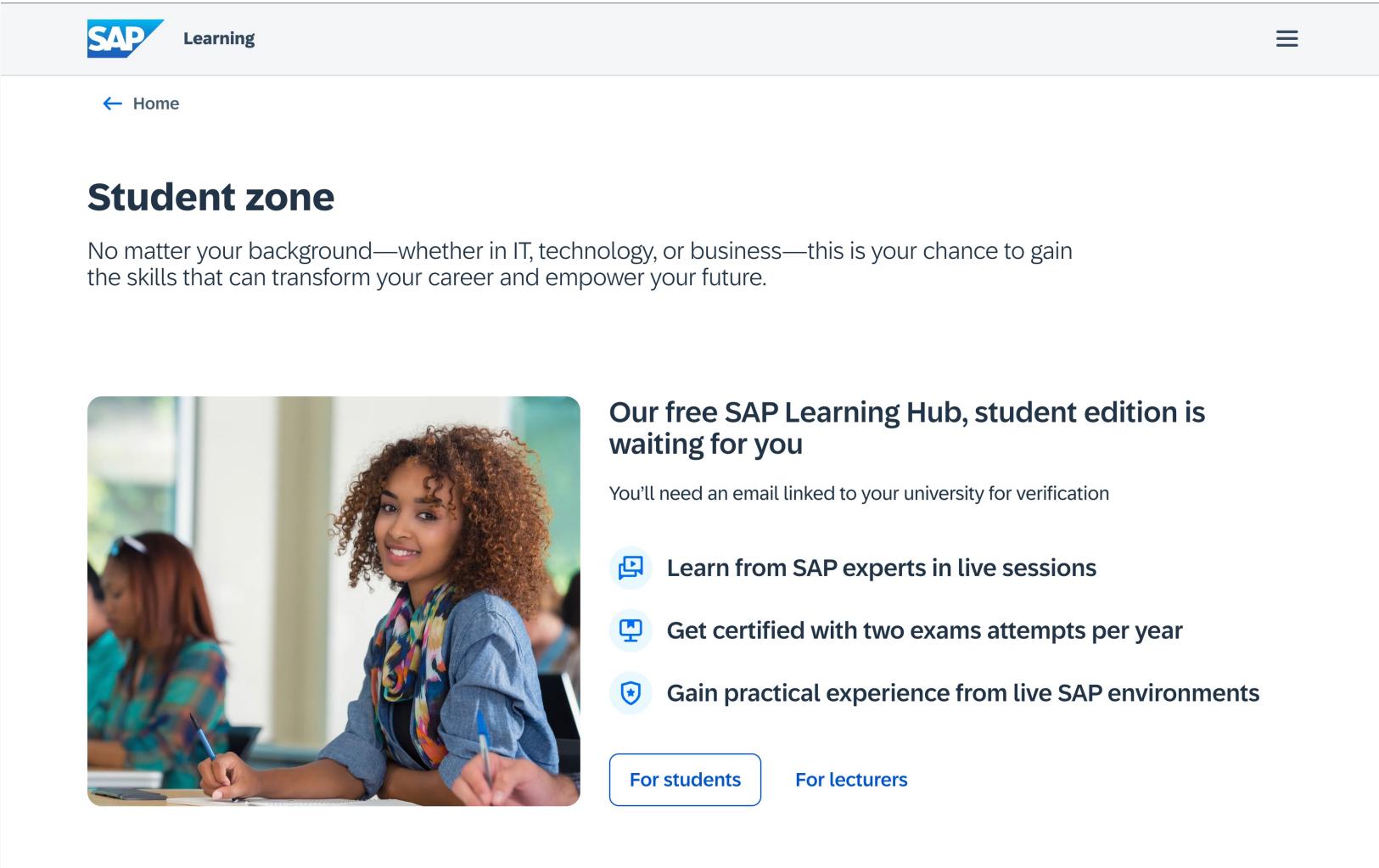
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
	<ul style="list-style-type: none">● Clean Core Extensibility Strat...● Custom code development a...● The New Developer Forums i...● Boost Your Developer Satisf...	<ul style="list-style-type: none">● Code-Along: Build a Joule Ski...● Building Agents with Joule St...● Unboxing Joule Studio: Hone...● Introducing Application Front...● Create a Case in Service Clou...	<ul style="list-style-type: none">● Pipeline for Cloud Integration● Clean Core, Event-Driven: Uni...● Designing understandable SA...● IT System Landscape Transpa...	<ul style="list-style-type: none">● Leveraging Calculation Views ...● Enrich Data Products with SA...● Model Context Protocol - Ho...	<ul style="list-style-type: none">● Building Enterprise Grade CA...● Get to know more about CAP...● Integrating S/4HANA Public C...	
5	6	7	8	9	10	11
	<ul style="list-style-type: none">● SAP BTP ABAP Environment –...● Explore the Latest Updates in...● Updates on Embedded Analy...	<ul style="list-style-type: none">● Wdi5 v3: Faster, Smoother, S...● Best Practices for Quickly Bu...● Leverage Joule Studio to Impl...● Beyond UI5 Controls with the ...+2 more	<ul style="list-style-type: none">● Warp-Speed for Event Creatio...● Hands-on Session: Practical D...● Enterprise in Motion: Event-Dr...● Unleash Next-Generation Hy...	<ul style="list-style-type: none">● Developing AI-driven SAP HA...● Accelerate AI & Generative AI ...● Prompt, Create and Innovate ...● Building Multi-Tool Research ...● Demystifying the MCP.A2A, a...	<ul style="list-style-type: none">● Less code, same logic – redu...● Best Practices in CAP● Status-Transition Flows● Take the Next Step in Your Ca...● Taking UI5 Server Side Rende...	
12	13	14	15	16	17	18
19	20	21	22	23	24	25
	<ul style="list-style-type: none">● Exploring the Path to SAP Cer...● Boost Your Developer Efficien...	<ul style="list-style-type: none">● Document Translation with S...● Taking Guided Experiences wi...● From Insights to Action: Proce...● End to End UI5 Tooling Conne...+2 more	<ul style="list-style-type: none">● Using Intermediate Message ...● Seamless Side-By-Side Exten...● Supercharge SAP Build Proce...● UI5 Middleware FE Mockserv...	<ul style="list-style-type: none">● Modernize your SAP Business...● Manage and Optimize Promp...● What's new in AI Core Orchest...● SAP Data Products: how to ha...● Accelerate SAP CAP and Fiori ...	<ul style="list-style-type: none">● CAP Tools – What's New and ...● Testing SAP CAP Node.js app...● How to Interview for an SAP T...● SAP HANA Application Migrati...	
26	27	28	29	30	31	1

