

FME AI FOR INDUSTRY JAAREVENT



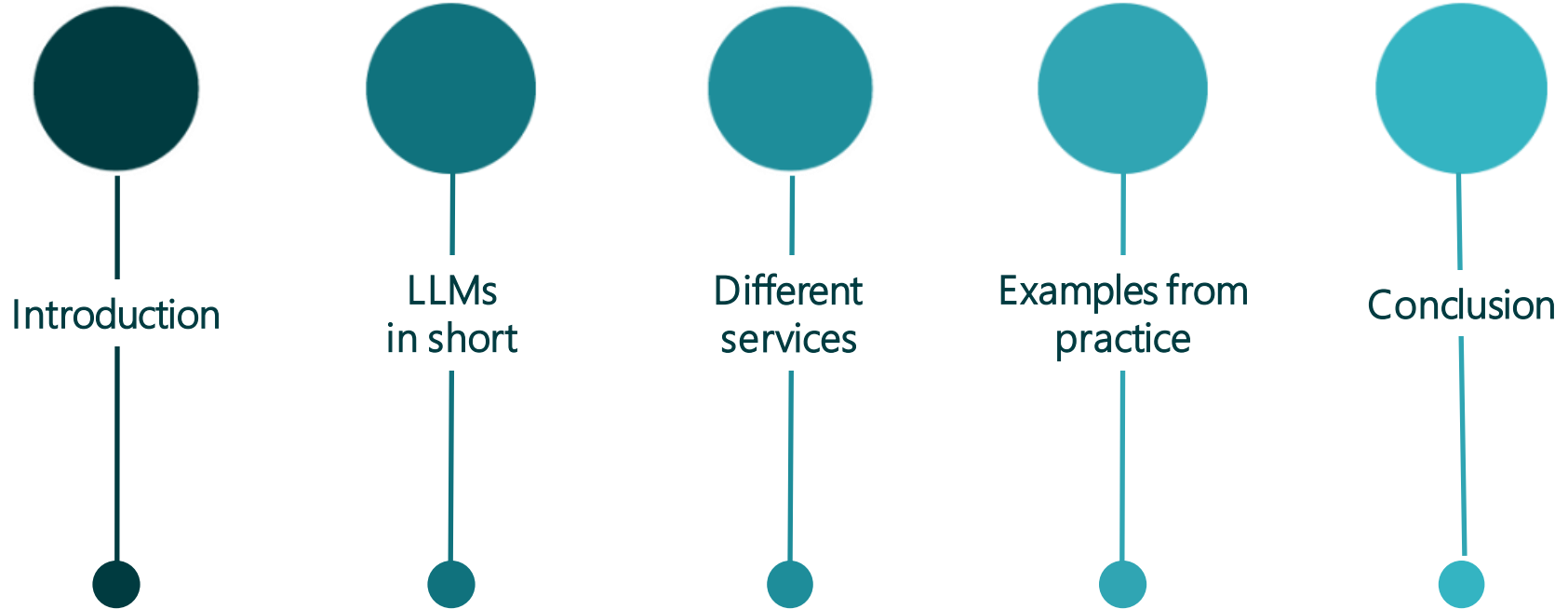
**Toepassing ChatGPT
en andere Large
Language Models**

7 december 2023

AGENDA

1. Introductie & use cases Large Language Models
Ralf Zoetekouw & Job Oosterkamp – Datacation
2. When ‘the model works’ is not enough
Joost Vos - IBM
3. Microsoft GenAI and Copilots
Arash Nezami - Microsoft

Outline



DATAACATION...

DEDICATED TO DATA



Job Oosterkamp
Data Science Consultant



Ralf Zoetekouw
Founder

Datacation: Who are we?

A team of 20 highly educated data professionals



IT nerds with a social character: we think along with the customer



Focus on adopting data-driven solutions through co-creation



Data Engineering

Connecting different **data sources** and **transform** the **raw data** into a **useful** format.



Data Analytics

The creation of valuable **insights** through **data visualizations** in the form of **dashboards**.



Data Science

The development of predictive and generative **AI** models

Large Language Models: What are they?

Language Models (LMs) are AI models that use text as input and/or output:

- They have existed for decades: the spam filter was one of the first large-scale applications
- They couldn't handle more complex text very well
- Think, for example, of the old Google Translate (<2016)

Large Language Models: What are they?

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Nowadays (approximately since 2017), modern **Large Language Models (LLMs)**:

- **Large models**: deep neural networks with tens of millions to billions of parameters
- Good at understanding the **meaning** of text, not just the words present.
- **Trained on massive amounts of text**, often without a specific task (foundation model).
- Can be fine-tuned for a specific task with relatively little data (or fine-tuning may not be necessary at all).
- (Chat)GPT is the most well-known, but there are thousands of other LLMs.

LLMs: Where are they good at?

Analytical tasks:

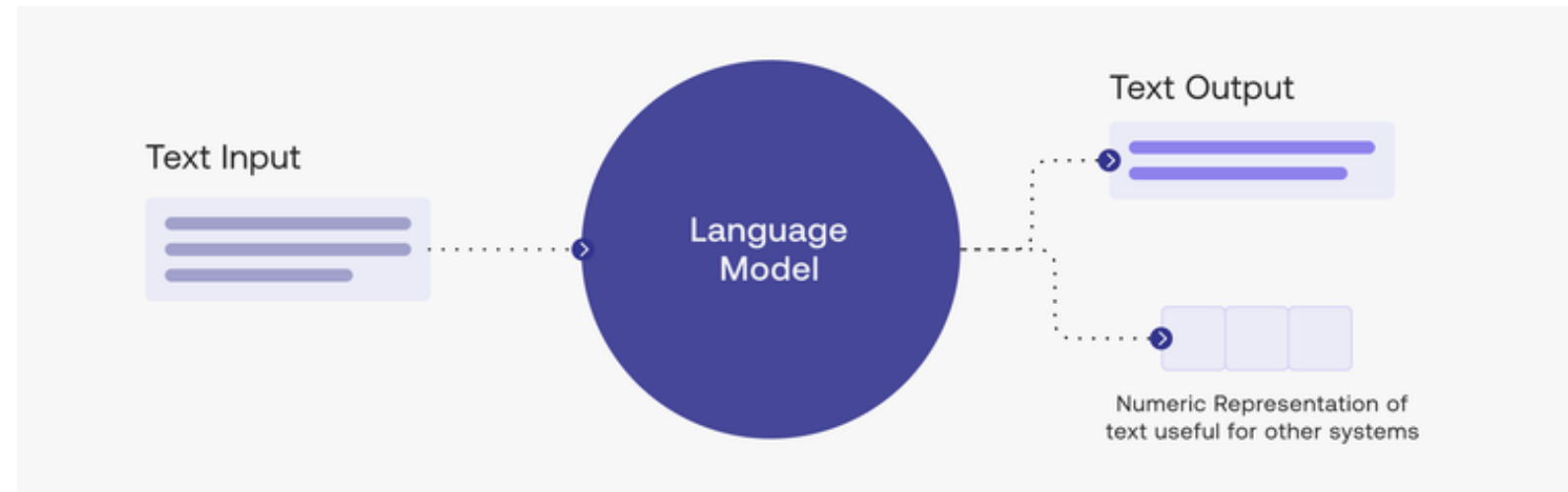
- Classification (categorization)
- Finding similarities (e.g., for searching)
- Searching for specific information in text

Combination:

- General or specific chatbot
- Quickly getting an overview of a topic
- Generating content

Generative tasks:

- Generating text
- Summarizing
- Rewriting
- Translating



LLMs: Where do you get them?

Commercial providers:

- Microsoft / OpenAI
- IBM
- Google
- Amazon



Public domain (open-source):

- Models from large organizations, researchers, and hobbyists
- Often trained on specific domains



Google Cloud



Hugging Face

LLMs: Where do you get them?

