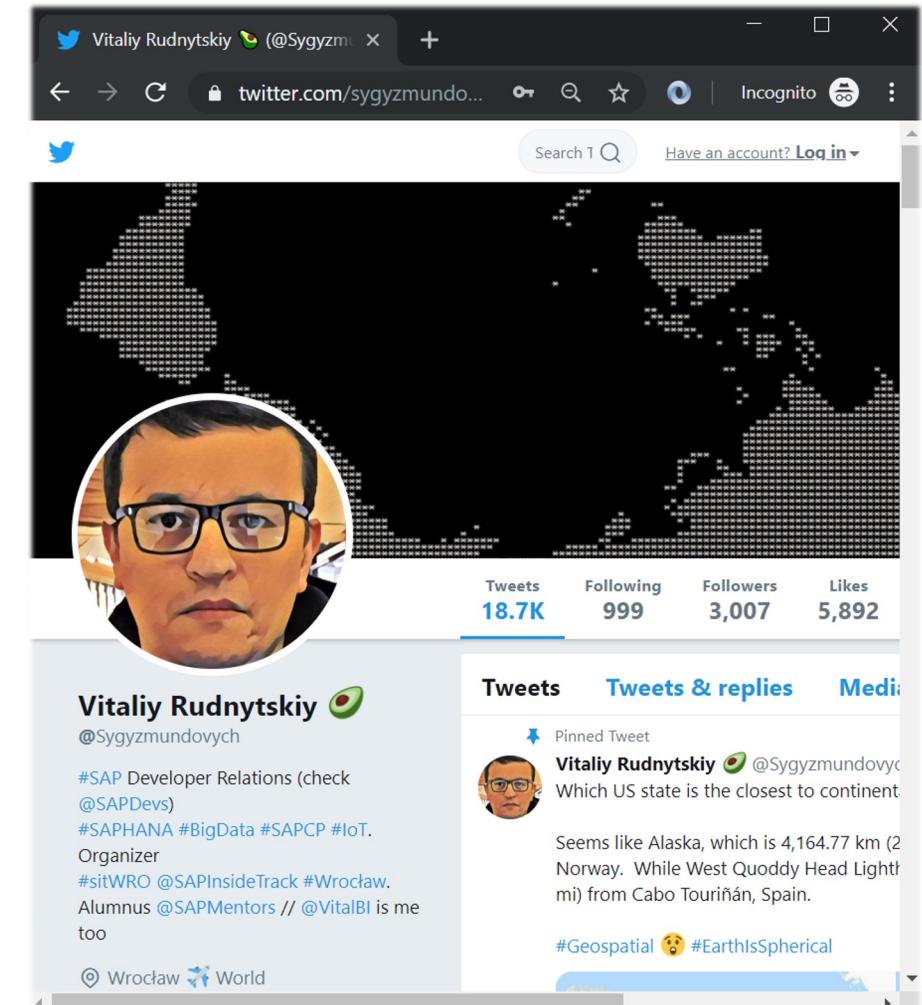


# Witalij Rudnicki

@Sygymundowych

aka Vitaliy Rudnytskiy,  
Віталій Рудницький

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



Never heard of Wrocław?

## TOP 10 MID-SIZED EUROPEAN CITIES OF THE FUTURE 2023 – OVERALL

RANK	CITY	COUNTRY
1	Wrocław	Poland
2	Zürich	Switzerland
3	Vilnius	Lithuania
4	Edinburgh	UK
5	Belfast	UK
6	Bratislava	Slovakia
7	Utrecht	Netherlands
8	Bristol	UK
9	Gdańsk	Poland
10	Tallinn	Estonia

**Events** not be missed

# SAP TechEd

Where ideas get real

The SAP TechEd event brings together developers, practitioners, enterprise architects, and global IT leaders. Joined by SAP experts and partners, they'll unite to explore innovations in app development tools, generative AI, clean core for cloud ERP, and much more.



<https://news.sap.com/2024/01/sap-teched-in-2024-expanded-global-program>:

**SAP TechEd Virtual:** October 8-9, 2024

**SAP TechEd On Tour:**

- North America,
- Europe, the Middle East and Africa (EMEA),
- Latin America and the Caribbean (LAC), and
- Asian-Pacific and Japan (APJ)

**ASUG Tech Connect with SAP TechEd, West Palm Beach, Florida: November 12-14, 2024**

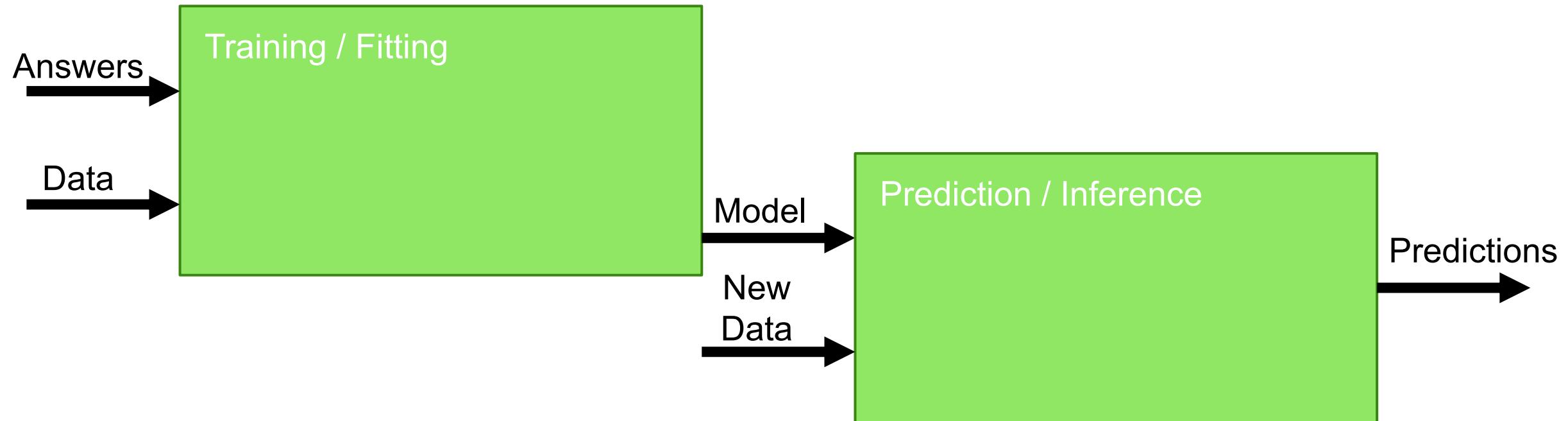
## Devtoberfest:

<https://www.youtube.com/playlist?list=PL6RpkC85SLQDHz97qsNTNAE2jnUKj8X5d>

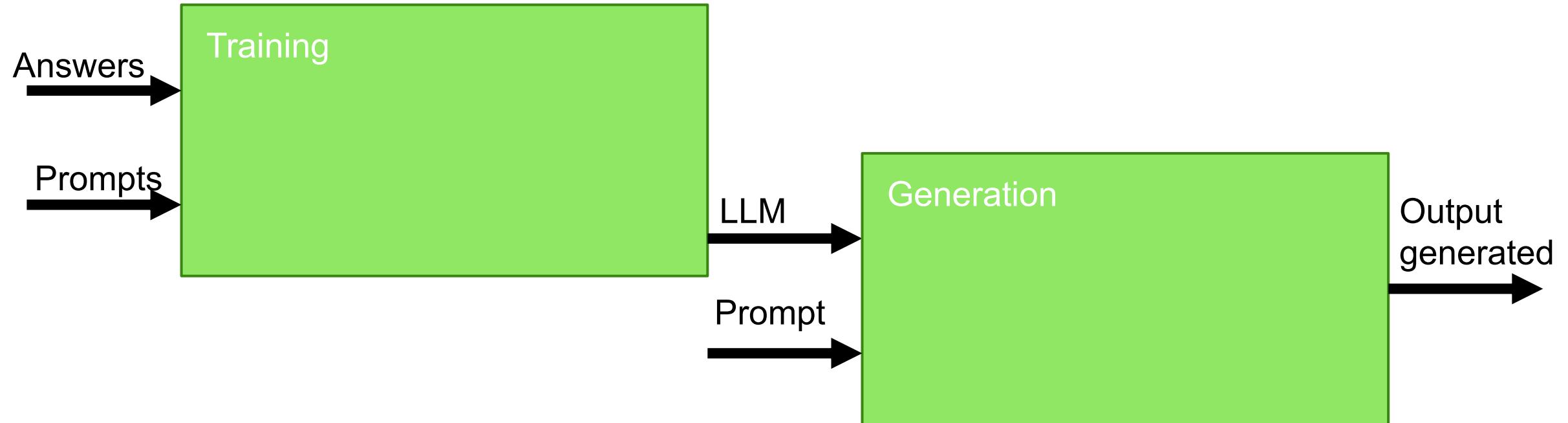
- ABAP & CAP
- Low-code/No-code
- Data, Analytics, & AI
- User Interface
- Integration Suite

