

The Field

L'impact d'OpenAI sur les enjeux actuels et futurs de l'Intelligence Artificielle



Philippe Limantour

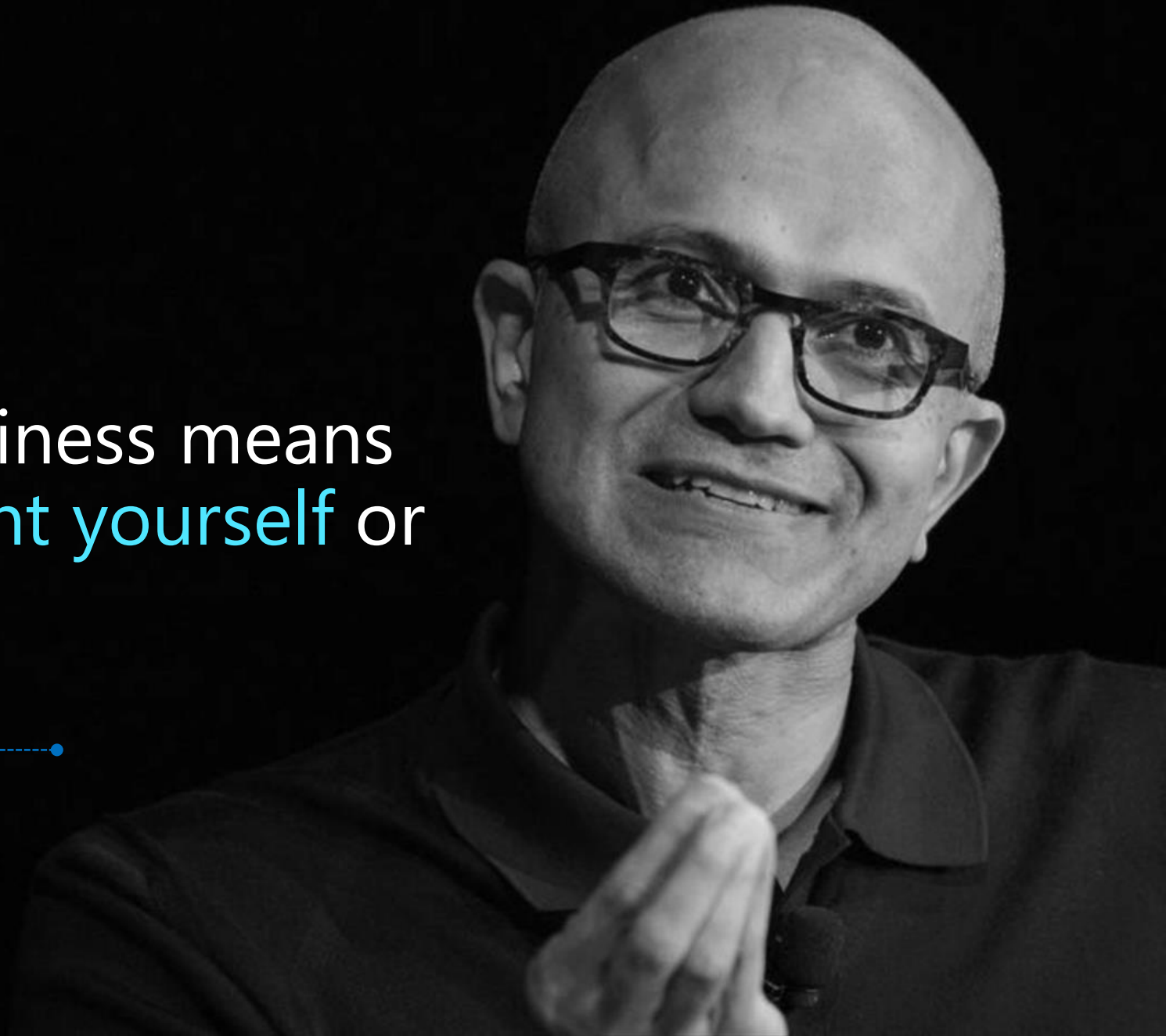
Chief Technology & CyberSecurity Officer

Exco member - Microsoft France

March 2023

“Longevity in this business means being able to **reinvent yourself** or **invent the future**”