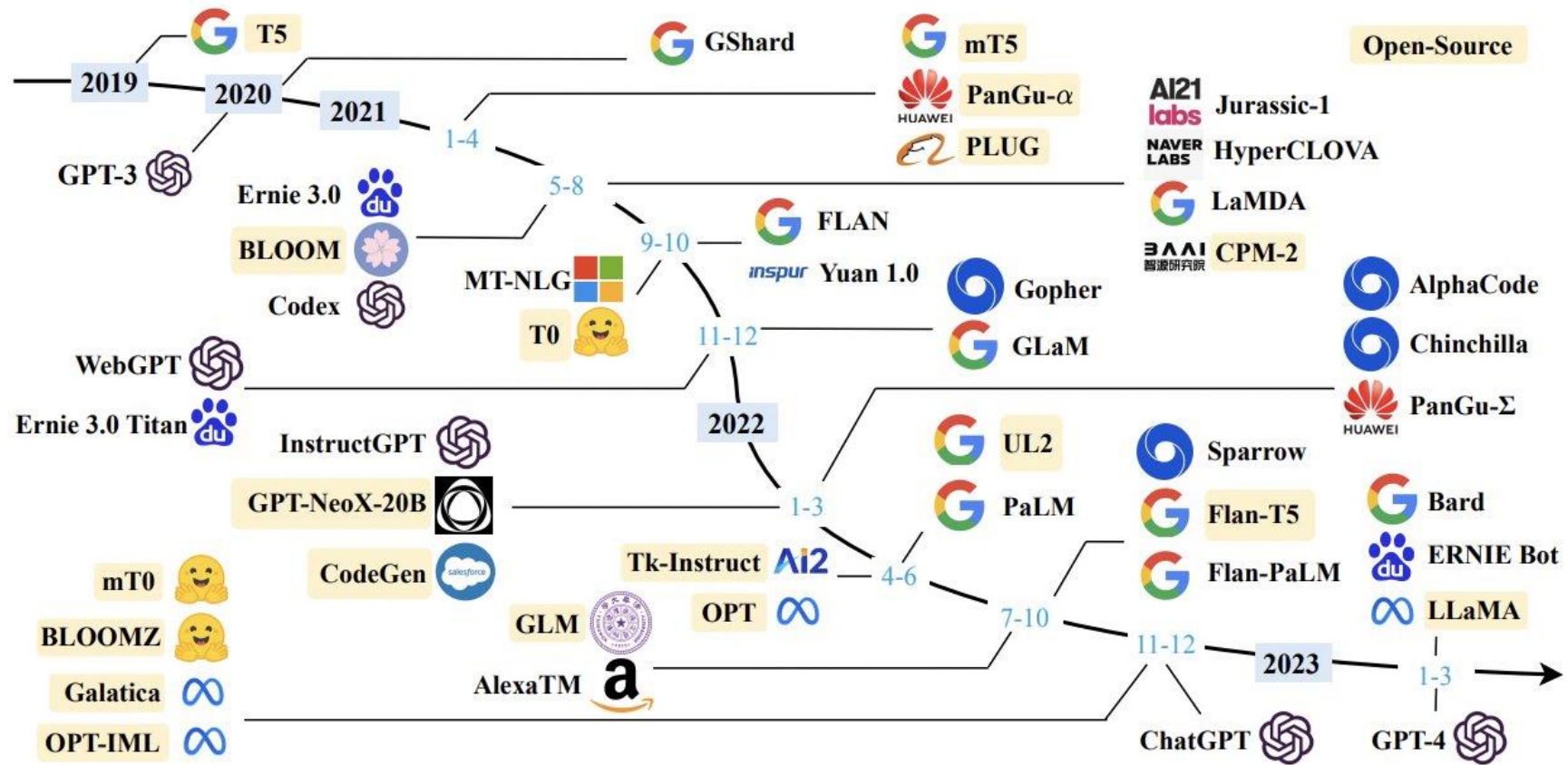


Fig. 1. A timeline of existing large language models (having a size larger than 10B) in recent years. We mark the open-source LLMs in yellow color.

LLMs: Where do you get them?

Commercial providers

Advantages

- Many possibilities
- Good performance
- Everything is taken care of for you

Disadvantages

- Costs
- Calls can be (relatively) slow
- Mostly for generic purposes

Public domain (open-source):

Advantages

- Many domain-specific models
- Free (also for commercial purposes)
- Can be hosted locally

Disadvantages

- Sometimes lower performance
- More configuration required
- Not available for every specific purpose

Seek advice from a professional.



Email handling

3 different use-cases

3 different solutions

Use case 1


- The **Sales department** of a distributor of spare parts, handles many emails a day
- The **AI-tool** sorts all incoming emails to create **focus, overview** and **priority**
- The AI-tool **reads all emails and attachments** (PDF and Excel) and determines:
 - **Main category**: order (1), tender-offer (2-6), other (7) of replies (7R)
 - **Type of customer** (2 and 5)
 - The **brand** that is requested (A-D)


- ▼ Postvak IN
 - 1. Orders
 - ▼ 2. Rederijen
 - 2A. Rederijen (Wartsila)
 - 2B. Rederijen (MAK)
 - 2C. Rederijen (MAN)
 - 2D. Rederijen (Himsen)
 - 3. Powerplants
 - 4. Reparatie
 - ▼ 5. Handelaren
 - 5A. Handelaren (Wartsila)
 - 5B. Handelaren (MAK)
 - 5C. Handelaren (MAN)
 - 5D. Handelaren (Himsen)
 - 6. Aanvragen (Ongecategoriseerd)
 - 7. Overig
 - 7R. Antwoorden


- Favorites
- Inbox
- Sent Items
- Drafts
- Postvak IN 765**
 - 1. Orders
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 - 7. Overig
 - 7R. Antwoorden
 - 8. Morgia
 - 9. India
 - E. Sorteerfouten

- Postvak IN By Date ↑
- Older
 - 25/07/2023 Hello, enclosed you will find the delivery notes of todays
 - 24/07/2023 Thanks for the quote, please confirm with our
 - 24/07/2023 Goedemiddag Hierbij willen we graag bijgaande items
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 - 12/07/2023 Vrijdag is goed. Koffie staat klaar Met
 - 10/07/2023
 - 10/07/2023 Please find attached PDF-document Mit freundlichen Grüßen
 - 05/07/2023

delivery notes of todays loading -

 To: [Redacted]



Start your reply all with: [Got it, thank you.](#) [Received, thank you.](#) [Thank you!](#)  Feedback

Hello, enclosed you will find the delivery notes of todays loading.


Reply Reply All Forward

Tue 25/07/2023 23:56

00:00:00.00

hr min sec

Play Stop Refresh





 DEDICATED TO DATA


- Favorites
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 - ▼ 2. Rederijen 34
 - 2A. Rederijen (Wartsila) 19
 - 2B. Rederijen (MAK) 5
 - 2C. Rederijen (MAN) 29
 - 2D. Rederijen (Himsen)
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 - 4. Reparatie 29
 - ▼ 5. Handelaren 20
 - 5A. Handelaren (Wartsila) 52
 - 5B. Handelaren (MAK) 10
 - 5C. Handelaren (MAN) 7
 - 5D. Handelaren (Himsen) 2
 - 6. Aanvragen (Ongecategoriseerd) 19
 - 7. Overig 235
 - 7R. Antwoorden 245
 - 8. Morgia 4
 - 9. India 9

1. Orders By Date ↑
- ▼ Older
 - [Blurred email] 24/07/2023
 - [Blurred email] 04/07/2023
 - [Blurred email] 28/06/2023
 - [Blurred email] 11/04/2023
 - [Blurred email] 11/04/2023
 - [Blurred email] 11/04/2023
 - [Blurred email] 07/04/2023
 - [Blurred email] 07/04/2023
 - [Blurred email] 07/04/2023
 - [Blurred email] 07/04/2023
 - [Blurred email] 06/04/2023

PO- [Blurred] // A1 //

 To [Blurred]

You forwarded this message on 24/07/2023 13:13.

 PO- [Blurred].pdf 106 KB

Goedemiddag

Hierbij willen we graag bijgaande items bestellen voor de [Blurred]

PO Ref. - [Blurred]

Aflever adres :

[Blurred]

Nederland

Factuur adres:

[Blurred]

Nederland
BTW Nr. [Blurred]
KvK Nr. [Blurred]

U kunt ook u factuur sturen naar: z [Blurred]

[Blurred]

Bij voorbaat dank

Met vriendelijke groet / Kind regards,

[Blurred]

Mon 24/07/2023 13:10

Reply Reply All Forward

Solution 1

- The emails get sorted **real-time**
- Created our own model, based on a traditional **Language Model**, hosted on **client's server**
- Integration with **Outlook**
- Pro:
 - When running, no costs per email
- Con:
 - Higher initial investment (development costs)



A screenshot of an Outlook inbox folder structure. The root folder is 'Postvak IN'. It contains several subfolders: '1. Orders', '2. Rederijen' (which is expanded to show '2A. Rederijen (Wartsila)', '2B. Rederijen (MAK)', '2C. Rederijen (MAN)', and '2D. Rederijen (Himsen)'), '3. Powerplants', '4. Reparatie', '5. Handelaren' (expanded to show '5A. Handelaren (Wartsila)', '5B. Handelaren (MAK)', '5C. Handelaren (MAN)', and '5D. Handelaren (Himsen)'), '6. Aanvragen (Ongecategoriseerd)', '7. Overig', and '7R. Antwoorden'.

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Use case 2

- Company in the shipping industry: a middleman between Shipping companies and Cargo companies
- Cargo companies send **email requests** for their cargo, looking for a ship
- Many **abbreviations** and domain language
- Our client needs to schedule the shipping routes
- The AI-tool **subtracts 5 fields** required for efficient planning:
 - **Product** **Quantity**
 - **Point of Loading** **Point of Discharge**
 - **Date (Laycan)**



Using NLP to create structure
in unstructured documents

Examples

GD DAY,

USUAL CHRTRS.

TERMS HERE.

QUANTITY 5.000 - 5.500 QTY Metric Tons

SHREDDED TYRES PROD IN Bulk (NON OILY), stowage factor about 67 CUF WOG

BREMEN POL - Marmara POD 1 / 1

20/24 March L/C

ITF VESSEL REQUIRED

LOAD 1.500 c / DISCH 1.500 c

2,50% Brokerage Commision

Semih ALTAY

As Brokers only

Mob.+90-532-253 9311

from : affremarine sa

sent : 07 / 03 / 2023 17 : 31 : 46

to :

subject : wilhelmshaven POL / montoir POD

gd afternoon

dir chrtrs

wilhelmshaven / montoir

max 2200 QTY metric tons coal PROD sfabt 44

prompt L/C

24 hrs x / 24 hrsx

3. 75% brokerage commision brokerage commision

taryk bousserghine

mobphone + 33 (0) 7 55 65 52 10

Solution 2

- Self trained **Large Language Model**, hosted in the Cloud (AWS)
- Integration with **Planning software**
- Pros:
 - When running, no costs per email, only hosting costs
 - Model **trained specifically for these emails**
- Con:
 - Higher initial investment (development costs)



Use case 3

- The **customer support departement** of a supplier of personalized gifts, handles many emails a day
- They want to decrease their average responding time and optimize their workflow
- Three use-cases:
 - **Email classification**
 - **Email summary**
 - **Personal follow-up** on tender offers



Classify, Summarize and respond with unique answers on standard questions

Solution 3

- Using OpenAI model in Azure
 - GPT3.5
- Integration with **Outlook** and **internal software**
- Pros:
 - Low initial investment (development costs)
 - Easy to upgrade to better models (GPT4)
- Con:
 - Costs per email



Classify, Summarize and respond with unique answers on standard questions

Standard work

Your virtual colleague



Use case 4

Challenge

- Company has **standard work** instructions for various processes and clients
- Current storage in an online file system causes **time and energy inefficiencies** for team members
- **New colleagues struggle** to find the right information

Solution

Large Language Models can use their excellent understanding of language to:

1. Quickly find the right section of the correct instruction;
2. Provide immediate answers to questions and engage in conversation about them;
3. Accelerate the standardization of standard work.

→ Your **virtual colleague**

Datacation Bot & Bananas

Deze bot is een experimentele versie die gebruik maakt van OpenAI's GPT- modellen. De correctheid van de reactie kan niet gegarandeerd worden.