**A bit of theory  
before we start**

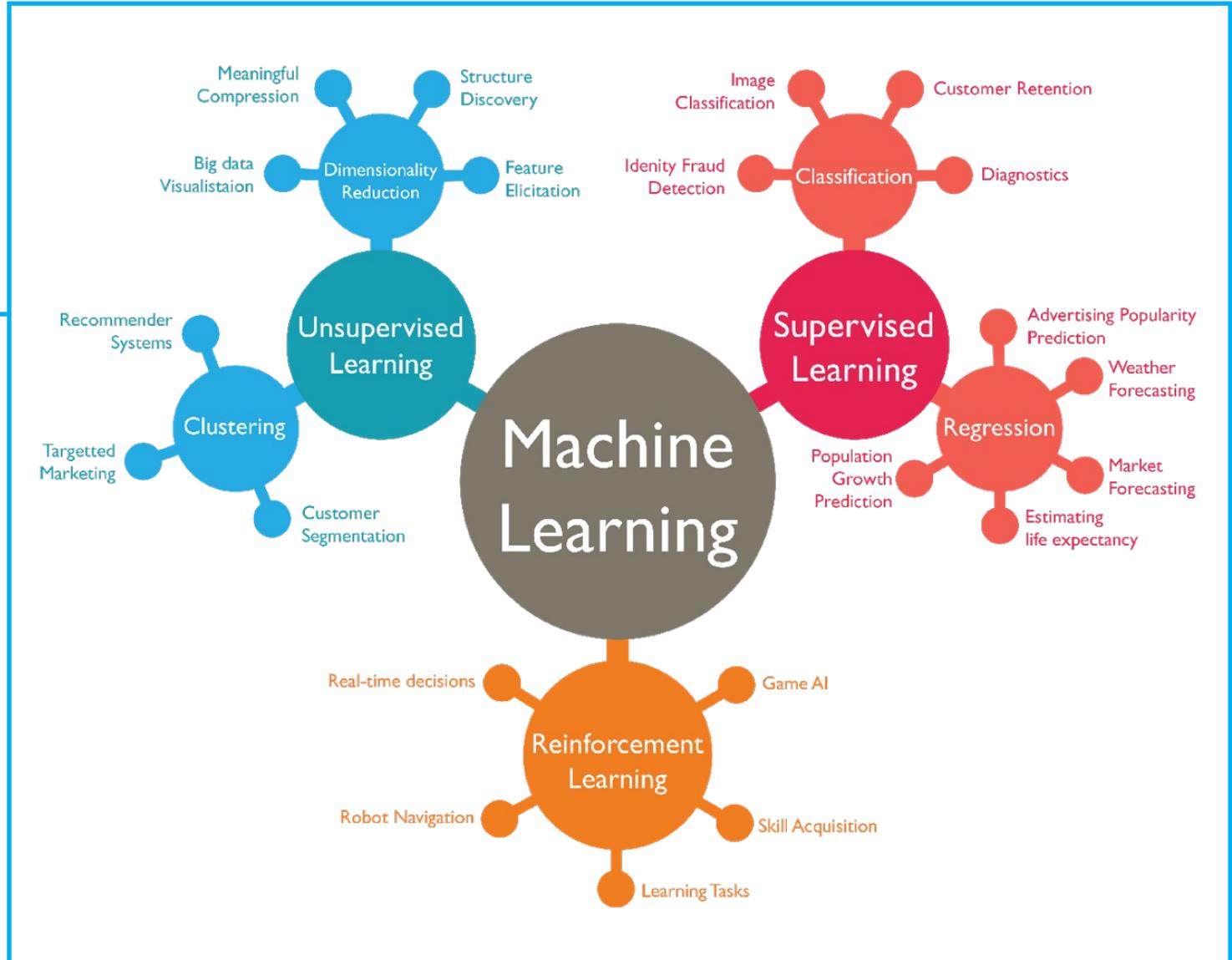
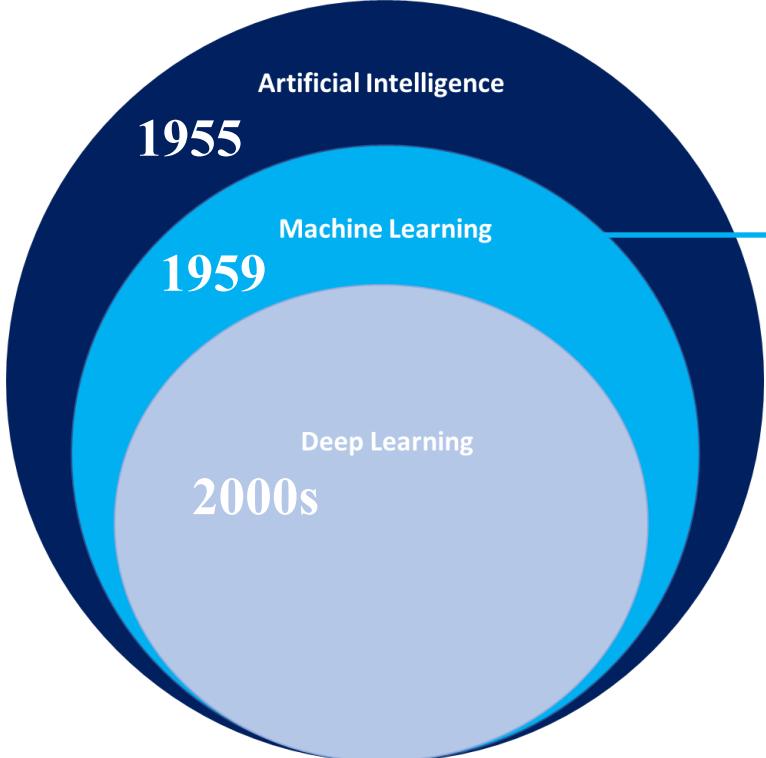
# Machine Learning