Devtoberfest Winners:

https://www.linkedin.com/posts/thomasjungsap_asugtechconnect-saptechconnect-activity-7262820851253731328-zODY



<https://learning.sap.com/students>



The screenshot shows the SAP Learning website's Student zone page. At the top left is the SAP Learning logo. To its right is a navigation menu icon. Below the logo is a back-link labeled "Home". The main heading "Student zone" is displayed in a large, bold, dark font. A subtext below it reads: "No matter your background—whether in IT, technology, or business—this is your chance to gain the skills that can transform your career and empower your future." To the left of the text is a photograph of a young woman with curly hair, smiling and writing in a notebook. To the right of the text is a list of benefits for the student edition of the SAP Learning Hub. At the bottom are two buttons: "For students" (highlighted with a blue border) and "For lecturers".

Student zone

No matter your background—whether in IT, technology, or business—this is your chance to gain the skills that can transform your career and empower your future.



Our free SAP Learning Hub, student edition is waiting for you

You'll need an email linked to your university for verification

-  Learn from SAP experts in live sessions
-  Get certified with two exams attempts per year
-  Gain practical experience from live SAP environments

[For students](#) [For lecturers](#)

SAP Developers channel: <https://www.youtube.com/@sapdevs>

The screenshot shows a YouTube video player interface. At the top, the YouTube logo and search bar are visible. The main video frame displays two men in a video conference. On the left, Thomas Jung, a Developer Advocate, is shown with a blue radial background and the SAP logo. On the right, DJ Adams is shown in a room with wooden cabinets and blinds. The video player includes a progress bar at 0:45 / 1:01:20, a control bar with play/pause, volume, and other video controls, and a SAP logo with 'Powered by Zoom' text. Below the video, a caption reads: 'Let's test drive Joule's generative AI features in SAP Build Code together! 1 of 2 (EMEA / APJ)'. The video has 34.4K subscribers and 49 likes. A banner at the bottom right says 'Anyone can build GENERATIVE UI with AI SDK 3.0'.

“SAP Build introduces new MCP Servers”

SAP Developer News September 4th, 2025



Eberenwaobiora
Developer Advocate

Subscribe ...

2025-09-04 9:10 PM

7 Kudos

8,489

SAP MANAGED TAGS

ABAP Development SAP Build Joule

Edit SAP Managed Tags

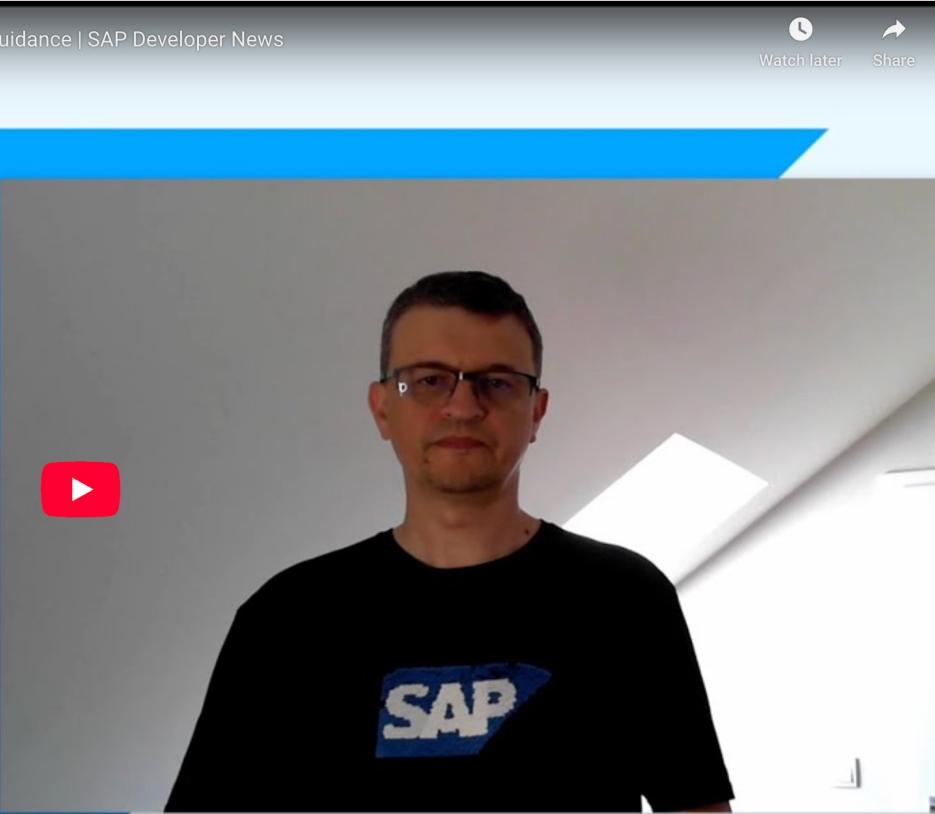


SAP Build MCP Servers, ABAP Partner Reference & Joule Studio Extension Guidance | SAP Developer News