Hoi! Ik ben de chatbot van Monkeys and Bananas, wat zou je willen weten?

w|

I



Conclusion

- In addition to ChatGPT, LLMs offer many possibilities
- LLMs are highly versatile, but not the solution for everything
- Three similar use cases, but three different solutions
- **The solution is situation-specific**, so seek advice

DATAcation...

DEDICATED TO DATA



LinkedIn



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LinkedIn



r.zoetekouw@datacation.nl

When *'the model works'* is not enough

Joost B. Vos, Ph.D.,
Technical Specialist NLP & Data Science

watsonx.governance



IBM and AI ↻



1997 Deep Blue Chess

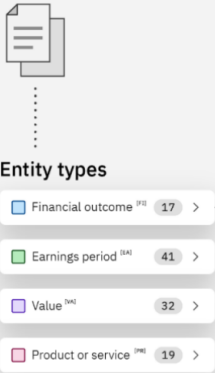


2012 Jeopardy



2019 Project Debater

IBM Watson Discovery



Accelerate business decisions and processes with an AI-powered intelligent document understanding and content analysis platform

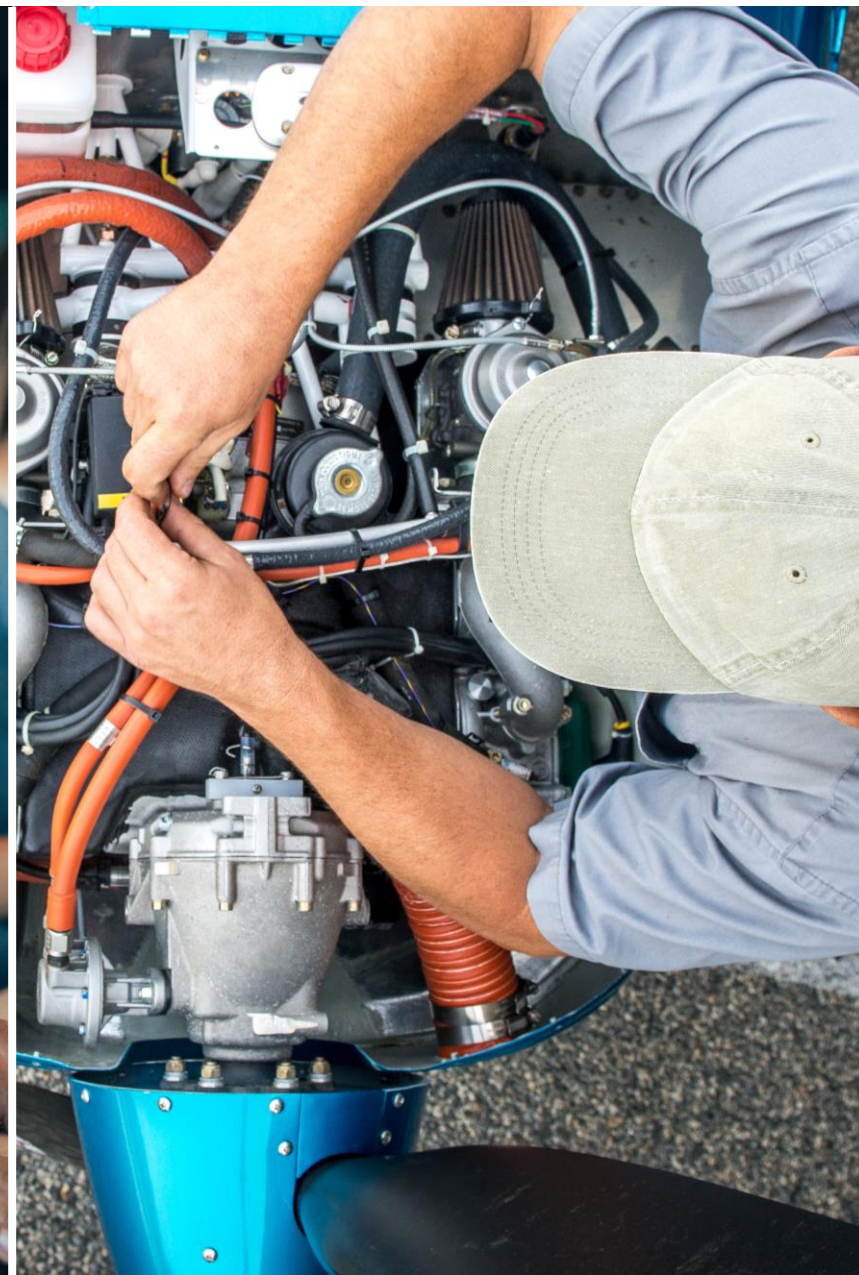
[Start your free trial](#) → [Book a meeting](#) 📅

watsonx Assistant

Deliver consistent and intelligent customer care with conversational AI

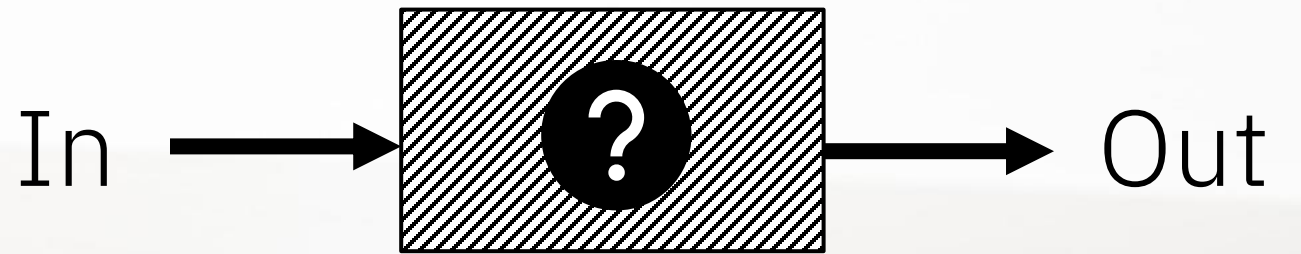
[Try watsonx Assistant](#) → [Book a live demo](#) →

Typical Use Case ↻



```
CustomerRequest.java X
1 package com.ibm.monarch;
2
3 class CustomerRequest extends Request {
4     Customer customer ;
5
6     CustomerRequest() {
7         customer = new Customer() ;
8     }
9
10    public Customer getCustomer() {
11        return customer;
12    }
13
14    public void setCustomer(Customer valCustomer) {
15        customer = valCustomer;
16    }
17
18    @Override
19    public String toString() {
20        return "customer = " + customer;
21    }
22
23    void insertCustomer(String lgacNcs, int db2Customer) {
24
25    void obtainCustomerNumber(String lgacNcs, int db2Customer) {
26    }
27
28
```


The Black Box problem ↻



How to move to a trustworthy enterprise-grade solution? ↻

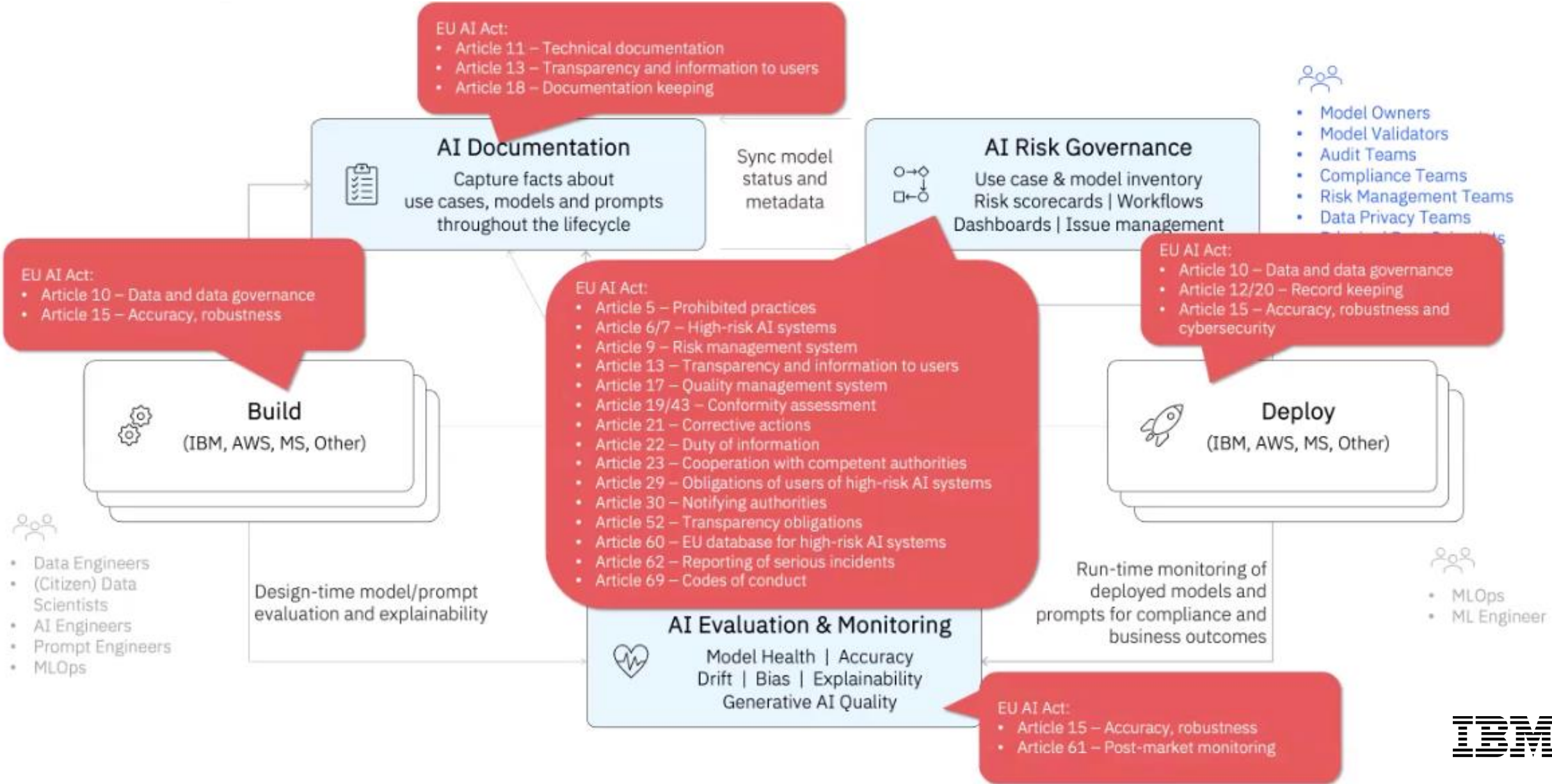


Regulations & EU AI Act



IBM

Governance regulations ↻



How do you keep overview on your AI ↻

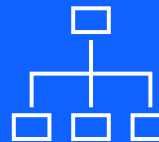


Toolkit

Direct



Manage



Monitor



BEREIDINGSWIJZE:

Zak goed schudden voor openen. Maak het zoals de Italianen het doen: kook de pasta en voeg toe aan je pastasaus (niet andersom) en warm nog even goed samen door.