•----- Satya Nadella -----•



The AI Journey

Artificial Intelligence

Machine Learning

Deep Learning



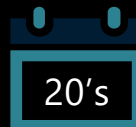
Artificial Intelligence

the field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence



Machine Learning

subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions



Deep Learning

a machine learning technique in which layers of neural networks are used to process data and make decisions

HyperScale Cloud Innovation



Datacenter Generations 1989-2022

<p>GENERATION 1</p> <p>Colocation</p> <p>2.0+ PUE</p>	<p>GENERATION 2</p> <p>Density</p> <p>1.5 – 1.8 PUE</p>	<p>GENERATION 3</p> <p>Containment</p> <p>1.4 – 1.6 PUE</p>
<p>GENERATION 4</p> <p>Modular</p> <p>1.1 – 1.3 PUE</p>	<p>GENERATION 5</p> <p>Hyper-scale</p> <p>1.17 – 1.25 PUE</p>	<p>GENERATION 6</p> <p>Scalable form factor</p> <p>1.17 – 1.19 PUE</p>
<p>GENERATION 7</p> <p>Ballard</p> <p>1.15 – 1.18 design PUE</p>	<p>GENERATION 8</p> <p>Rapid-deploy datacenter</p> <p>1.15 – 1.18 design PUE</p>	<p>GENERATION vNEXT</p> <p>Project Natick</p> <p>1.07 PUE or less</p>

Power Usage Effectiveness (PUE)

Sustainability Goals by 2030

Carbon negative by 2030

Water positive by 2030

Zero waste by 2030

Build the Planetary Computer

Over Last Decade

Workloads increased

8x

and traffic

12x

...yet datacenter energy use remained constant



The carbon benefits of cloud computing

A study on the Microsoft Cloud

in partnership with 

IT for Green

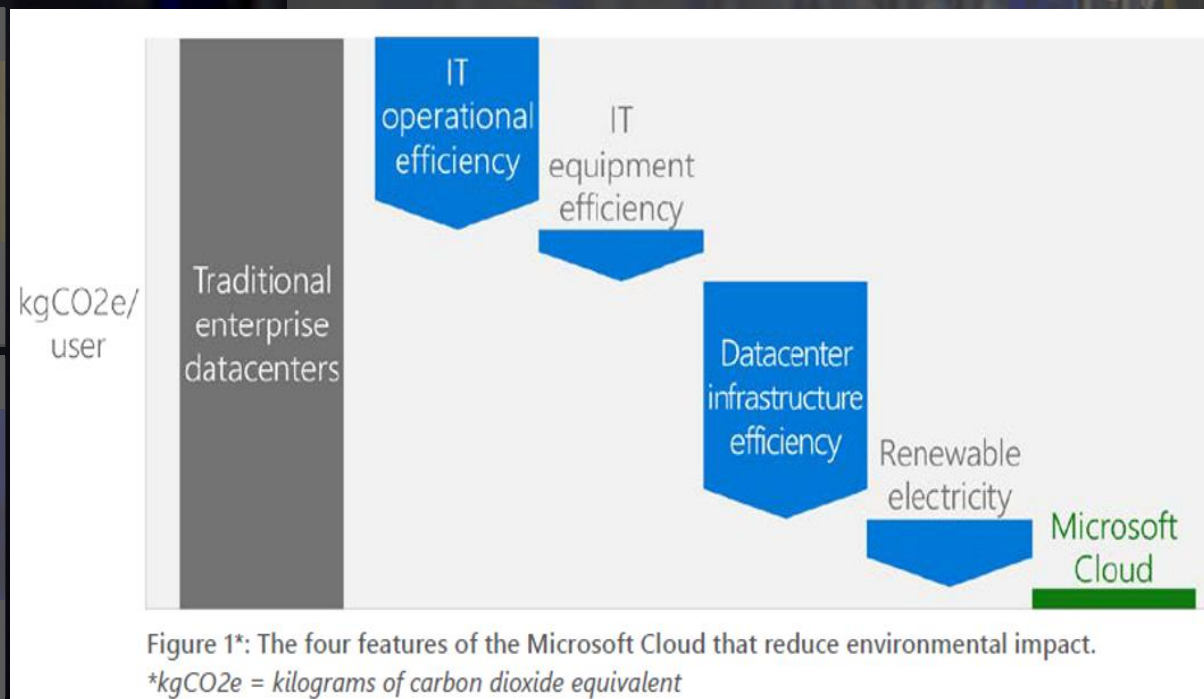
Reduce the environmental footprint of the entire organization through digital technology