Watch later Share

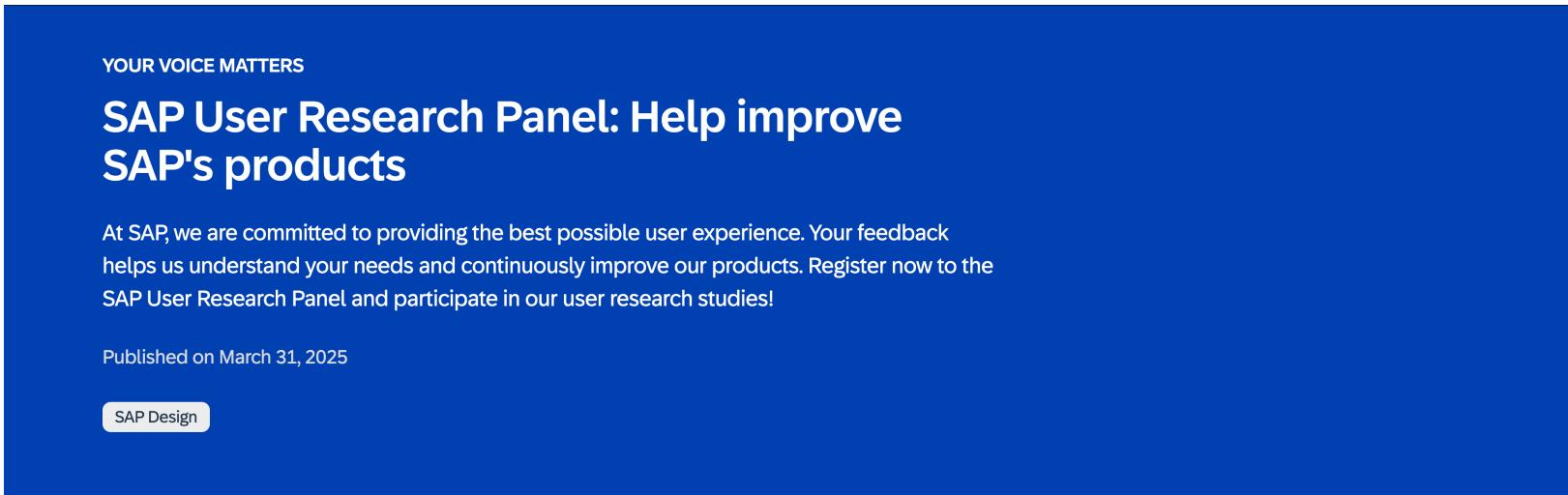
SAP Developer News

A LinkedIn post from the SAP Inside Track Porto page. The post features a video thumbnail of Vitaly Rudnytskyy speaking at an event. The caption reads: "We're excited to welcome **Vitaly Rudnytskyy** (Development Architect, Developer Relations) to the stage of #SITPorto, with a timely and thought-provoking session. Vitaly explains: 'AI agents promise to automate tasks, enhance decision-making, reinvent industries, and revolutionize our lives. By leveraging machine learning (ML) and natural language processing (NLP) techniques, AI agents perceive and analyze their environment, receive inputs from humans or operate autonomously, plan necessary actions, and execute ...more'". The post has 103 likes and 4 comments.



SAP User Research Panel:

<https://www.sap.com/design/stories-resources/sap-user-research-panel>



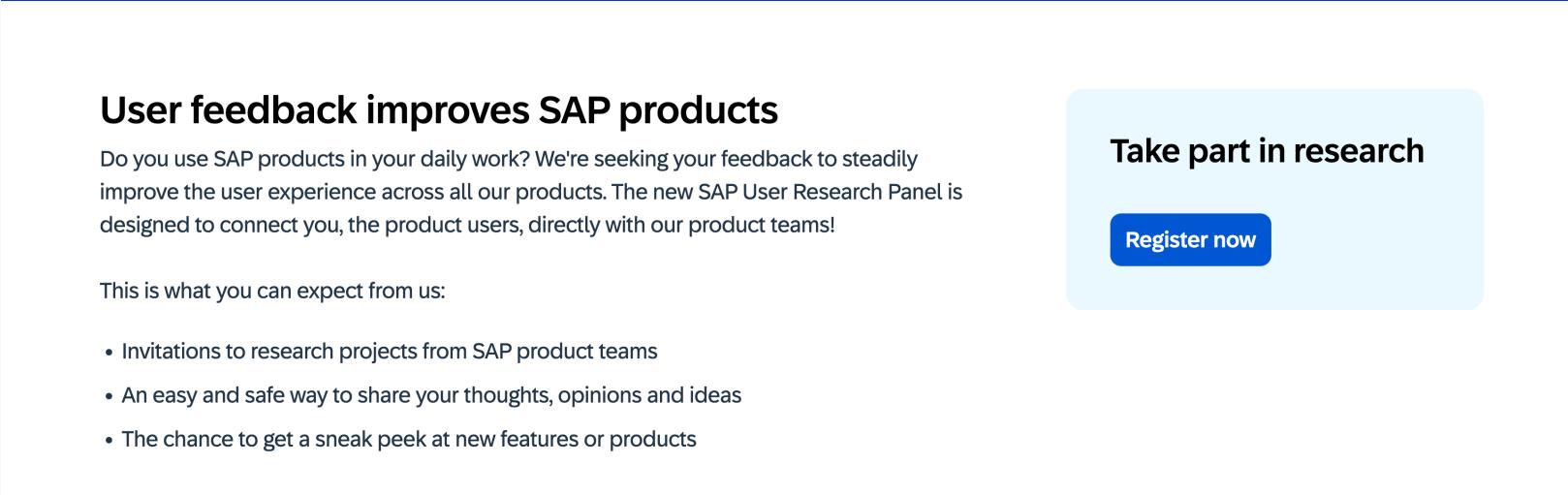
YOUR VOICE MATTERS

SAP User Research Panel: Help improve SAP's products

At SAP, we are committed to providing the best possible user experience. Your feedback helps us understand your needs and continuously improve our products. Register now to the SAP User Research Panel and participate in our user research studies!

Published on March 31, 2025

SAP Design



User feedback improves SAP products

Do you use SAP products in your daily work? We're seeking your feedback to steadily improve the user experience across all our products. The new SAP User Research Panel is designed to connect you, the product users, directly with our product teams!