Opgelet: de verpakking niet in de magnetron plaatsen!

RECEPTTIPS:

Kook pasta. Reken 75 tot 100 g pasta per persoon.

PASTA BOLOGNESE MET UI EN CHAMPIGNONS:

- Fruit een gesnipperde ui en voeg hier 250 g champignons (in partjes gesneden) aan toe.
- Voeg de pastasaus toe en verwarm 10 min. op laag vuur.
- Voeg de pasta aan de pan met pastasaus toe en roer goed door voor je het serveert.

PASTA BOLOGNESE MET SPINAZIE EN CHAMPIGNONS:

- Fruit een gesnipperde ui, ontdooi 250 g diepvriesblad spinazie en halveer 250 g champignons.
- Fruit de gesneden ui kort in een pan en voeg de spinazie en champignons toe.
- Voeg de pastasaus toe en verwarm 10 min. op laag vuur.
- Voeg de pasta aan de pan met pastasaus toe en roer goed door voor je het serveert.

VOEDINGSWAARDE	per 100 g
Energie	332 kJ / 79 kcal
Vetten	3,0 g
waarvan verzadigde vetzuren	0,9 g
Koolhydraten	8,6 g
waarvan suikers	6,4 g
Vezels	1,9 g
Eiwitten	3,5 g
Zout	1,1 g

How do you keep overview on your AI ↻

watsonx.governance

1. Automate | AI processes w/ GRC

2. Monitor | AI models → take action

3. Translate | Regulations into policies

4. Visibility | For reports/dashboards



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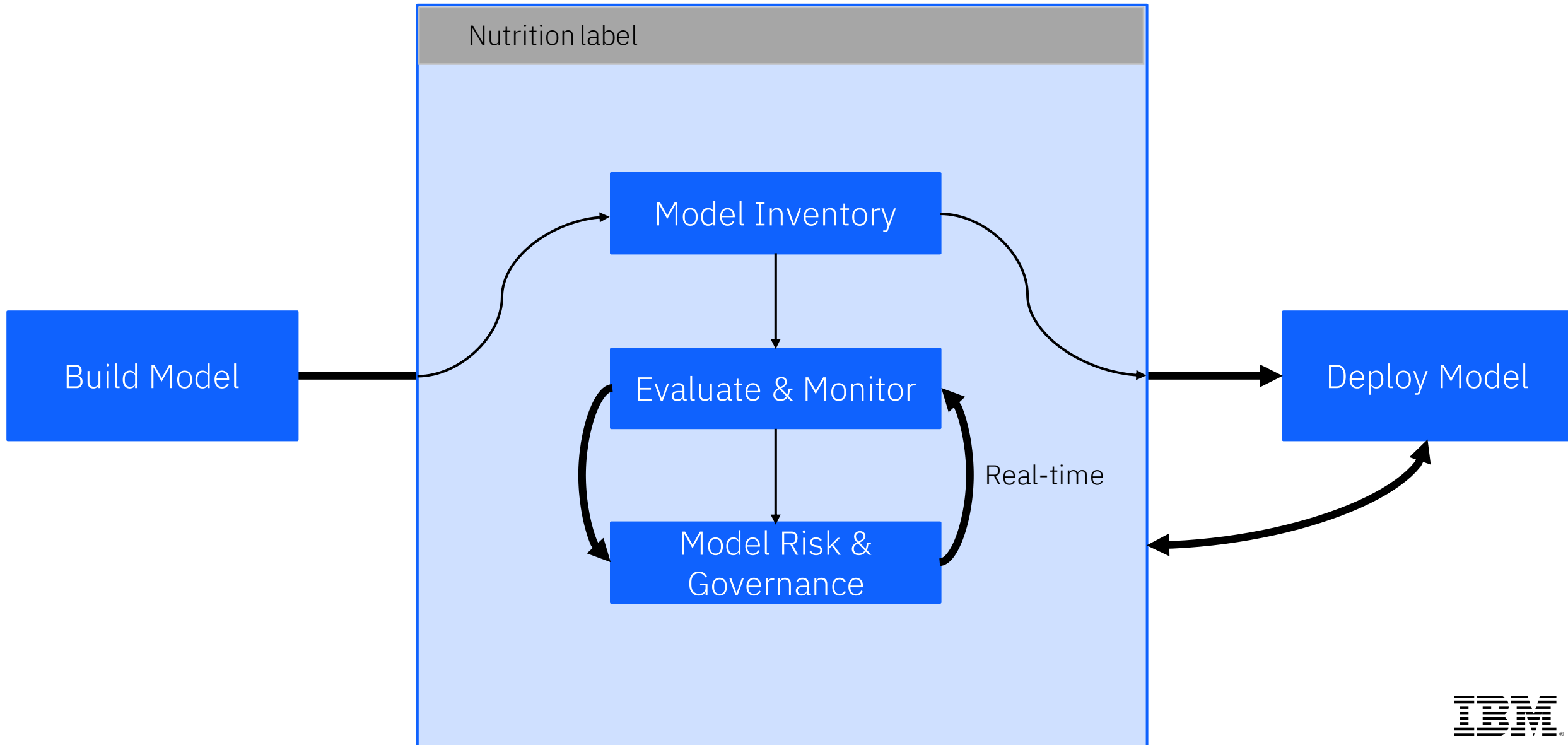
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Ongeopend ten minste houdbaar tot einde:

This is how we do it ↻

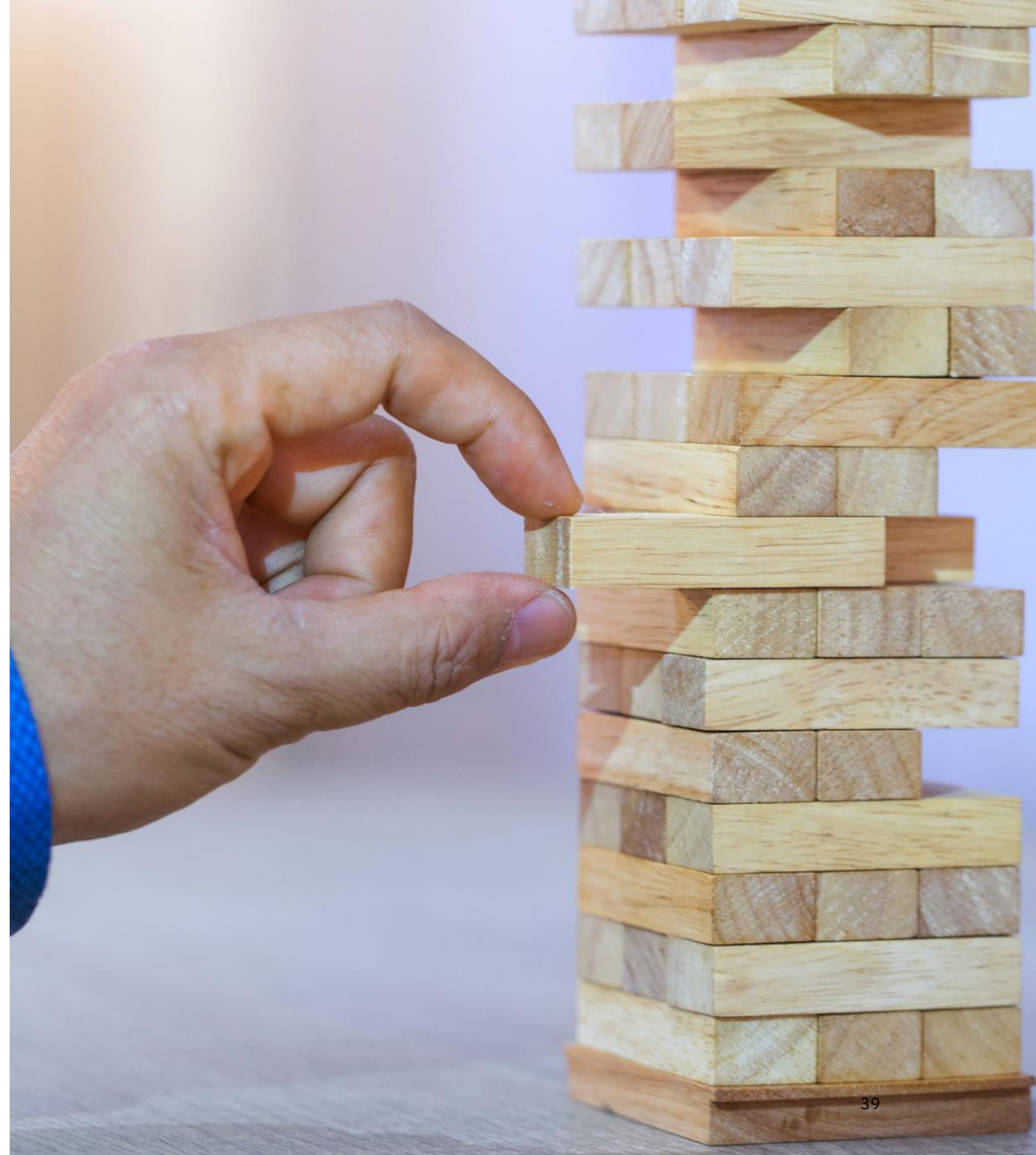


Why? EU AI Act!