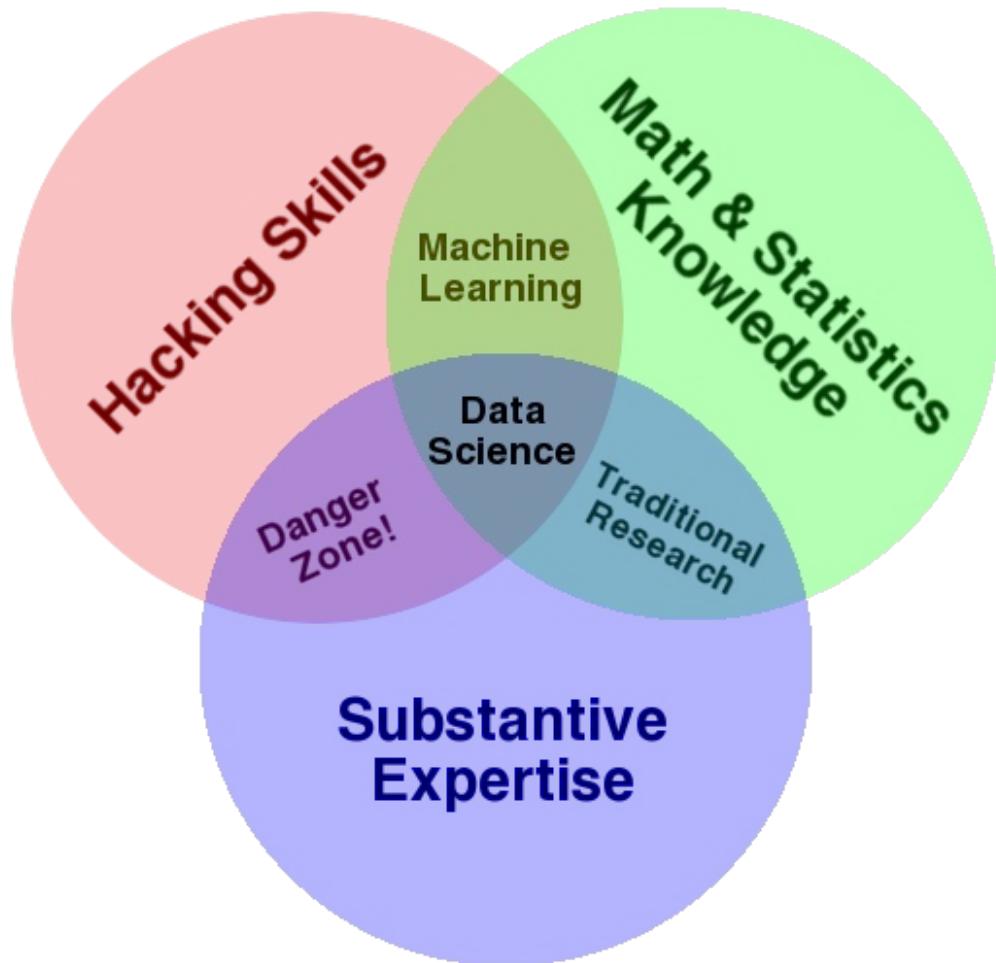
# Gen AI



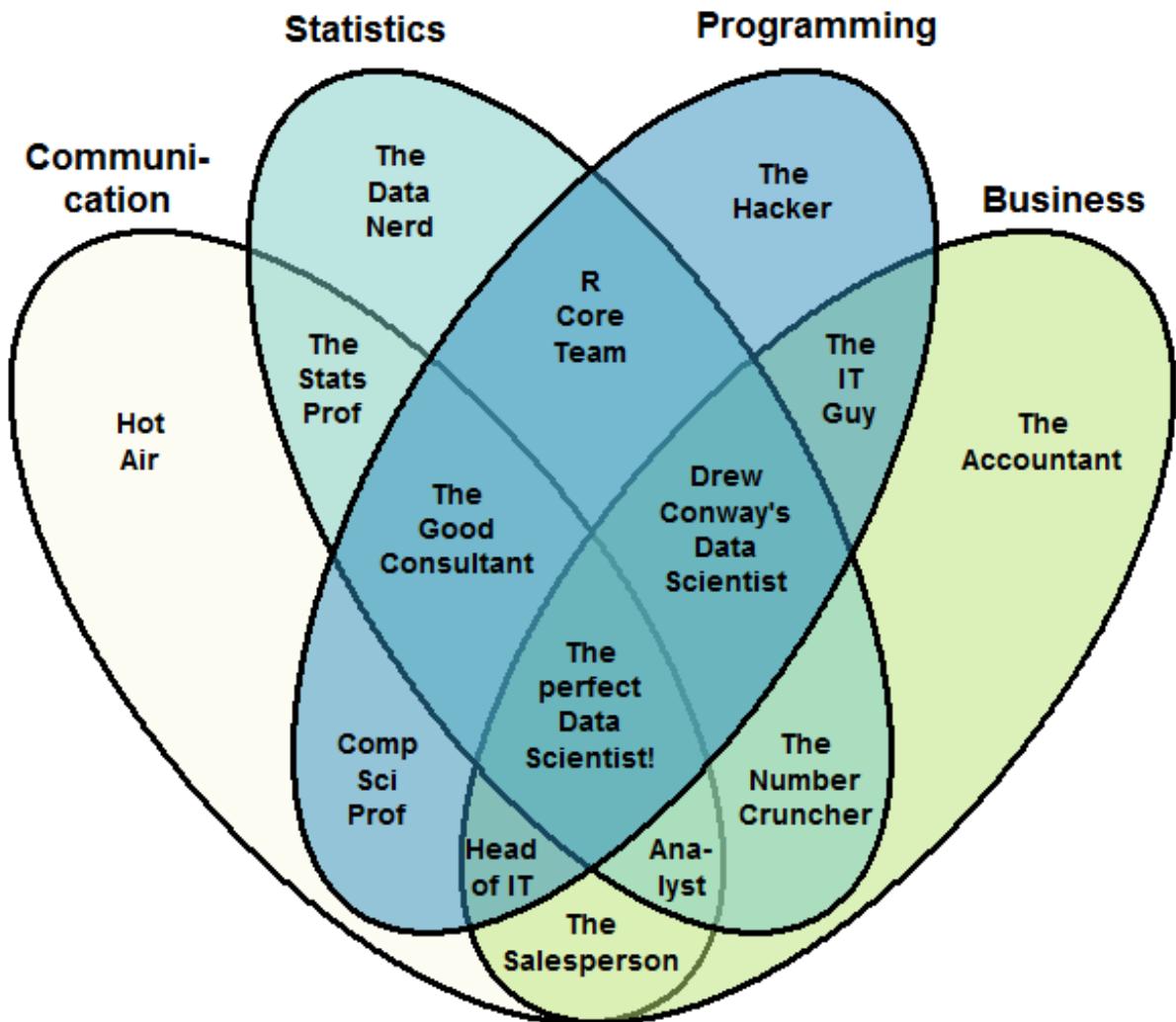
# Machine Learning Terminology



# Who is the Data Scientist?

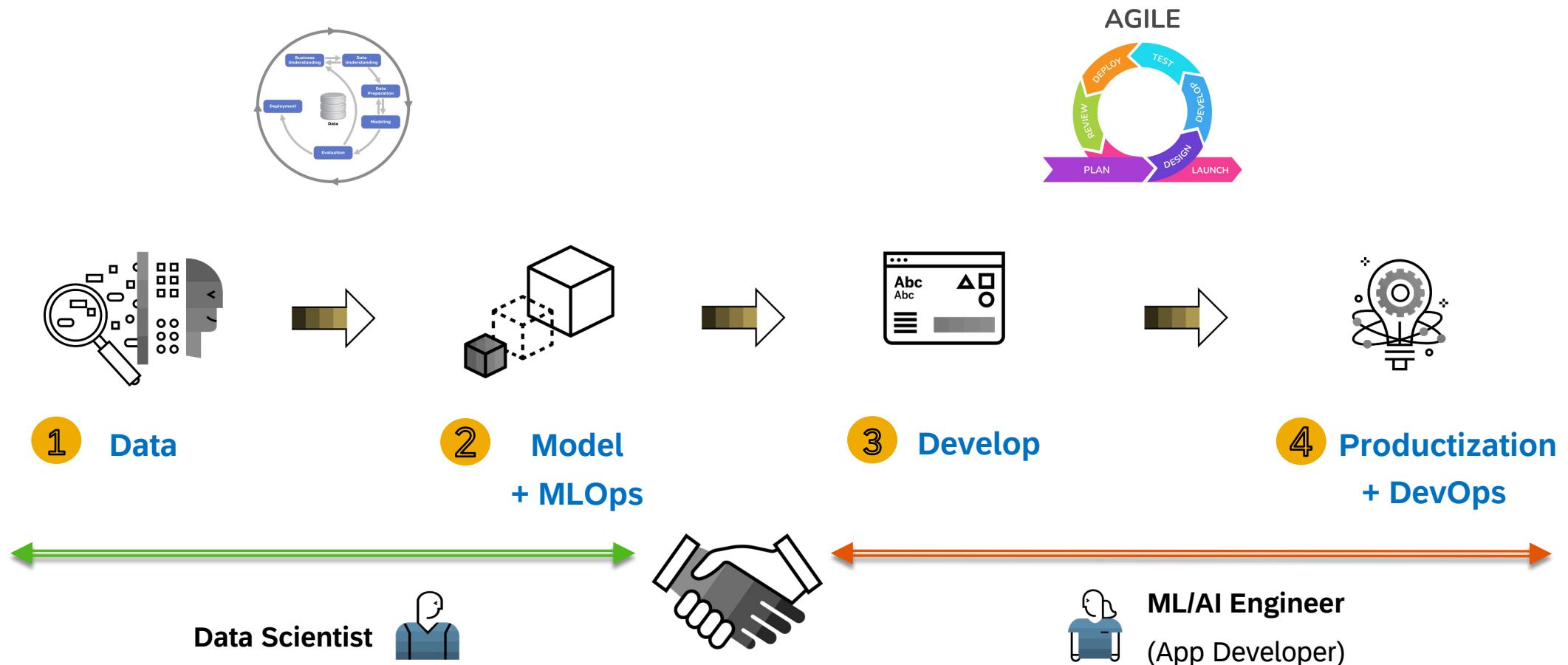


Drew Conway's Data Scientist Venn Diagram

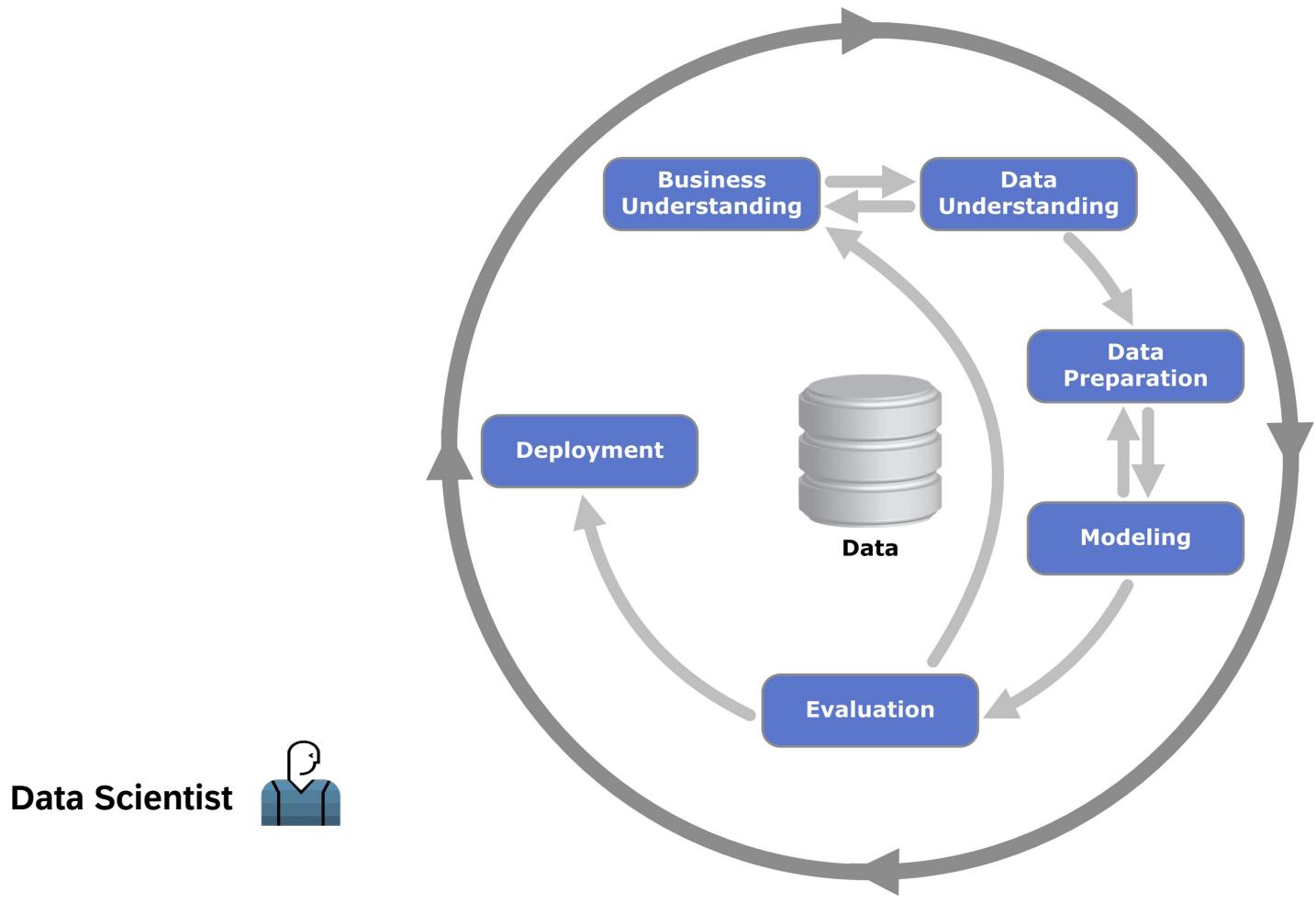


Stephan Kolassa's Data Scientist Venn Diagram

# Development Approach | Building an Intelligent Data Application



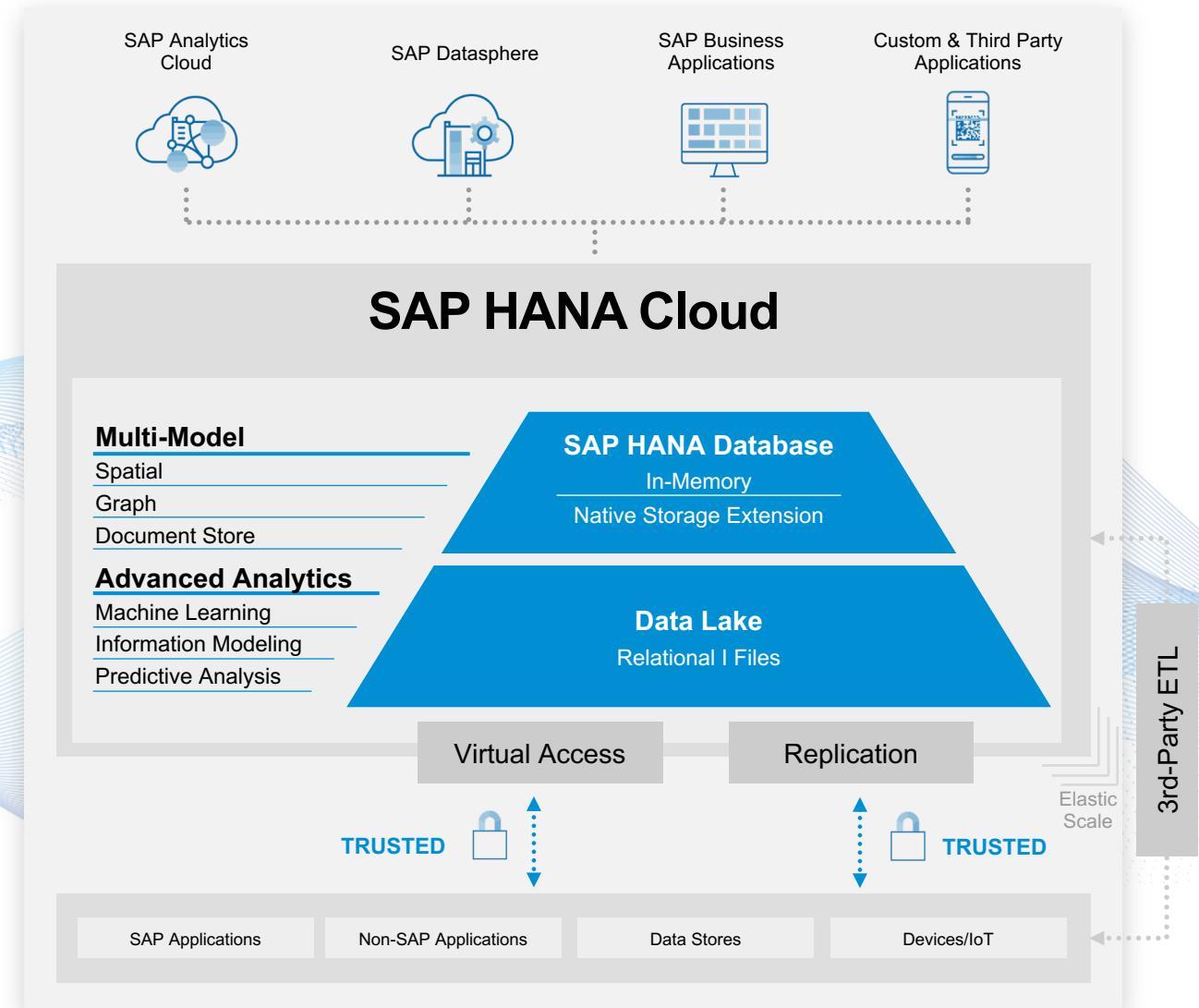
# Development Approach | Training a Model



# SAP HANA Cloud | Foundation for Intelligent Data Applications on SAP BTP

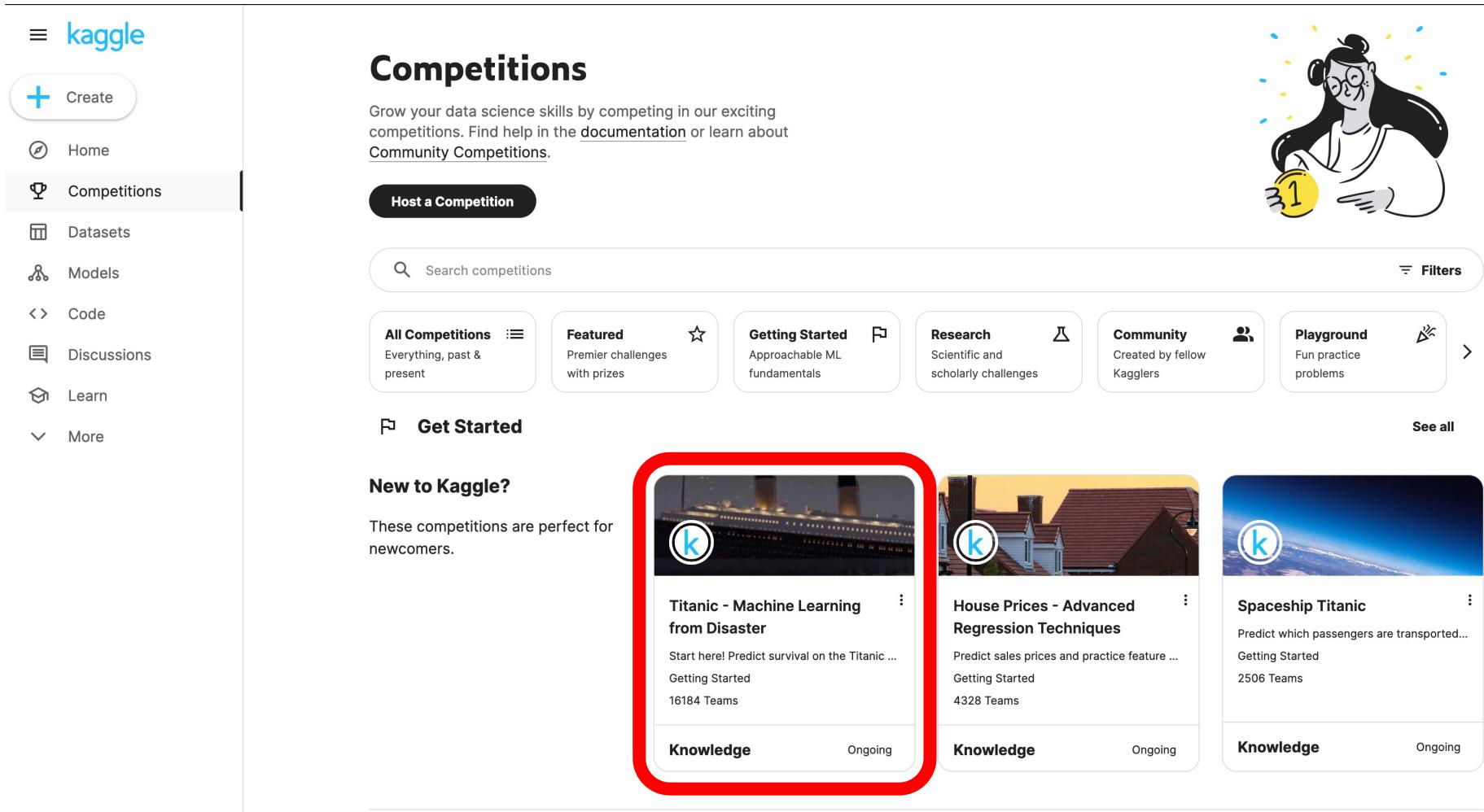
## Power Intelligent Data Applications with SAP HANA Cloud

- Running mission-critical applications and analytics with **one solution**
- Seamlessly blend **multi-model data** to enhance business processes
- Federate data **across hybrid systems** and multiple clouds
- Provide **proven in-memory performance** for all data needs



**Let's get busy** 😎

# Our ML Challenge today:



The screenshot shows the Kaggle Competitions page. On the left is a sidebar with navigation links: kaggle, Create, Home, Competitions (which is selected), Datasets, Models, Code, Discussions, Learn, and More. The main content area has a header "Competitions". Below it is a sub-header: "Grow your data science skills by competing in our exciting competitions. Find help in the [documentation](#) or learn about [Community Competitions](#)". A "Host a Competition" button is present. A search bar with placeholder "Search competitions" and a "Filters" button are below. A horizontal navigation bar includes categories: All Competitions (Everything, past & present), Featured (Premier