Green IT

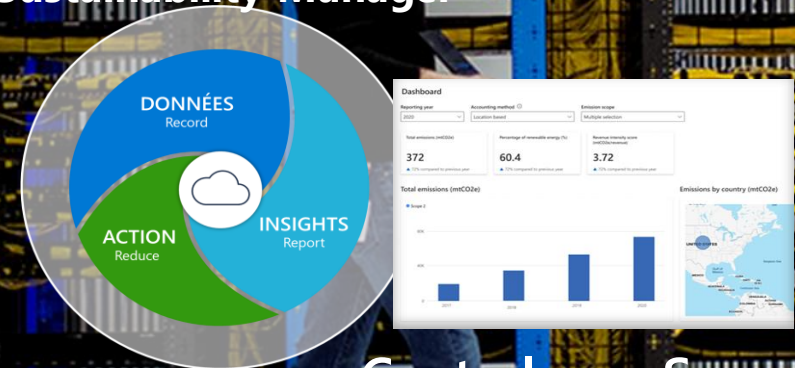
Reducing the environmental footprint of digital technology

Up to **93%** More energy efficient than onPrem

Up to **98%** More Co2 efficient than onPrem



Microsoft Sustainability Manager



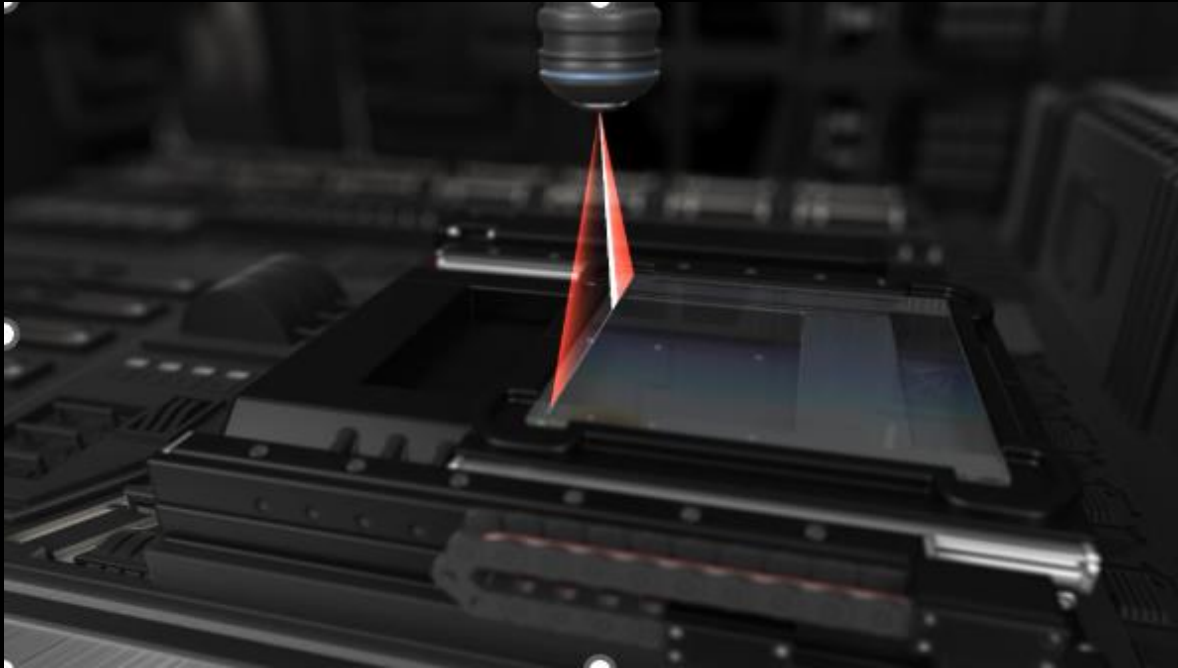
Control your Scope 3

- Visualize greenhouse gas emissions linked to your use of Microsoft Cloud Services
- Discover the root cause of changes in emissions
- Measure the impact on your carbon footprint
- Calculate how to further reduce emissions