Anticipate on regulations ahead ↻

EU has defined four categories of Risk – based on Use case

1. **Unacceptable Risk**
2. **High Risk**
3. **Limited Risk**
4. **Minimal Risk**



Importance of Governance ↷

Explained by way of the 1890 Heinz Glass Bottle

IBM's Recipe for Trustworthy AI



Food label
-Explainability

Tamper proof cap
-Robustness

Clear Glass Bottle
-Transparency

Pure Food and Drug
Act

-Explainability
-MRG (Regulatory
Compliance)

Sanitary Production
Factory Tour
-Transparency
- ModelOps

IBM watsonx

watsonx.governance



The first end-to-end enterprise governance available



The AI Alliance ↻

*Advance safe and responsible AI
rooted in open innovation*



Ana Paula De Jesus Assis • Following
Chair and General Manager EMEA at IBM
16h • 🌐

We need a bold bet on open innovation, collaboration and responsible **#AI** adoption to safely usher in this transformational technology into business and society.

That is why today's introduction of the AI Alliance is so meaningful: **IBM** and Meta are co-launching this community of 50+ global leaders across academia, research, science and industry determined to deploy an AI that is safer, more inclusive, and addresses specific risks. Very proud to see so many Europe, Middle East and Africa universities, developers and AI players among its founding members.

<https://thealliance.ai/>



IBM

Microsoft GenAI and Copilots

Presenter: Arash Nezami

Cloud Solution Architect Data & Analytics

Arash.Nezami@microsoft.com



The AI technology is here

Forbes

What ChatGPT And Generative AI Mean For Your Business?

COMPUTERWORLD

Microsoft's new Teams Premium tier integrates with OpenAI's GPT-3.5

MarketWatch

Microsoft's Nadella: AI is taking the computer age from 'the bicycle to the steam engine'

The Washington Post

Meet Windows Copilot, the AI coming to help you understand your PC

techradarpro

Microsoft Fabric looks to offer the next generation of AI analytics for your business

TC TechCrunch

Microsoft's Azure AI Studio lets developers build their own AI 'copilots'

VentureBeat

Microsoft announces generative AI-powered Copilot 365 to 'change work as we know it'

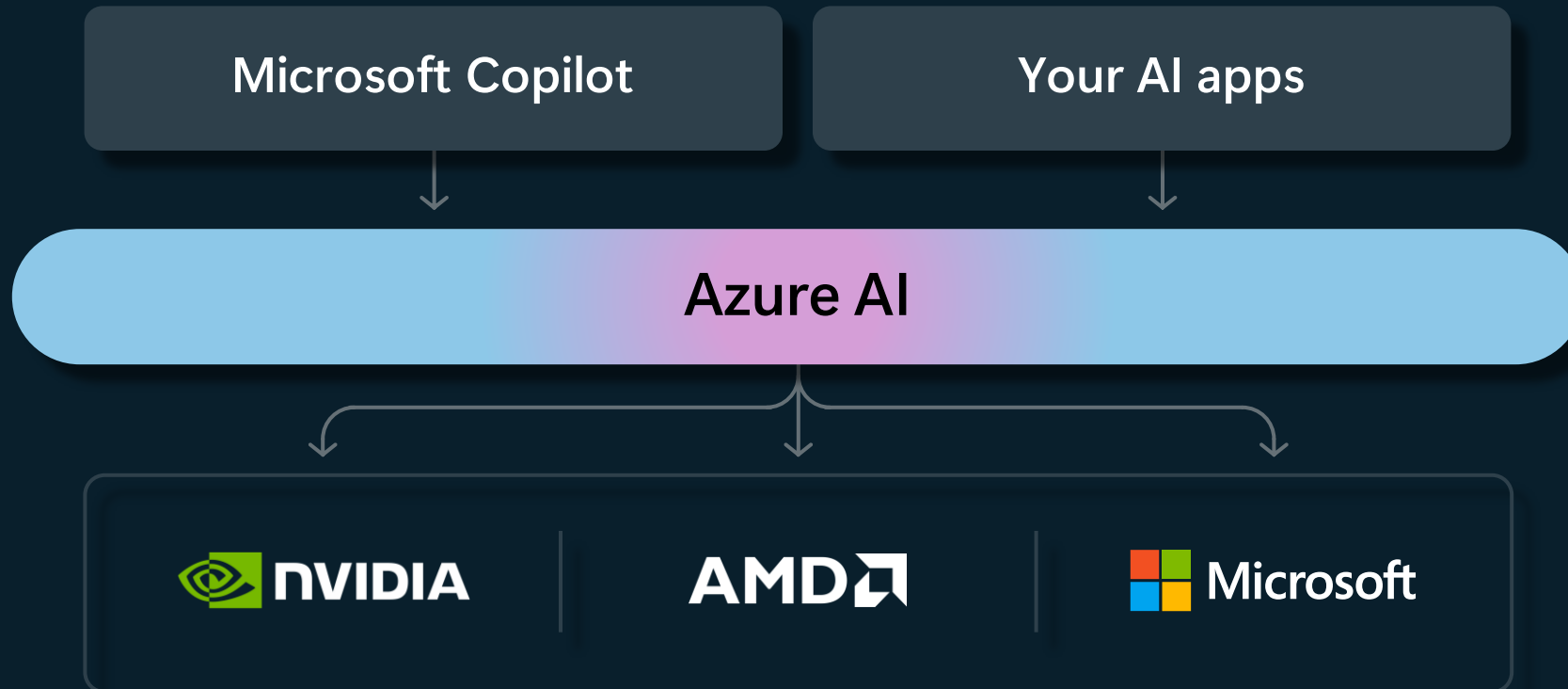
CNN BUSINESS.

Real estate agents say they can't imagine working without ChatGPT now

THE VERGE

Microsoft's AI-powered Copilot is getting plug-ins

Every AI workload benefits from silicon optimization



Microsoft

Copilots

M365 Copilot

Bing Edge

Word

Outlook

Excel

PowerPoint

Teams

Business Chat

Designer

Windows Copilot



Better Q&A and task completion

Better interaction with web content

Better reading and writing assistance

Better e-mail management

Better data analysis

Better presentations

Better Meetings

Better knowledge management

Better digital creations

Better interaction with OS, apps, and files

Copilots for Web

Copilots for Productivity

Copilot for Creativity

Copilot for Everyday

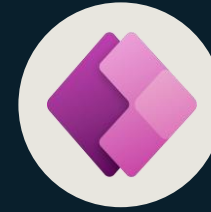
Dynamics Copilot

Fabric Copilot

Security Copilot

GitHub Copilot

Power Platform Copilot



Better sales and customer support

Better data analytics and business intelligence

Better threat detection, identification, and mitigation

Better code development

Better creation of apps, workflows, and agents

Copilots for Business

Copilots for Analytics

Copilot for Security

Copilot for Development

Copilot for Low/No Code Development

M365 Copilots

The screenshot shows the Microsoft Word interface with a document titled "Document1 - Saved". The Copilot sidebar is open, displaying a "Create content with Copilot" dialog box. The dialog has a text input field with the placeholder "Describe what you'd like to create, and Copilot will generate a draft" and a "Send" button. Above the input field are four buttons: "A job description for...", "10 ideas for...", "A press release for...", and "A project proposal about...". The status bar at the bottom indicates "Page 1 of 4", "256 words", and "English (U.S.)".

The screenshot shows the Microsoft Excel interface with a spreadsheet titled "Q1 Performance - Saved". The spreadsheet contains a table with 18 rows and 11 columns. The columns are: Country, Customer, Product, Discount Band, Units Sold, Manufacturing Price, Sale Price, Gross Sales, Discounts, Sales, and COGS. The data is as follows:

Country	Customer	Product	Discount Band	Units Sold	Manufacturing Price	Sale Price	Gross Sales	Discounts	Sales	COGS
France	VanArsdel	Biodegradable Cleaning Products	Low	4345	\$10	\$352	\$1,529,440	\$15,294	\$1,514,146	
USA	VanArsdel	Biodegradable Cleaning Products	Low	4245	\$10	\$352	\$1,494,240	\$14,942	\$1,479,298	
Australia	VanArsdel	Biodegradable Cleaning Products	None	4124	\$10	\$352	\$1,451,648	\$0	\$1,451,648	
Mexico	VanArsdel	Biodegradable Cleaning Products	Medium	3954	\$10	\$352	\$1,391,808	\$83,508	\$1,308,300	
France	Contoso Pharmaceuticals	Biodegradable Cleaning Products	Low	4952	\$10	\$127	\$628,904	\$6,289	\$622,615	
France	Contoso Pharmaceuticals	Recycled Can	Low	4903	\$5	\$127	\$622,681	\$6,227	\$616,454	
Canada	Proseware	Natural Personal Care Products	Low	1954	\$270	\$302	\$590,108	\$5,901	\$584,207	
Canada	Proseware	Biodegradable Cleaning Products	High	1990	\$220	\$302	\$600,980	\$84,137	\$516,843	
USA	VanArsdel	Compostable Food Packaging	Low	1254	\$3	\$380	\$476,520	\$4,765	\$471,755	
USA	Proseware	Natural Personal Care Products	Medium	1465	\$224	\$302	\$442,430	\$26,546	\$415,884	
USA	Proseware	Sustainable Snack Packaging	Medium	1410	\$120	\$302	\$425,820	\$25,549	\$400,271	
Australia	Proseware	Natural Personal Care Products	Medium	1369	\$224	\$302	\$413,438	\$24,806	\$388,632	
USA	VanArsdel	Compostable Food Packaging	Medium	1052	\$3	\$380	\$399,760	\$23,986	\$375,774	
Canada	VanArsdel	Compostable Food Packaging	Low	980	\$312	\$380	\$372,400	\$3,724	\$368,676	
Australia	Proseware	Sustainable Snack Packaging	Medium	1298	\$120	\$302	\$391,996	\$23,520	\$368,476	
Australia	VanArsdel	Compostable Food Packaging	None	954	\$3	\$380	\$362,520	\$0	\$362,520	
Canada	Contoso Pharmaceuticals	Biodegradable Cleaning Products	Low	2785	\$110	\$127	\$353,695	\$3,537	\$350,158	

The screenshot shows the Microsoft PowerPoint interface with a slide titled "VanArsdel_Proposal - Saved". The slide content area is mostly blank, with a large text box containing the placeholder text "Click to add title" and "Click to add subtitle". The Copilot sidebar is open, and the status bar at the bottom indicates "Slide 1 of 1" and "English (U.S.)".