challenges with prizes), Getting Started (Approachable ML fundamentals), Research (Scientific and scholarly challenges), Community (Created by fellow Kagglers), and Playground (Fun practice problems). A "Get Started" section follows, featuring three competitions: "Titanic - Machine Learning from Disaster" (highlighted with a red box), "House Prices - Advanced Regression Techniques", and "Spaceship Titanic". Each card shows the competition name, a brief description, the number of teams, and status (Knowledge, Ongoing).

**Competitions**

Grow your data science skills by competing in our exciting competitions. Find help in the [documentation](#) or learn about [Community Competitions](#).

[Host a Competition](#)

Search competitions [Filters](#)

**All Competitions** Everything, past & present **Featured** Premier challenges with prizes **Getting Started** Approachable ML fundamentals **Research** Scientific and scholarly challenges **Community** Created by fellow Kagglers **Playground** Fun practice problems

[Get Started](#) See all

**New to Kaggle?**

These competitions are perfect for newcomers.

**Titanic - Machine Learning from Disaster**

Start here! Predict survival on the Titanic ...  
Getting Started  
16184 Teams

**Knowledge** Ongoing

**House Prices - Advanced Regression Techniques**

Predict sales prices and practice feature ...  
Getting Started  
4328 Teams

**Knowledge** Ongoing

**Spaceship Titanic**

Predict which passengers are transported...  
Getting Started  
2506 Teams

**Knowledge** Ongoing

# **Exercises**

**Repo:** <https://github.com/SAP-samples/hana-ml-py-codejam/>

(→ [https://bit.ly/CJ\\_HANAML](https://bit.ly/CJ_HANAML))