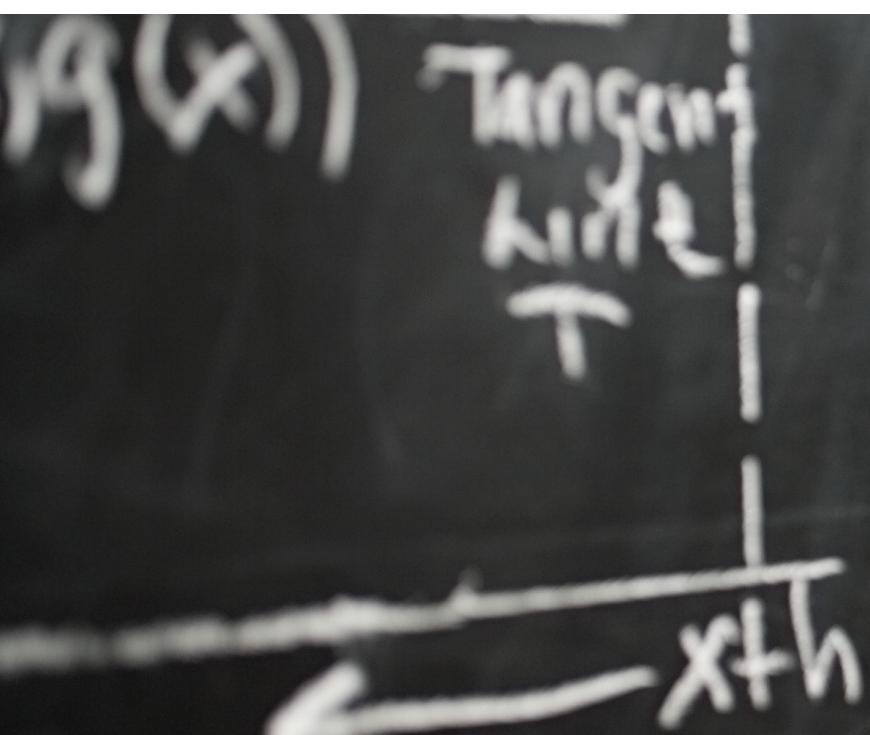
This is what you can expect from us:

- Invitations to research projects from SAP product teams
- An easy and safe way to share your thoughts, opinions and ideas
- The chance to get a sneak peek at new features or products

Take part in research

Register now

Let's get...
...to business



$$f'(x) = \lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h}$$
$$= \lim_{h \rightarrow 0} \frac{x^2 + 2xh + h^2 - x^2}{h}$$
$$= \lim_{h \rightarrow 0} \frac{2xh + h^2}{h}$$
$$= \lim_{h \rightarrow 0} (2x + h)$$
$$= 2x$$
$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

The Variable

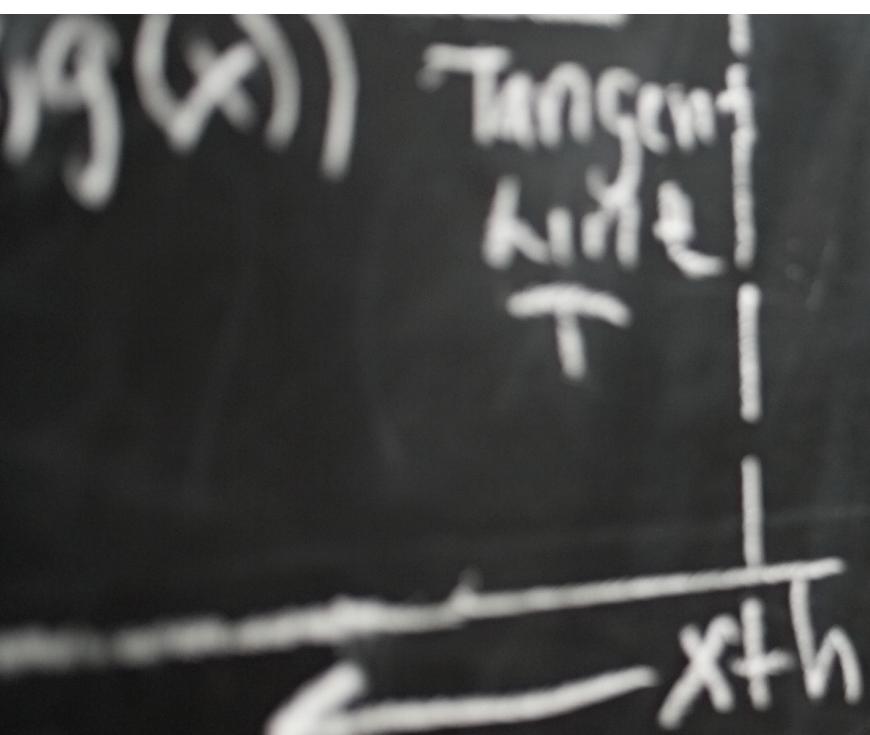
To Better Understand AI, Look Under the Hood

AI-powered tools tend to generate extreme reactions: on one side we have the "It's magic!" and "best thing ever!" crowd. On the other, we find the "we're doomed!" camp. These aren't static or monolithic groups, of course. You might even find yourself on both ends of the spectrum — in the span of a single day.

We think the best way to resist hyperbole is to look at how LLMs (and the products they've made possible) work, and how they don't; what they can achieve, and where they continue to struggle.

For nuanced approaches to the inner workings of AI tools, we invite you to explore this week's highlights. You'll see more than a few myths busted, and even more insights gained.