The screenshot shows the Microsoft Teams interface with a chat window titled "Copilot Chat". The chat history shows several messages from team members. The Copilot chat window is open, displaying a message from Copilot: "Good morning Kat! Here are some ideas that might help you get started: Get a summary of everything you need to catch up on, including meetings; Find and use info that's buried in documents or lost in conversations; Create content with all of it—drawing from your files, conversations, events, topics, and more. As your Copilot, I'm here to assist you but I do make mistakes, so sources are provided for your review when possible." The input field at the bottom contains the text "What's going on with EraNext? Summarize the Green Builder's summit doc".

Microsoft copilot/Bing chat:

describe this image, what is hapening there?



- The type of objects involved are a **train** and a **police car**. The train is blue and white and appears to be a passenger train. The police car is white and blue with a checkered pattern on the side.
- The type of incident is a **collision** between the train and the police car. It is not clear what caused the collision, but it seems like a serious accident.
- The level of damage is **high** for the police car and **low** for the train. The police car appears to have been pushed off the tracks and is damaged. There is a piece of the car's bumper lying on the ground in the foreground. The train does not seem to have any visible damage, but it may have some internal damage.
- The time of the day is **daytime**. The image is bright and clear, and there are no shadows or lights indicating a different time of the day.
- Any additional descriptions are that there are several **police officers** standing around the car. They are wearing uniforms and hats, and some of them are holding radios or clipboards. The background consists of **power lines** and a **fence**. The power lines are running parallel to the train tracks, and the fence is separating the tracks from a grassy area.

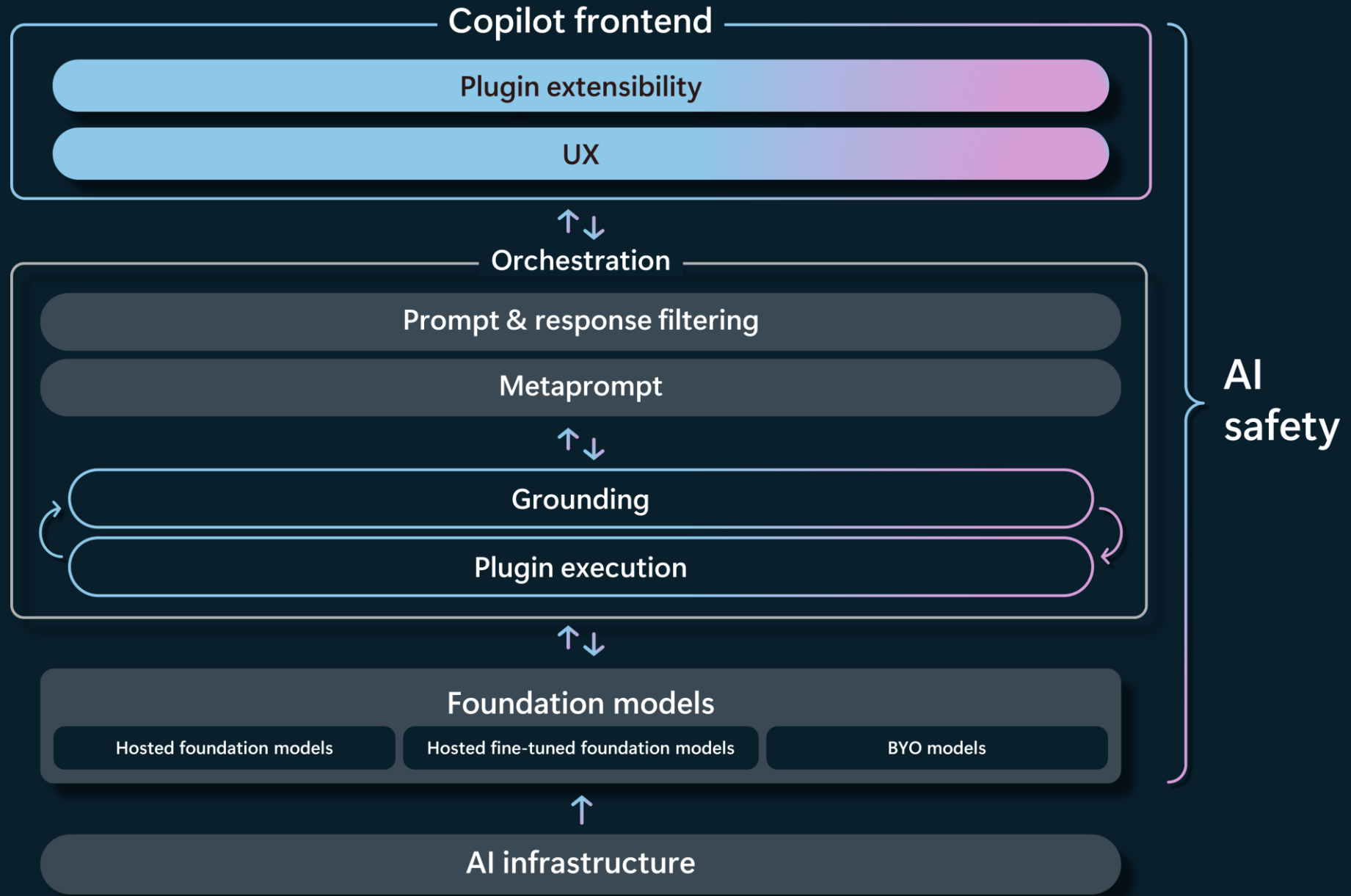
I can generate a JSON document based on the image description. Here is the JSON document:

JSON

AI-generated code. Review and use carefully. [More info on FAQ.](#)

```
{
  "type_of_objects_involved": ["train", "police car"],
  "type_of_incident": "collision",
  "level_of_damage": {
    "train": "low",
    "police car": "high"
  },
  "time_of_day": "daytime",
  "additional_descriptions": {
    "police officers": "several",
```

Anatomy of a Copilot



Microsoft



Developers

Announcing

GitHub Copilot

Generally
available
Copilot Chat

New
Pull requests

New
Copilot in
GitHub Mobile

New
Copilot
Enterprise

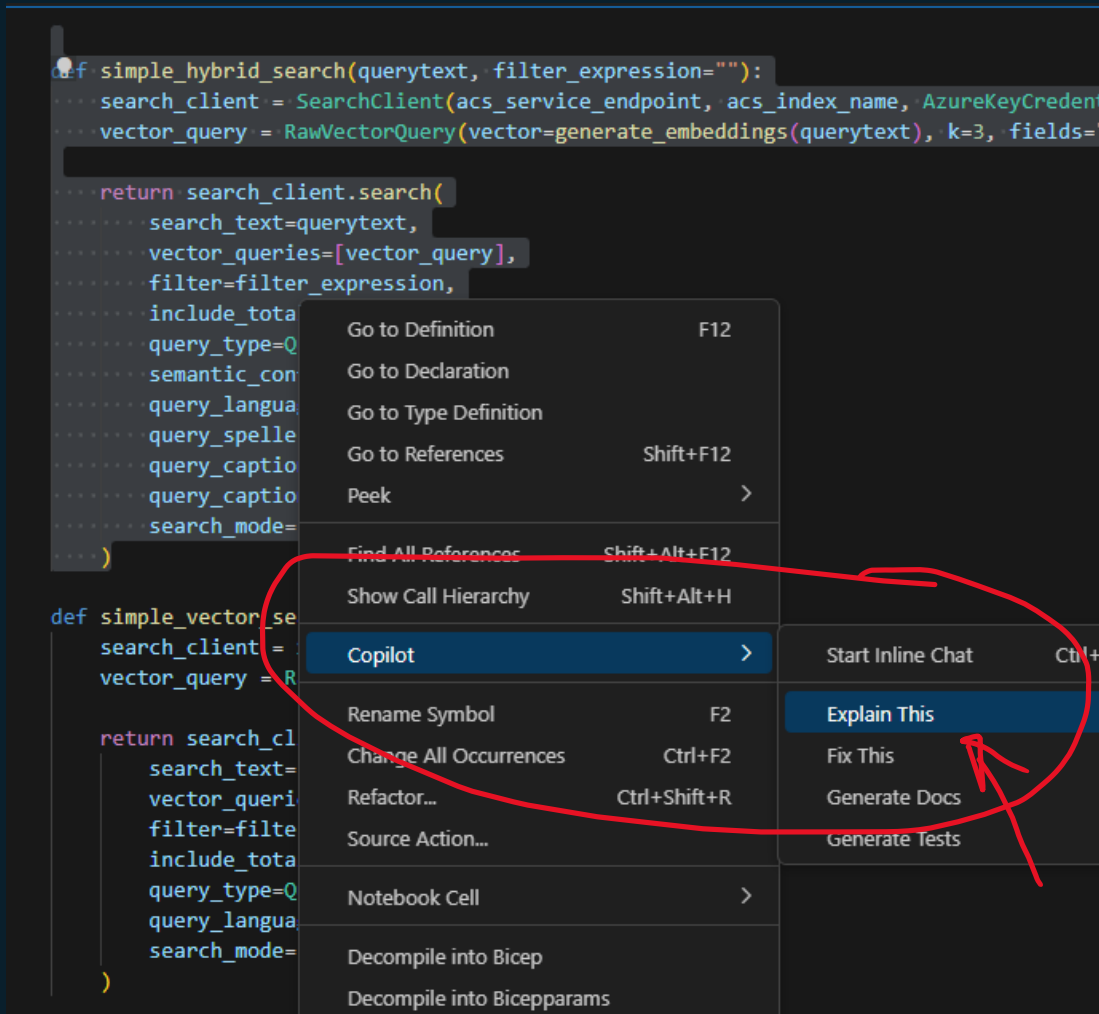
Copilot as a assistant to generate code and explain existing code

```
def simple_hybrid_search(querytext, filter_expression=""):
    search_client = SearchClient(acs_service_endpoint, acs_index_name, AzureKeyCredential(acs_query_key))
    vector_query = RawVectorQuery(vector=generate_embeddings(querytext), k=3, fields="texts_vectorized")

    return search_client.search(
        search_text=querytext,
        vector_queries=[vector_query],
        filter=filter_expression,
        include_total_count=True,
        query_type=QueryType.SEMANTIC,
        semantic_configuration_name="semantic_config",
        query_language=QueryLanguage.EN_US,
        query_speller="lexicon",
        query_captions_highlight=True,
        query_captions="extractive",
        search_mode="all"
    )

def simple_vector_search(querytext, acs_service_endpoint, acs_index_name, acs_query_key):
    search_client = SearchClient(acs_service_endpoint, acs_index_name, AzureKeyCredential(acs_query_key))
    vector_query = RawVectorQuery(vector=generate_embeddings(querytext), k=3, fields="texts_vectorized")

    return search_client.search(
        search_text=querytext,
        vector_queries=[vector_query],
        filter=filter_expression,
        include_total_count=True,
        query_type=QueryType.SEMANTIC,
        semantic_configuration_name="semantic_config",
        query_language=QueryLanguage.EN_US,
        query_speller="lexicon",
        query_captions_highlight=True,
        query_captions="extractive",
        search_mode="all"
    )
```