## **1. Pre-requisites:**

<https://github.com/SAP-samples/hana-ml-py-codejam/blob/main/prerequisites.md>

## **2. Exercises:**

<https://github.com/SAP-samples/hana-ml-py-codejam#the-exercises>

## **3. Worth watching:**

<https://github.com/SAP-samples/hana-ml-py-codejam#additional-learning-material>

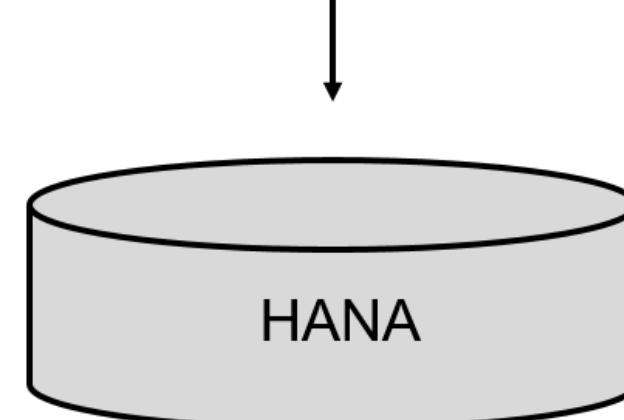
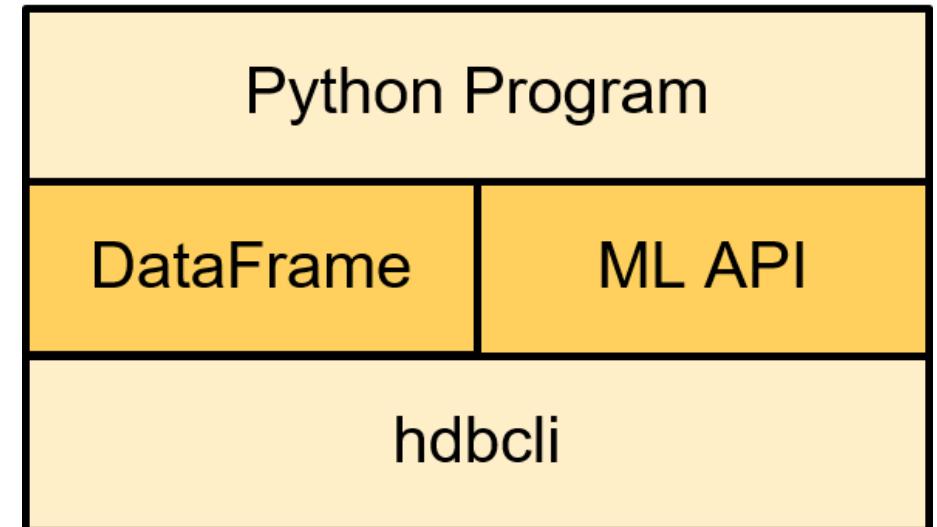
## **4. Try at home in your SAP BTP Trial:**

<https://github.com/SAP-samples/sap-community-developer-challenge-eda-hana>

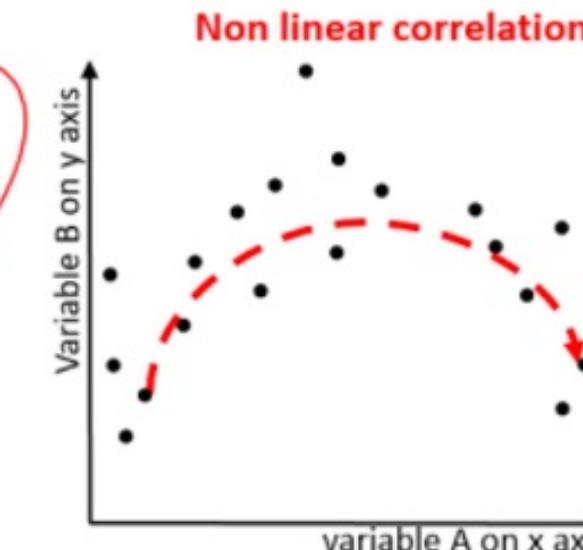
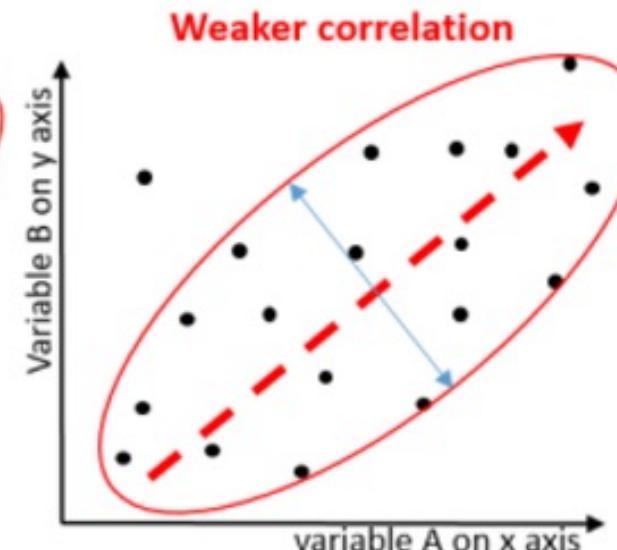
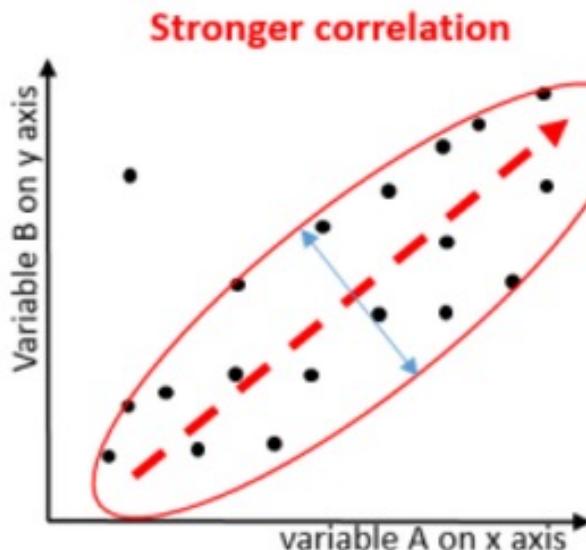
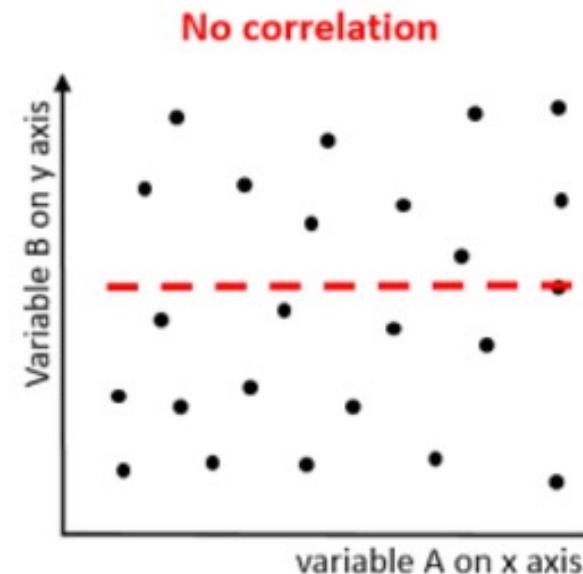
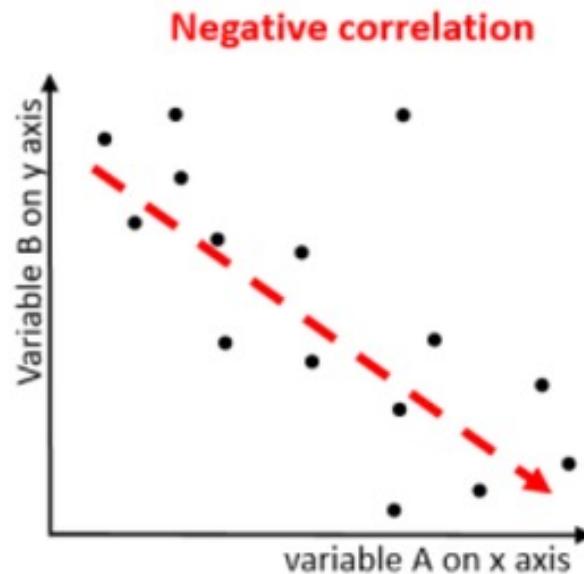
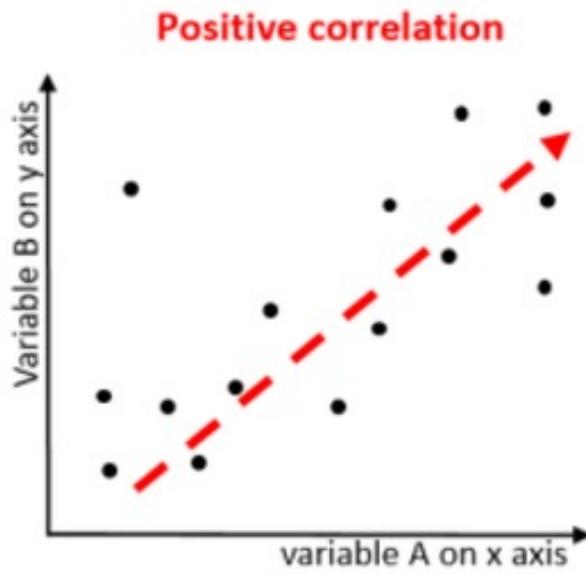
# Understand DataFrame(s)