A bit of theory before we start



$$f'(x) = \lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h}$$
$$= \lim_{h \rightarrow 0} \frac{x^2 + 2xh + h^2 - x^2}{h}$$
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$$= 2x$$
$$f'(x) = \lim_{\Delta x \rightarrow 0} \frac{f(x+\Delta x) - f(x)}{\Delta x}$$

Our strategy to bring out the best in SAP

Our purpose Help the world run better and improve people's lives

Our vision Bring out the best in every business



AI-First

with SAP Business AI and SAP Business Data Cloud



Suite-First

with SAP Business Suite

Our Product Strategy

Our Go-to-market Strategy

Marketing, Customer Success, Customer Services & Delivery, Partner Ecosystem

Our Corporate Functions Strategy

Global Finance & Administration, People & Culture, Strategy & Operations

Our Goal

#1 Enterprise Application and Business AI company
powered by our leading platform

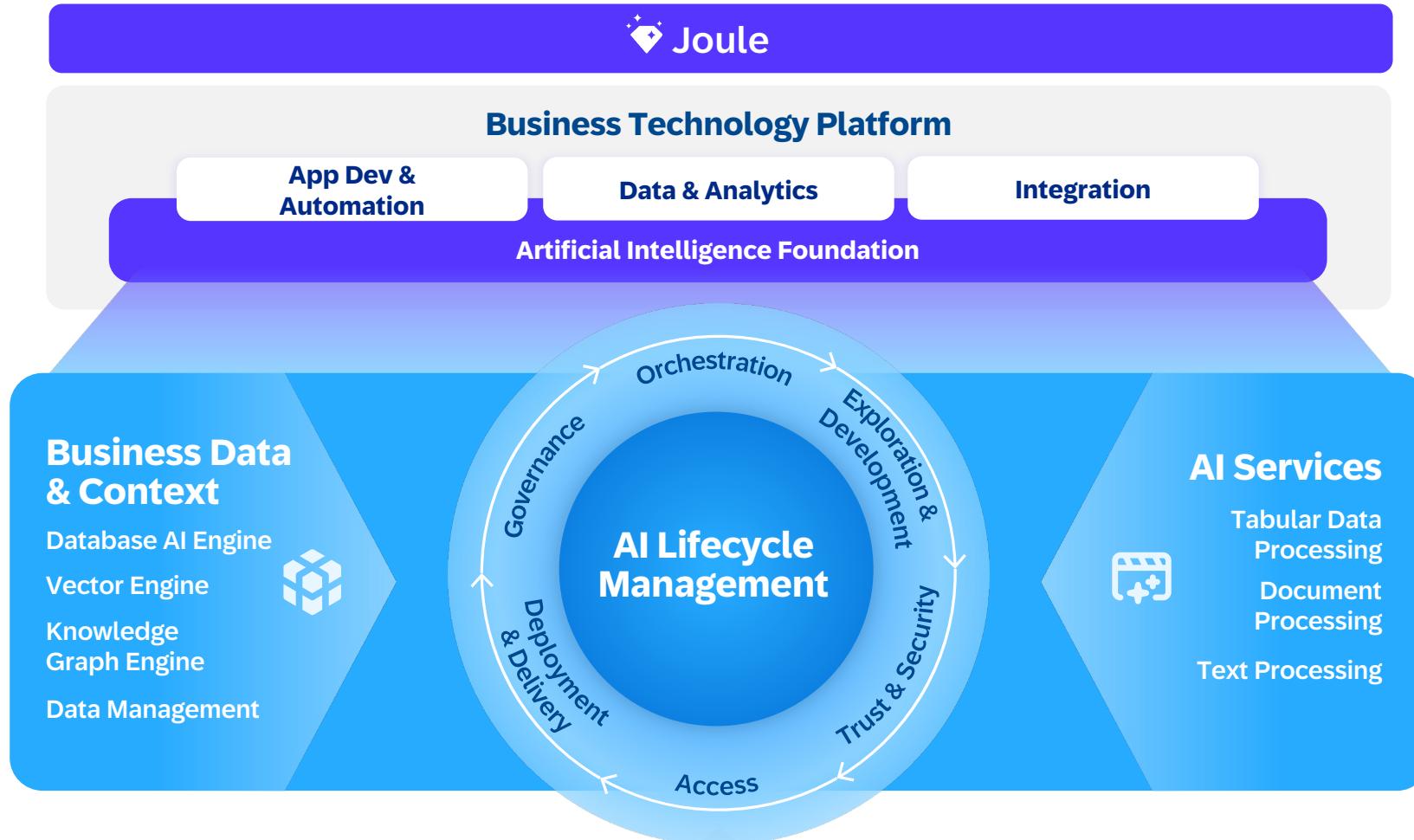


Our Financial Ambition

accelerating **profitable growth** throughout 2027

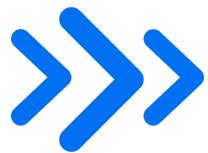
AI Foundation on SAP BTP

Business-ready and trusted AI capabilities deeply integrated with BTP for AI-powered innovation



SAP HANA Cloud | Database for SAP Business AI

DB for GenAI Apps



Unlocking context of local, private application data

DB for Embedded AI



Applying AI functions in real-time, co-located with data

AI for App Developer



Faster application development with AI-assisted tools

AI for DB Admins



Easier administration utilizing conversational interfaces

AI for DB ops



Improved automation and AI-driven insights

Generative AI toolkit for SAP HANA Cloud | hana-ai

AI-assisted HANA ML development and code generation

Generative AI-assisted HANA ML library

- **Uses code-template knowledge stores and new hana-ml tools**
 - Tools for code generation as well as executable tools for agentic-use of HANA ML for Forecasting