- `search_client = SearchClient(acs_service_endpoint, acs_index_name, AzureKeyCredential(acs_query_key))`: This line creates an instance of `SearchClient` using the Azure Cognitive Search service endpoint, index name, and query key. This client will be used to perform the search.
- `vector_query = RawVectorQuery(vector=generate_embeddings(querytext), k=3, fields="texts_vectorized")`: This line creates a `RawVectorQuery` object. The `generate_embeddings` function is called with the query text to generate a vector representation of the query. The `k` parameter is set to 3, which means the search will return the top 3 results. The `fields` parameter is set to "texts_vectorized", which means the search will be performed on the "texts_vectorized" field in the index.
- The `search_client.search()` method is then called with several parameters to perform the hybrid search. The `search_text` parameter is the query text for the full-text search. The `vector_queries` parameter is a list of vector queries, which in this case contains the `vector_query` we created earlier. The `filter` parameter is a filter expression to apply to the search query. The `include_total_count` parameter is set to `True`, which means the total count of results will be included in the response. The `query_type` parameter is set to `QueryType.SEMANTIC`, which means the search will use semantic ranking. The `semantic_configuration_name` parameter is set to "semantic_config", which is the name of the semantic configuration to use for the search. The `query_language` parameter is set to `QueryLanguage.EN_US`, which means the query language is English (United States). The `query_speller` parameter is set to "lexicon", which means a lexicon-based speller will be used to correct individual search query terms. The `query_captions_highlight` parameter is set to "true", which means highlighting will be enabled for the captions extracted from key passages in the highest ranked documents. The `query_captions` parameter is set to "extractive", which means the captions will be extracted from key passages in the highest ranked documents. The `search_mode` parameter is set to "all", which means all search terms must be matched in order to count the document as a match.

Microsoft



OpenAI

aka.ms/OpenAI



ChatGPT

Runs on Azure Cosmos DB & AI Search

Runs on Azure Kubernetes Service

Developed using GitHub

Fastest

growing consumer
product in history





"ChatGPT" (GPT-3.5 / GPT-4)

Text to Text

Prompt:

Write a tagline for an ice cream shop.

Response:

We serve up smiles with every scoop!

DALL-E 2 / 3

Text to Image

Prompt: A white Siamese cat

Response:



GPT-3.5V / GPT-4V

Multimodal

Prompt: Explain this meme



Response: This meme is a joke that combines two unrelated things: pictures of the earth from space shown as chicken nuggets

Announcing

Latest Azure OpenAI models

Preview
GPT-4 Turbo

Preview
DALL·E-3

Preview
GPT-4 Turbo
with Vision

aka.ms/AzureOpenAIService

Azure OpenAI Service

GPT-4 Turbo with Vision

Enable multimodal
GenAI with video,
image and text

Unlock new scenarios
with integrated
Azure AI Vision support

Augment RAG pattern
with images and
Azure AI Search

aka.ms/AzureOpenAIService

Announcing

Fine-tune your Azure OpenAI models

Fine-tuning for
GPT-3.5 Turbo

Fine-tuning
for GPT-4

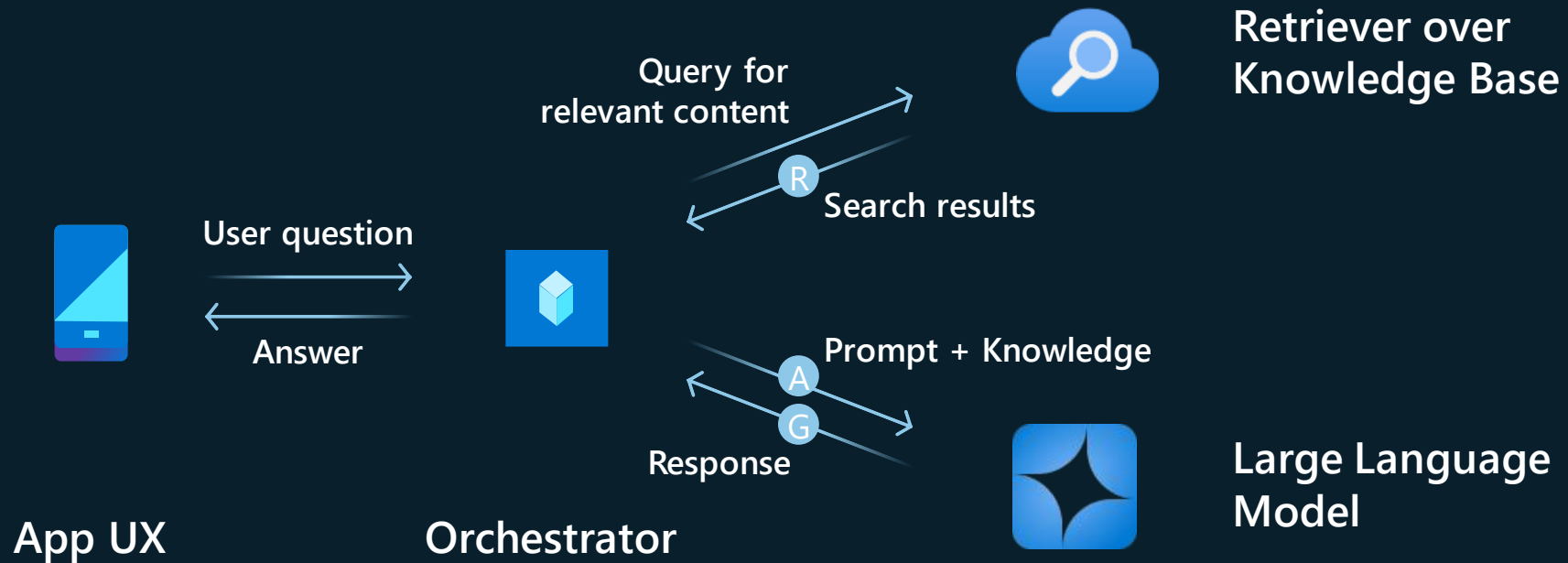
Generally available

Vector Search in Azure AI Search

Revolutionary information retrieval
for GenAI applications

Retrieval Augmented Generation (RAG)

Anatomy of the workflow



Microsoft



Open source

Preview



Azure AI Studio

Unified
platform

Hybrid and
semantic search

Full development
lifecycle

PromptFlow

Safe and
responsible AI

[AI.Azure.com](https://ai.azure.com)

New

Model catalog

Stable
Diffusion

Code Llama

Mistral 7B

NVIDIA
Nemotron-3 8B

aka.ms/OpenModels

Announcing

Model as a Service with Azure AI

Meta's
Llama 2

Mistral's
premium models

G42's Jais

Cohere's
Command

Ready to
use APIs

Hosted
finetuning

Integrated with
leading LLM tools

aka.ms/ModelsAsAService



Copilot in Microsoft Fabric

The unified data platform for the era of AI



Data
Factory



Synapse Data
Engineering



Synapse Data
Science



Synapse Data
Warehousing



Synapse Real
Time Analytics



Power BI



Data
Activator



Copilot in Microsoft Fabric



OneLake



Purview

Unified
architecture

Unified
experience

Unified
governance

Unified
business model



Copilot in Microsoft Fabric at Ignite 2023

The unified data platform for the era of AI



Copilot in Microsoft Fabric



Power BI

Quickly create report pages, natural language summaries, and generate synonyms.



Synapse Data
Science

Quickly generate code in Notebooks to help work with Lakehouse data and get insights.



Data
Factory

Quickly clean and move data using Dataflows and Data Pipelines.

More experience shipping monthly



Demo

Get started creating report pages with Copilot for Power BI

1. Understand your dataset quickly
2. Get suggested topics for report pages
3. Create pages for high-level topics
4. Use our editing tools to customize your report

Power BI Copilot Demos

Search

Filter by keyword Filter

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Included in app
Hotel Customer Retention	Report	Copilot Demos	5/10/23, 5:54:33 PM	—	—	Non-Business	<input type="checkbox"/> No
Hotel Customer Retention	Semantic model	Copilot Demos	5/10/23, 5:54:33 PM	N/A	—	Non-Business	<input type="checkbox"/>
Hotel Demo Clean Model	Semantic model	Copilot Demos	7/17/23, 10:14:52 AM	N/A	—	Non-Business	<input type="checkbox"/>
Hotel Demo Clean Model 2	Report	Copilot Demos	10/31/23, 12:40:28 AM	—	—	Non-Business	<input checked="" type="checkbox"/> No
Hotel Demo Clean Model 2	Semantic model	Copilot Demos	10/31/23, 12:40:28 AM	N/A	—	Non-Business	<input type="checkbox"/>
Hotel Demo Clean Model 2.pbix	Dashboard	Copilot Demos	—	—	—	—	<input type="checkbox"/> No
Hotel Demo Created 10.18	Report	Copilot Demos	7/17/23, 10:14:52 AM	—	—	Non-Business	<input type="checkbox"/> No
King County Food Safety	Report	Copilot Demos	6/9/23, 8:55:25 AM	—	—	Confidential\Micro...	<input type="checkbox"/> No
Marketing Impact	Report	Copilot Demos	7/17/23, 10:14:52 AM	—	—	Non-Business	<input type="checkbox"/> No
Table	Semantic model	Copilot Demos	5/19/23, 11:50:07 AM	N/A	—	Confidential\Micro...	<input type="checkbox"/>
Taylor Swift Analysis by Copilot	Report	Copilot Demos	10/23/23, 9:31:54 AM	—	—	Confidential\Micro...	<input type="checkbox"/> No
Taylor Swift Data	Report	Copilot Demos	10/20/23, 6:05:23 PM	—	—	Confidential\Micro...	<input type="checkbox"/> No
Taylor Swift Data	Semantic model	Copilot Demos	10/20/23, 6:05:23 PM	N/A	—	Confidential\Micro...	<input type="checkbox"/>
Taylor Swift Data.pbix	Dashboard	Copilot Demos	—	—	—	—	<input type="checkbox"/> No

4°C Mostly sunny

Copilot Explore this data Data/drill Text box Shapes Buttons Visual interactions Refresh Save

MANDT All

Filters Visualizations

Data

Search

- bsad
- bsid
- vbap
- vbrk
- vbrp

Copilot Preview

What to add more detail to your request:

- Create a page that shows...
- Suggest content for this report

Suggest content for this report

OK, here's a suggested outline for your report. Select any page topic to view details and start creating pages.