# Data Scientist using Python

Pandas DataFrame <> HANA DataFrame

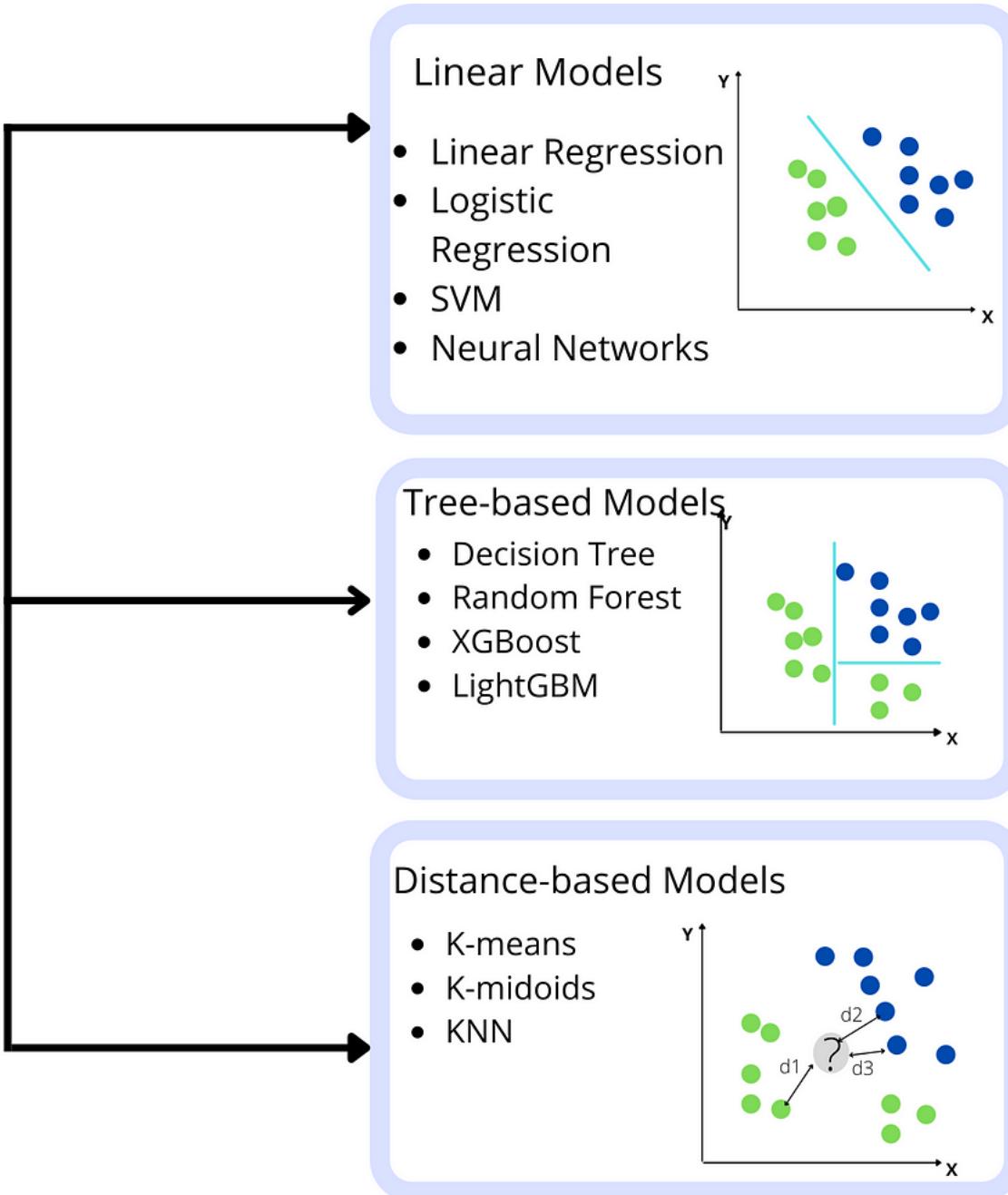


# Correlation based on direction, form, and dispersion strength

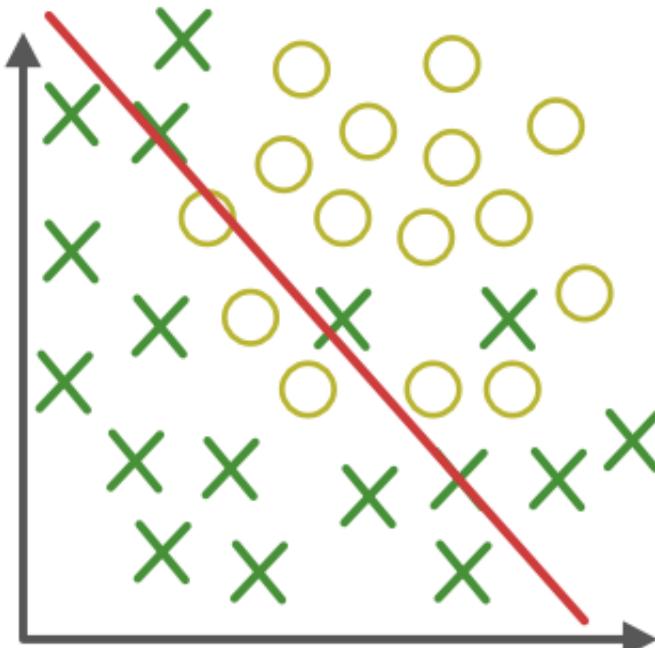


# Decision Boundary

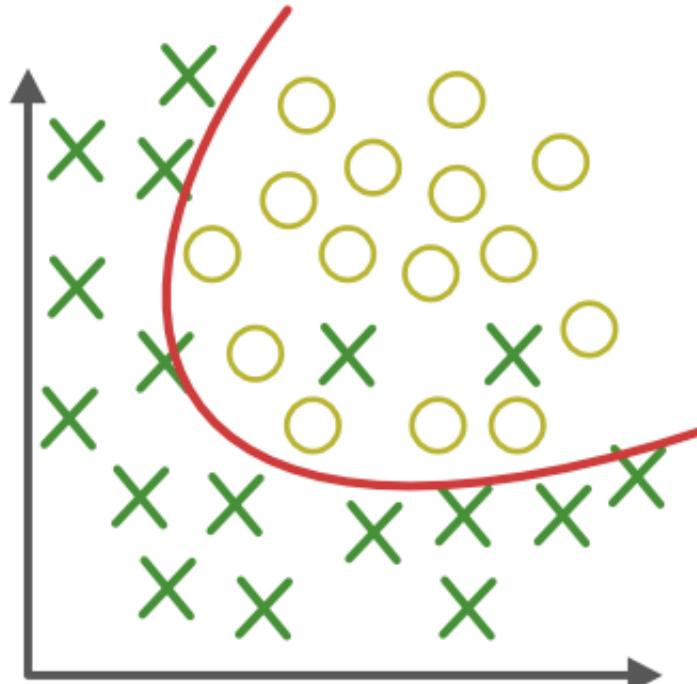
Decision  
Boundary



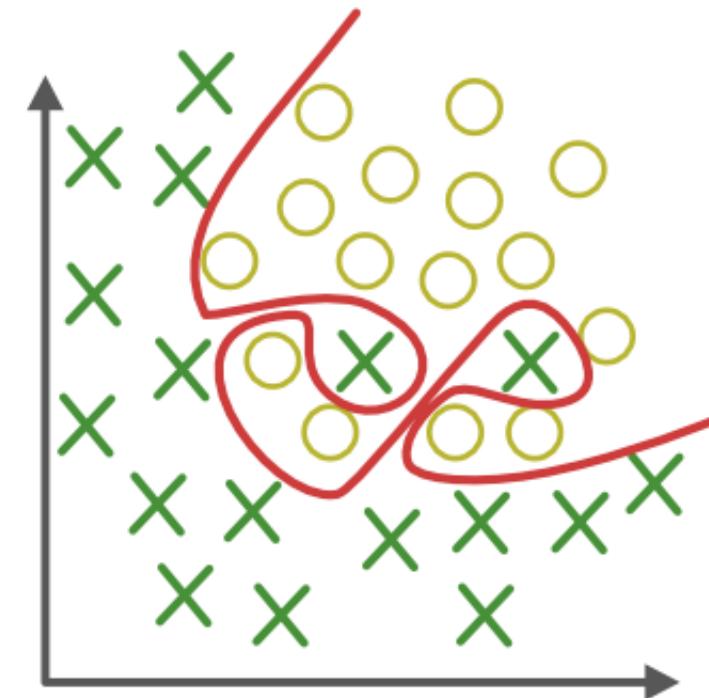
# Underfitting and Overfitting



**Under-fitting**  
(too simple to  
explain the variance)



**Appropriate-fitting**



**Over-fitting**  
(forcefitting--too  
good to be true)

DG

## Confusion matrix

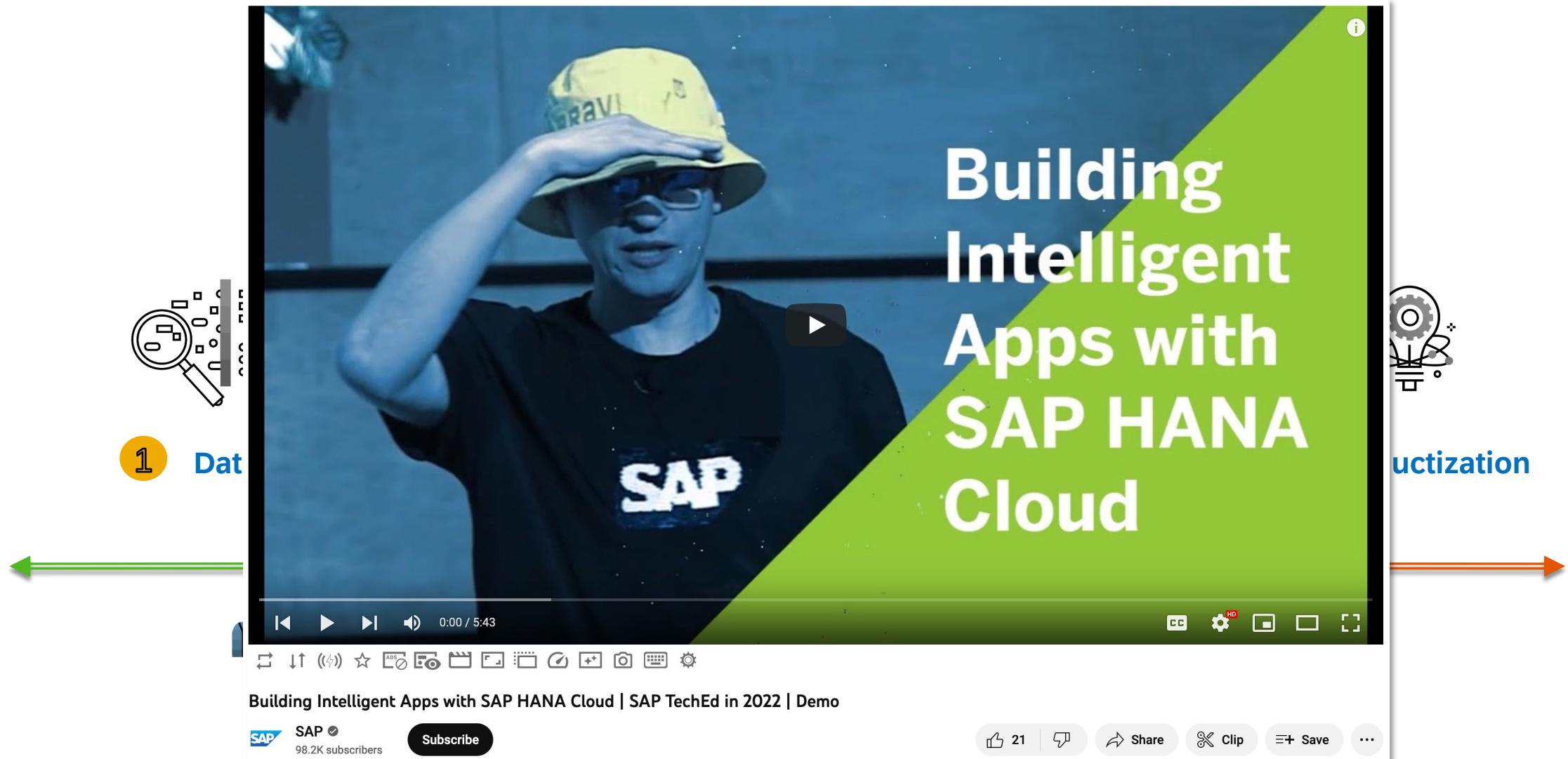
In predictive analytics, a **table of confusion** (sometimes also called a **confusion matrix**) is a table that reports the number of true positives, false negatives, false positives, and true negatives.