■ Provides an Conversational Agent for HANA ML

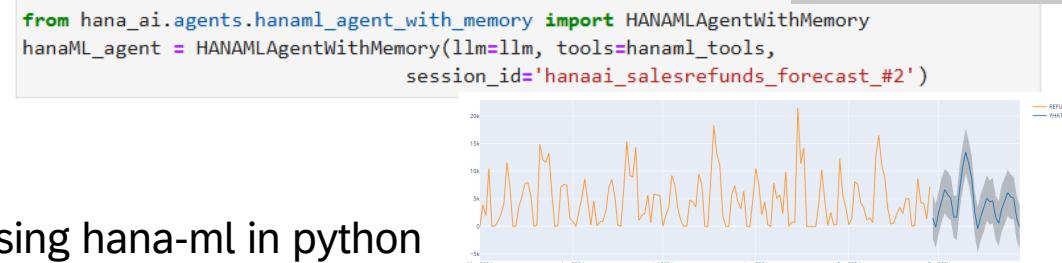
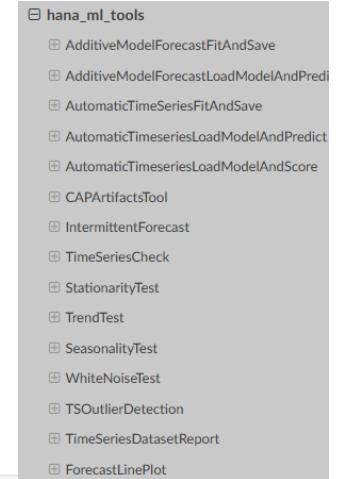
- **ReAct agent**, combines **Reasoning** (step-by-step thoughts) and **Acting** (utilizing executable tools specifically targeted for HANA ML) to solve tasks,
- **Unlocking agentic, GenAI-assisted HANA ML development**

■ Further conversational interfaces and agents

- HANA *dataframe* agent for invoke code template-based tasks using hana-ml in python
- *SQL* agent for invoking code template-based and langchain-db tool tasks via SQL generation and execution

■ Availability and documentation

- Find project at github.com/SAP/generative-ai-toolkit-for-sap-hana-cloud, [pypi.org/hana-ai/](https://pypi.org/project/hana-ai/)
- Extension to the existing Python ML client for HANA, builds upon many GenAI related open source libraries (e.g. langchain). Provides integration with HANA ML, HANA vector engine, and other like SAP GenAI Hub SDK.
- Documentation sap.github.io/generative-ai-toolkit-for-sap-hana-cloud



Conversational Agent for HANA ML

Generative AI toolkit for SAP HANA Cloud | hana-ai

Agentic, AI-assisted HANA ML development

■ ReAct agent for HANA ML

- Ready to use agent to build HANA Cloud PAL forecast models
- Conversational agent session incl. chat history,
based on langchain
- Leverages **executable tools** specifically targeted for HANA ML
HANA ML-tools: initially focused on *Time Series Forecasting*
like automatic time series data analysis, forecast algorithm proposal
and fitting, or CAP project artifact generation
Additionally use of HANA ML code-templates possible

■ Agent methods to build forecast models

- HANAMLAgentWithMemory-object instantiating the agent with
llm- and tools-reference etc.)
- run() for executing on the conversational user requests

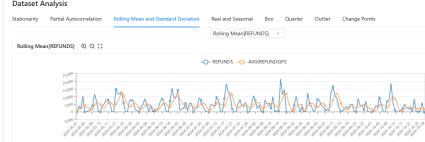
```
from hana_ai.agents.hanaml_agent_with_memory import HANAMLAgentWithMemory
hanaML_agent = HANAMLAgentWithMemory(llm=llm, tools=hanaml_tools,
                                         session_id='hanaai_salesrefunds_appdev_#1', n_messages=30)

result = hanaML_agent.run("Show me the first 5 rows from SALES_REFUNDS_TRAIN table")
print(result)
```

Here are the first 5 rows from the SALES_REFUNDS_TRAIN table:

	BOOKING_DATE	REFUNDS
0	2024-05-06	67.29
1	2024-05-07	903.66
2	2024-05-08	2130.07
3	2024-05-09	4104.27
4	2024-05-11	7318.81

```
hanaML_agent.run("Please create a dataset report for this table")
```



```
hanaML_agent.run("Please analyze and check the time series data in the table SALES_REFUNDS_TRAIN")
```

The time series data in the table SALES_REFUNDS_TRAIN has been analyzed. The results are as follows:
n1. Intermittent Test: The proportion of zero values is 0.15, which indicates that the time series is intermittent.
n2. Stationarity Test: The p-value is 0.1, which is greater than 0.05, indicating that the time series is stationary.
n3. Trend Test: There is no trend in the time series.
n4. Seasonality Test: The time series has an additive seasonality with a period of 28 days.
Based on these results, the time series data is stationary and intermittent with an additive seasonality of 28 days and no trend.

```
hanaML_agent.run("Now, what would you like to do next?")
```

Based on the check result, the time series data is stationary and intermittent with an additive seasonality of 28 days and no trend. For such a time series, the Croston's method or Syntetos-Boylan Approximation (SBA) is usually recommended. These methods are specifically designed for intermittent demand forecasting. However, these methods are not available in the current toolset. The available tools are the additive model forecast and automatic timeseries model. The additive model forecast is suitable for time series with clear seasonality and trend, while the automatic timeseries model can handle a variety of time series patterns. Given the characteristics of the data, the automatic timeseries model might be a better choice.

```
hanaML_agent.run("Then please build a forecast model based on the automatic algorithm and save it as SalesRefundsForecastModel")
```

The model has been successfully trained using the automatic timeseries algorithm and saved under the name "SalesRefundsForecastModel". The version of the model is 4. Now, I can provide this information to the user.

```
hanaML_agent.run("Based on trained model SalesRefundsForecastModel and the forecast prediction results generate a forecast line plot ")
```



```
tmp
└── my_SalesRefunds_app
    ├── db
    └── src
        └── hana-ml-base-pal-additive-model-analysis.hdbprocedure
```

```
hanaML_agent.run("Generate CAP artifacts, the project name is my_SalesRefunds_app and output path is ./tmp")
```

```
hdbprocedure
└── hana-ml-grants.hdbgrants
    └── hana-ml-synonyms.hdbsynonym
        └── hana-ml-cds.cds
            └── srv
                └── hana-ml-cat-service.cds
                    └── package.json
```

Joule-assisted HANA ML application development

hana-ai extensions in Joule for developers in SAP Build Code



New AI capabilities for Database App Developers

■ AI-assisted HANA ML application development

- Joule in Build Code **hana-ai agent tools**, assisting developers in building SAP HANA Cloud **time series forecasting applications**