- Sales Performance by Customer
- Payment Terms and Cash Flow
- Sales Order Fulfillment
- Tax and Rebate Analysis

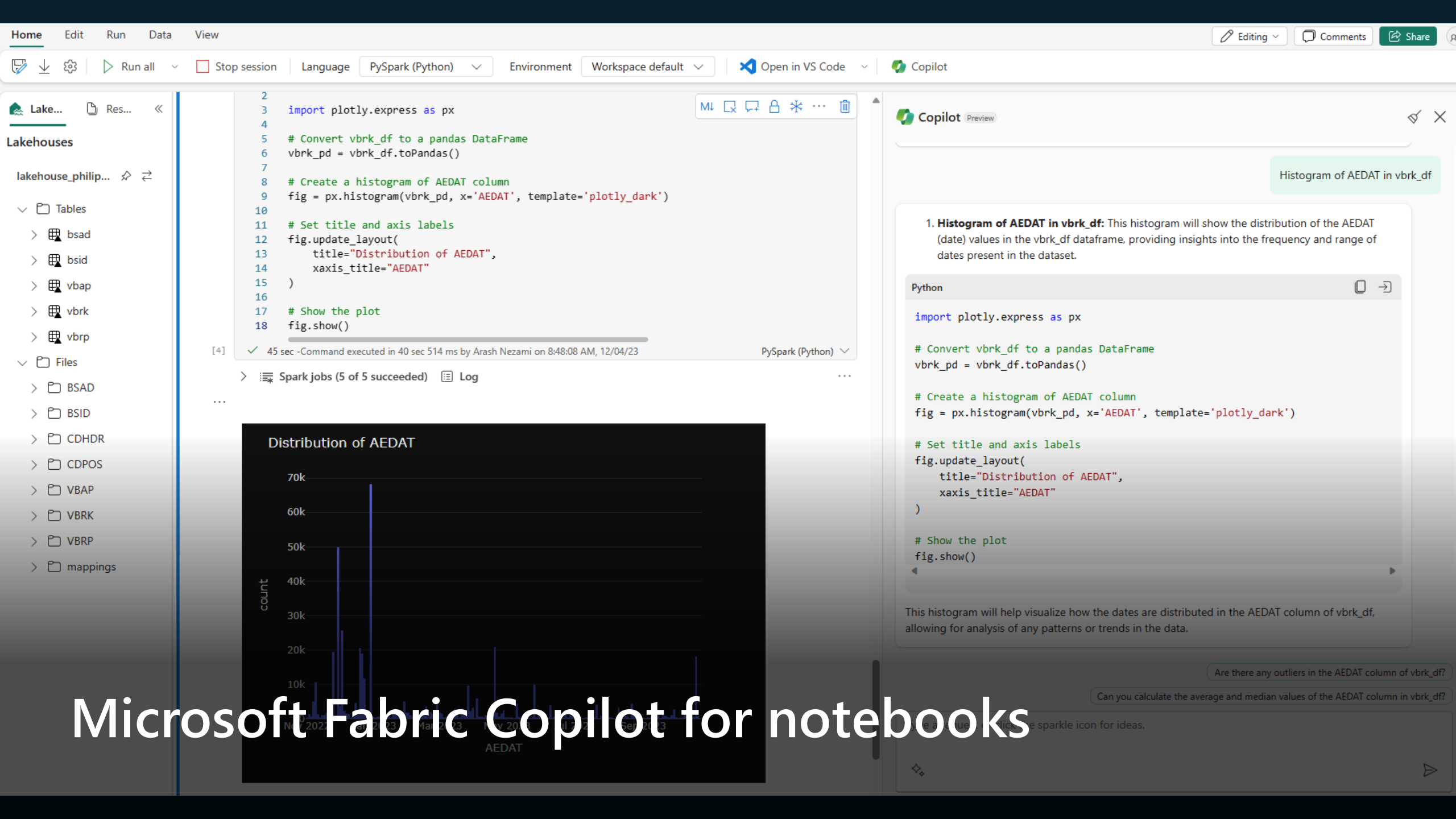
Create a page to analyze the sales revenue, quantity, and margin by customer, sales document, and billing date using data from vbrp, vbrk, and bsad tables.

Created a Sales Revenue Analysis page.

View the report you want or select the prompt guide for ideas

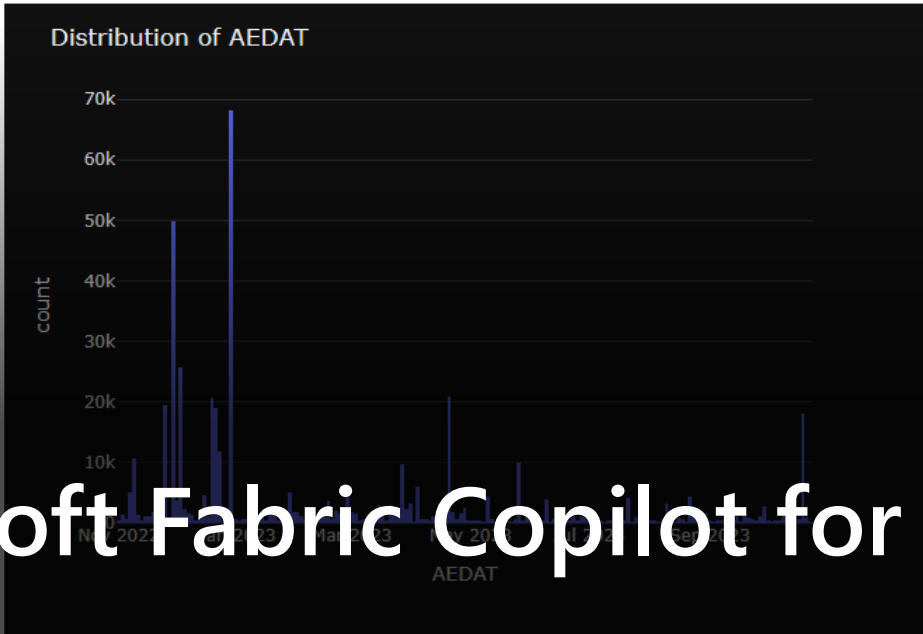
MANDT	POSNR
500	000001
500	000002
500	000003
500	000004
500	000005
500	000006
500	000007
500	000008
500	000009
500	000010
500	000011
500	000012
500	000013

Copilot in PowerBI on top of SAP tables



```
2
3 import plotly.express as px
4
5 # Convert vbrk_df to a pandas DataFrame
6 vbrk_pd = vbrk_df.toPandas()
7
8 # Create a histogram of AEDAT column
9 fig = px.histogram(vbrk_pd, x='AEDAT', template='plotly_dark')
10
11 # Set title and axis labels
12 fig.update_layout(
13     title="Distribution of AEDAT",
14     xaxis_title="AEDAT"
15 )
16
17 # Show the plot
18 fig.show()
```

[4] ✓ 45 sec - Command executed in 40 sec 514 ms by Arash Nezami on 8:48:08 AM, 12/04/23
PySpark (Python) ▾
Spark jobs (5 of 5 succeeded) Log



Copilot Preview

Histogram of AEDAT in vbrk_df

1. **Histogram of AEDAT in vbrk_df:** This histogram will show the distribution of the AEDAT (date) values in the vbrk_df dataframe, providing insights into the frequency and range of dates present in the dataset.

```
Python
import plotly.express as px

# Convert vbrk_df to a pandas DataFrame
vbrk_pd = vbrk_df.toPandas()

# Create a histogram of AEDAT column
fig = px.histogram(vbrk_pd, x='AEDAT', template='plotly_dark')

# Set title and axis labels
fig.update_layout(
    title="Distribution of AEDAT",
    xaxis_title="AEDAT"
)

# Show the plot
fig.show()
```

This histogram will help visualize how the dates are distributed in the AEDAT column of vbrk_df, allowing for analysis of any patterns or trends in the data.

Microsoft Fabric Copilot for notebooks

Resources

Azure OpenAI - aka.ms/AzureOpenAIService

Microsoft Copilots - Copilot for Development (GitHub Copilot) - aka.ms/GitHubCopilot,

Power Platform Copilot - aka.ms/PowerPlatformCopilot

Microsoft Fabric Copilot - aka.ms/FabricCopilot

Azure AI Studio - AI.Azure.com





Thank you.

BEDANKT VOOR JE AANDACHT!

Volg van het FME Platform AI for Industry ook een AI Deep Dive sessie over de toepassing van ChatGPT en andere Large Language Models

Meer informatie:

- Datacation – Ralf Zoetekouw r.zoetekouw@datacation.nl & Job Oosterkamp j.oosterkamp@datacation.nl
- IBM – Joost Vos Joost.Vos@ibm.com
- Microsoft – Arash Nezami Arash.Nezami@microsoft.com

FME AI FOR INDUSTRY JAAREVENT



**Bedankt voor
je aandacht!**