		Predicted class
		$P$
		$N$
Actual class	$P$	True positives (TP)
	$N$	False negatives (FN)
	$N$	False positives (FP)
		True negatives (TN)

source: <https://subscription.packtpub.com/book/data/9781787125933/6/ch06lvl1sec41/looking-at-different-performance-evaluation-metrics>

# **Additional content**

# Development Approach | Building an Intelligent Data Application (demo)

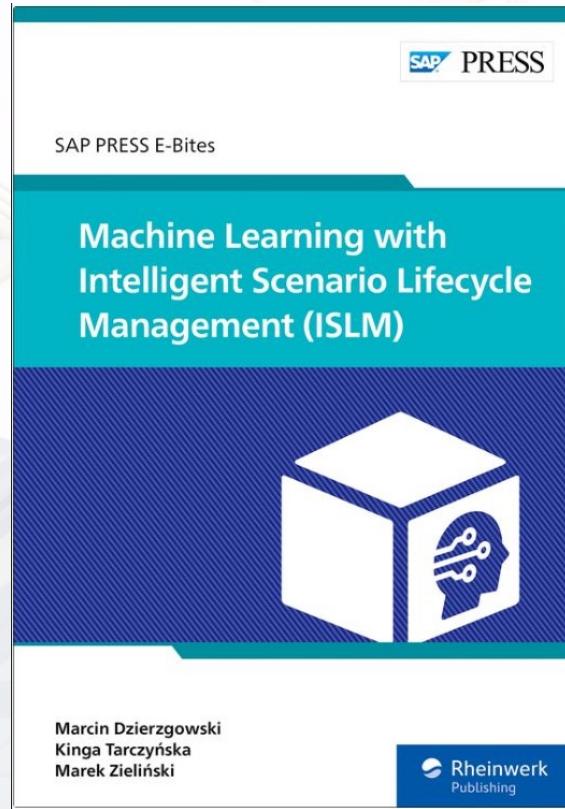


# Code samples: <https://github.com/SAP-samples/hana-ml-samples>

Screenshot of a GitHub repository page for "hana-ml-samples / Python-API / usecase-examples /". The page shows a list of code samples with their names, last commit messages, and dates.

The repository was created by cmog (FairML - Fair Recruiting Model) on f009115 · 3 weeks ago. There is a History link available.

Name	Last commit message	Last commit date
..		
diabetes-classification	Create OpenSAP-SAPHANA-HANA Machine Learning Demo (2...	2 years ago
estimate-car-price	update estimate car price	3 years ago
fairml-examples	FairML - Fair Recruiting Model	3 weeks ago
fraud-detection	fraud-detection use case	2 years ago
melbourne-housing-price	Add files via upload	4 years ago
ml-anonymized-data	Tutorial example - ML with HANA-ML Python ML client on HAN...	4 years ago
multimodel-analysis-airroutes	Update README.md	4 years ago
sapcommunity-automl-examples	update community call examples	2 years ago
sapcommunity-hanaml-challenge	Create SAP HANA Cloud Machine Learning Demo - Employee C...	7 months ago



## Machine Learning with Intelligent Scenario Lifecycle Management (ISLM)

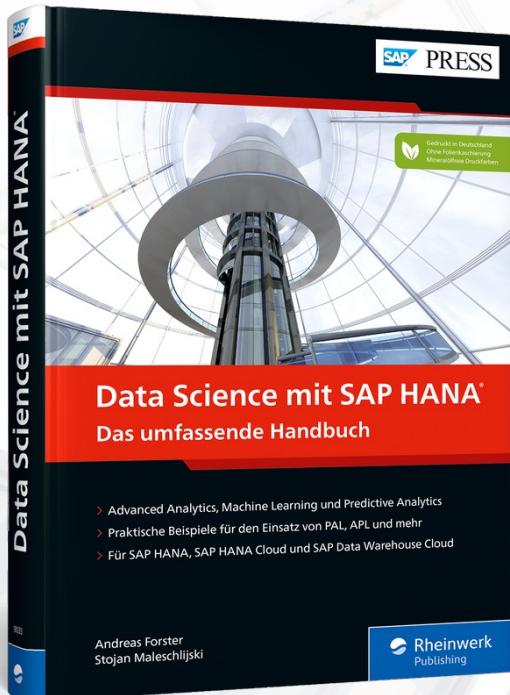
115 pages, 2023, E-Book  
ISBN 978-1-4932-2395-4

[www.sap-press.de/5668](http://www.sap-press.de/5668)

## Update your machine learning skills with Intelligent Scenario Lifecycle Management (ISLM)!

In this E-Bite, you'll develop a complete machine learning application for SAP S/4HANA using SAP HANA PAL, from data preparation and model building to training and prediction generation. You'll learn to use the ISLM framework to simplify machine learning implementation with standard apps for managing intelligent scenarios. Learn the ins and outs of machine learning with ISLM in this how-to guide!

- Learn to use the ISLM framework in SAP S/4HANA
- Develop an end-to-end machine learning scenario with SAP HANA PAL
- Prepare data, train models, and implement predictions with ISLM



## Mit SAP HANA, SAP HANA Cloud und SAP Data Warehouse Cloud ist viel mehr möglich als das Speichern großer Datenmengen.

In diesem Buch erfahren Sie, wie Sie die Automated Predictive Library (APL) und die Predictive Analysis Library (PAL) einsetzen können, um komplexe Auswertungen vorzunehmen und Vorhersagen zu treffen. Praktische Beispiele zu Klassifizierung, Textanalyse, Clustering, Regression u.v.m. zeigen Ihnen die vielfältigen Möglichkeiten auf und lassen sich direkt auf Ihre Anwendungsfälle übertragen.

- Advanced Analytics, Machine Learning und Predictive Analytics
- Praktische Beispiele für den Einsatz von PAL, APL und mehr
- Für SAP HANA, SAP HANA Cloud und SAP Data Warehouse Cloud

### Data Science mit SAP HANA

Das umfassende Handbuch

von [Andreas Forster, Stojan Maleschlijski](#)

<https://www.rheinwerk-verlag.de/data-science-mit-sap-hana/>

# **SAP Business AI portfolio**

# SAP Business AI approach

Relevant. Reliable. Responsible.

Finance | Supply Chain | HR | Procurement | Marketing and Commerce | Sales and Services | IT