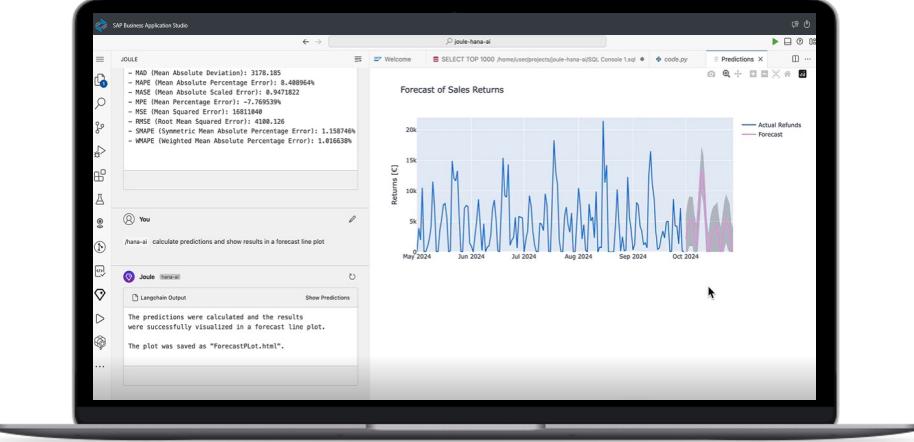
Proven business scenario by many SAP applications

- Integrates the **generative AI toolkit re-act agent** and the executable **tools specifically targeted for HANA ML**

Analyzing the time series data and proposing model candidates

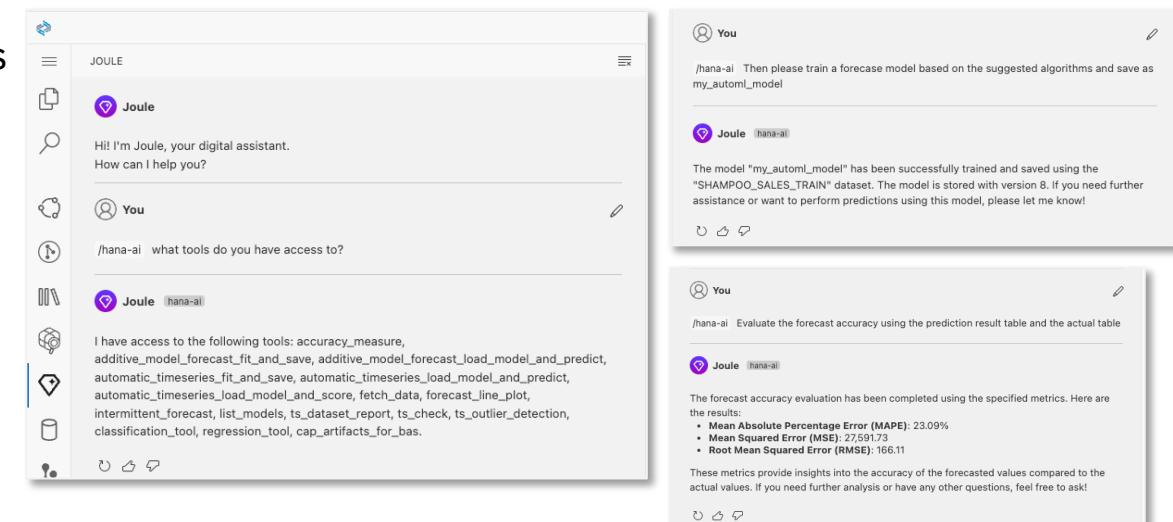
Automatic Time Series forecast model generation and visualization

Design-time application code generation for CAP / HDI applications



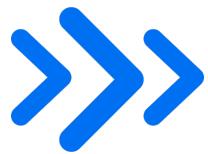
■ Embedded AI application development

- Empowering developers at any skill level to build embedded AI applications more quickly and easily
- Jump-start into AI scenario infused SAP HANA Cloud or CAP applications on SAP BTP
- Accelerating delivery on AI First strategy