A copilot that truly understands your business

## Embedded AI capabilities

Cloud ERP

Human capital management

Spend management  
and business network

Customer relationship  
management

Business Technology  
Platform

## AI Foundation

on Business Technology Platform

## AI ecosystem partnerships and investments



ANTHROPIC



cohere

databricks

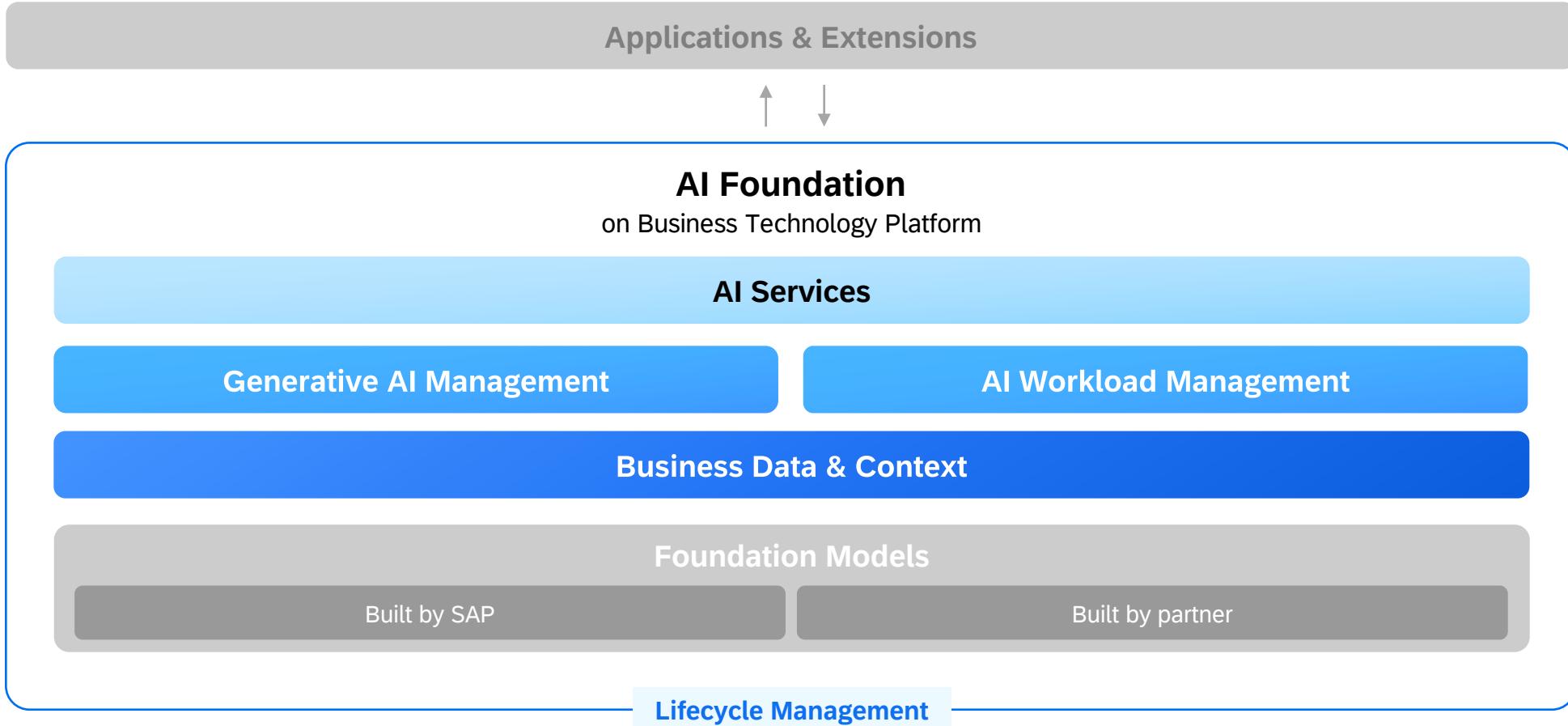
DataRobot

Google Cloud

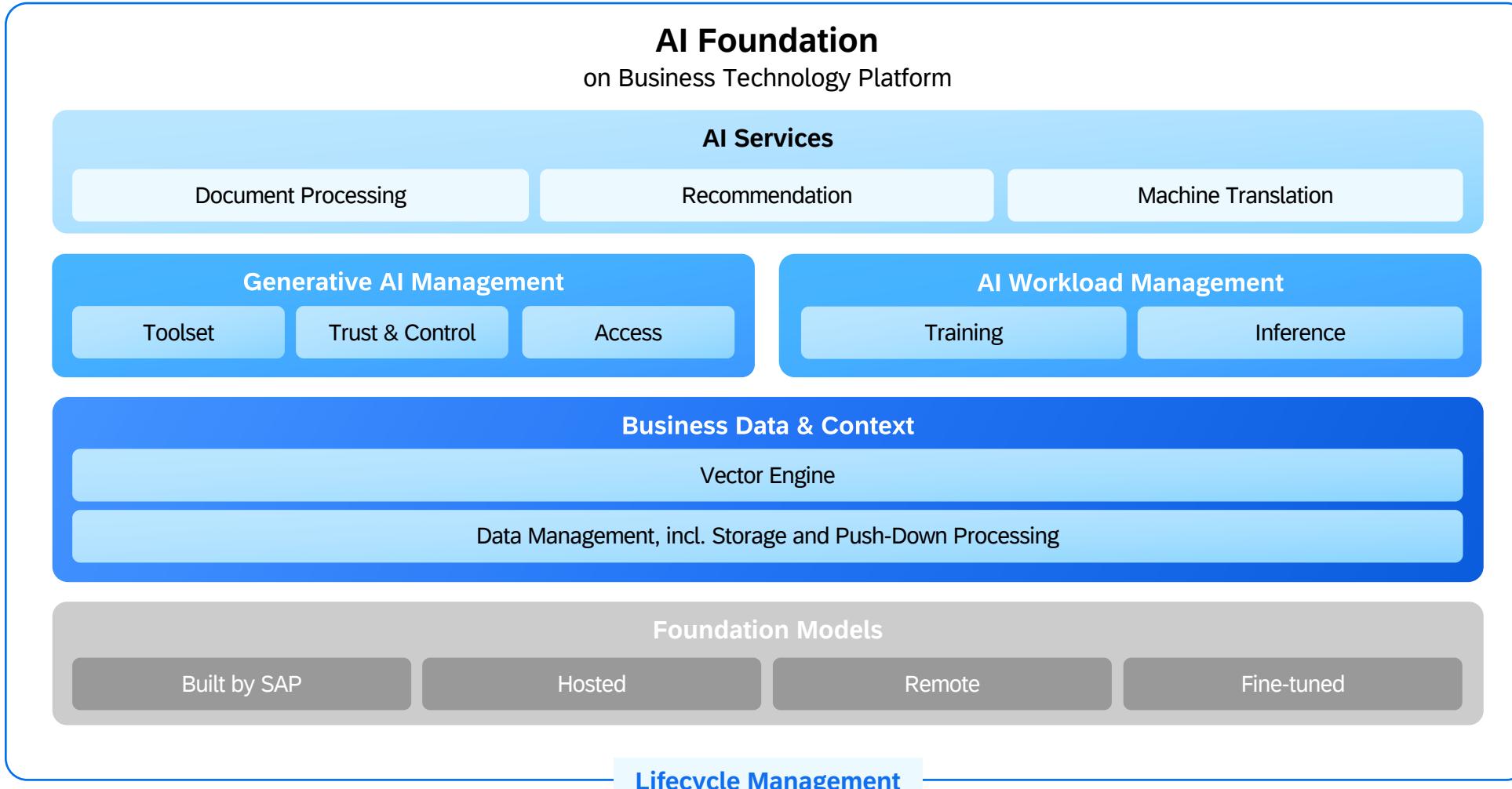
IBM

Microsoft

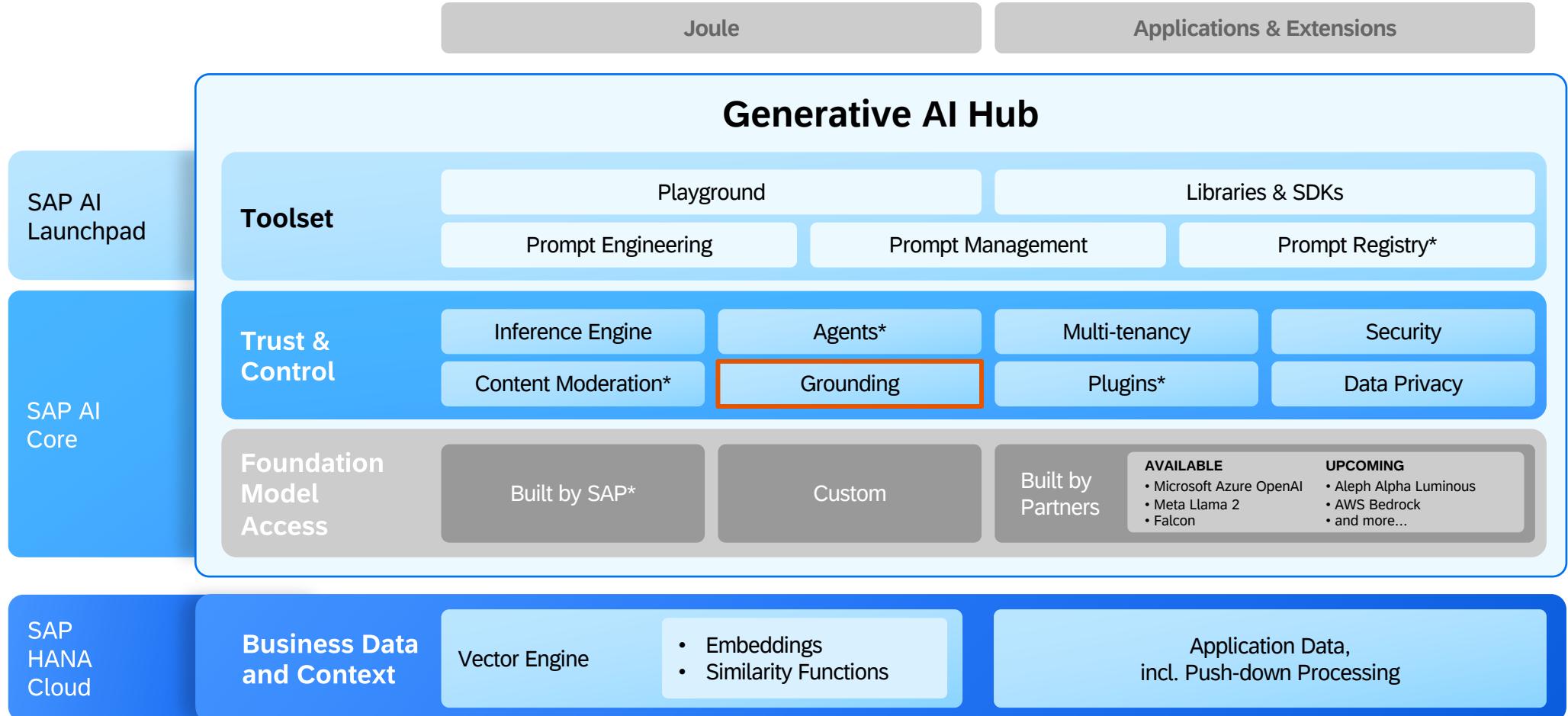
# A complete set of services for AI developers on SAP BTP



# A complete set of services for AI developers on SAP BTP



# Generative AI Hub: integrate AI into applications, seamlessly



Please, support Ukrainian business 💙💛 eg. Ugears Mechanical Models

<https://ugearsmodels.com/>

Free shipping on all orders of €60 or more!

The website features a green header bar with the text "Free shipping on all orders of €60 or more!". Below the header is the Ugears logo and a search bar. The main navigation menu includes links for CATALOG, BEST DEALS, CUSTOMER SERVICE, UGEARS WORLDWIDE, GIFT IDEAS, and language selection (English). The main content area features a large blue banner with the text "NEW RELEASE" in white. Below the banner are four product images: "SERENITY'S DREAM YACHT", "NASA SPACE SHUTTLE DISCOVERY", "RESCUE HOVERCRAFT", and "STEGOSAURUS". A "LEARN MORE" button is located next to the Hovercraft image. At the bottom of the page, there are three categories with icons: "SELF ASSEMBLY" (thumb up icon), "MECHANICAL" (cogwheel icon), and "EDUCATIONAL" (brain icon). A small speech bubble icon is also present at the bottom right.

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



SCAN ME

**Thank you // Дякую // Dekojame!**

Contact information:

Witalij Rudnicki