SAP HANA Cloud | Database for SAP Business AI

DB for GenAI Apps



Unlocking context of local, private application data

DB for Embedded AI



Applying AI functions in real-time, co-located with data

AI for App Developer



Faster application development with AI-assisted tools

AI for DB Admins

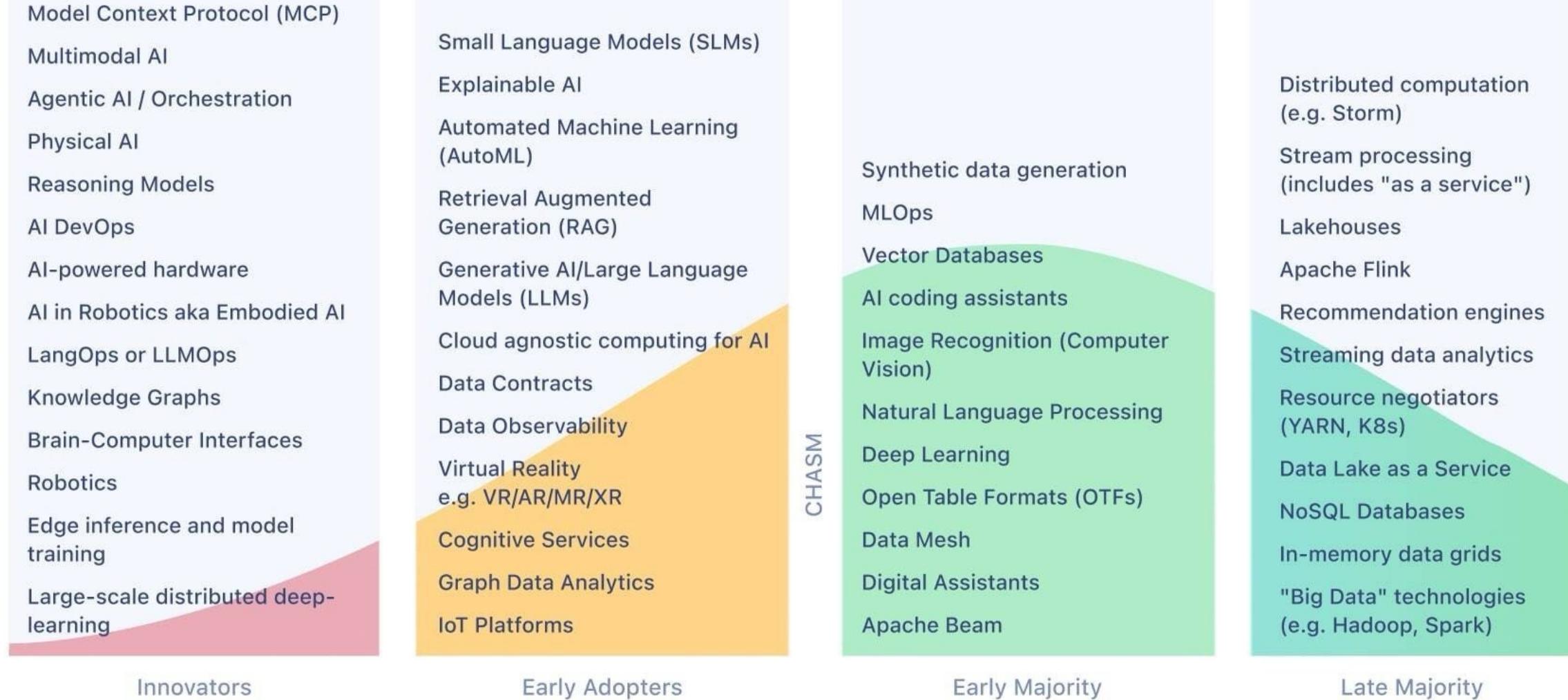


Easier administration utilizing conversational interfaces

AI for DB ops



Improved automation and AI-driven insights



Let's get busy 😎

Understand SAP Business Application Studio terminology (relevant today)

- SAP Build Code
- SAP Business Application Studio
- Code-OSS
- Extensions
- Dev Space
- Workspace
- Project folder
- Virtual Environment (Python)

Exercises



Repo: <https://github.com/Sygyzmundovych/hana-ai-ve-kg-codejam>

(→ https://bit.ly/CJ_HANAAI)

1. Pre-requisites:

<https://github.com/Sygyzmundovych/hana-ai-ve-kg-codejam/blob/main/prerequisites.md>

2. Exercises:

<https://github.com/Sygyzmundovych/hana-ai-ve-kg-codejam?tab=readme-ov-file#the-exercises>

Additional content



SAP HANA Cloud – Free offering

SAP HANA Cloud Basic Trial

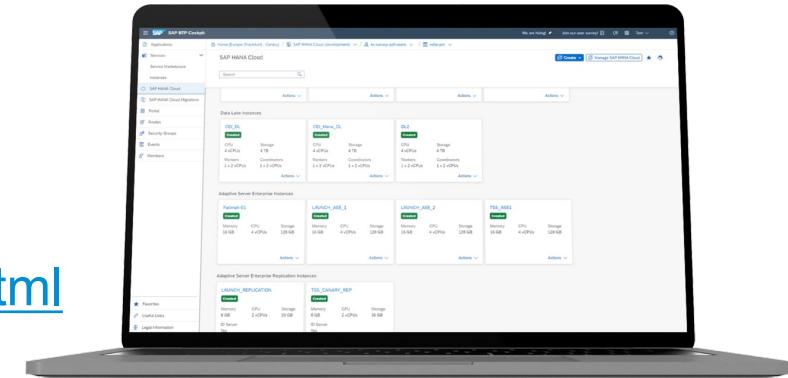
- 30-days own-schema shared-instance
- <https://www.sap.com/products/technology-platform/hana/trial.html>

SAP HANA Cloud (Advanced) Trial

- 3x30-days own-instance in SAP BTP Trial
- 16GB RAM, 1 vCPU
- <https://developers.sap.com/tutorials/hana-trial-advanced-analytics.html>

SAP HANA Cloud Free Tier

- 30 GB RAM, 2 vCPUs
- <https://developers.sap.com/mission.hana-cloud-database-get-started.html>



Resources!

- HANA ML Samples: <https://github.com/SAP-samples/hana-ml-samples>
- Advanced RAG examples: https://github.com/SAP-samples/btp-genai-starter-kit/tree/main/scripts/step03_explore_examples
- SAP Mission at SAP BTP Discovery Center:
 - Harnessing Generative AI Capabilities with SAP HANA Cloud Vector Engine: <https://discovery-center.cloud.sap/protected/index.html#/missiondetail/4405/4691/>
 - Building Intelligent Data Applications with SAP HANA Cloud Knowledge Graphs: <https://discovery-center.cloud.sap/protected/index.html#/missiondetail/4568/4856/>
- BTP AI Best Practices
 - Embeddings Model with SAP HANA Vector Store: <https://github.com/SAP-samples/sap-btp-ai-best-practices/tree/968aa38b33e2e55b9eac435551c9bb53068a4bad/best-practices/generative-ai/vector-rag-embedding>
 - Knowledge Graph RAG: <https://github.com/SAP-samples/sap-btp-ai-best-practices/tree/968aa38b33e2e55b9eac435551c9bb53068a4bad/best-practices/generative-ai/knowledge-graph>

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Mechanical Models

CATALOG ▾ BEST DEALS CUSTOMER SERVICE ▾ UGEARs WORLDWIDE GIFT IDEAS ❤️

English ▾

NEW RELEASE

SERENITY'S DREAM YACHT

NASA SPACE SHUTTLE DISCOVERY

RESCUE HOVERCRAFT

STEGOSAURUS

LEARN MORE

SELF ASSEMBLY

Details are already cut and ready to assemble

MECHANICAL

The models produce motion

EDUCATIONAL

Perfect for family projects through hands-on STEM learning

<https://ugearsmodels.com/catalogue/preorder5/>



Thank you // Дякую // Obrigado!

Contact information:

Witalij Rudnicki, SAP Developer Advocacy