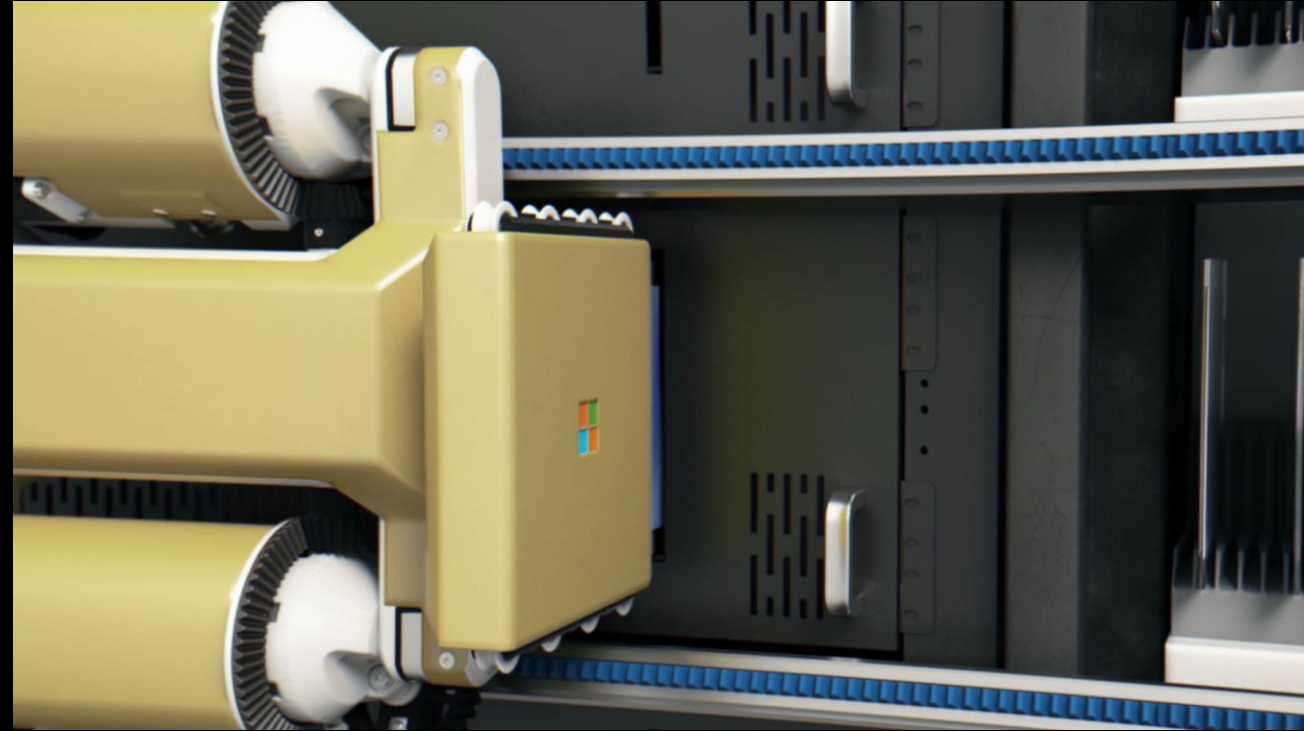


Storage Innovation

Storing data on glass for long-term archiving



High speed writing in glass



Microsoft Silica Library Shuttles

HyperScale Cloud allows to do *More Innovation* with *Less Complexity*

Rising opportunities and threats require to **listen and answer to customers** through **Agility, Innovation and Industrialization**



Get more **velocity**, more **productivity**, and more **agility** to focus on what matters most by maximizing the value of your investments with **technology that does more.**

Better Economics of Scale per Unit of IT (~10x)

Optimize cost-to-serve



Create more value with less complexity, more standardization and automation amid talent scarcity and macroeconomic challenges with a more efficient carbon and energy footprint

Better Economics of Compliance per Unit of IT (~100x)

Operate confidently



Prioritize security, data privacy, resilience, and performance across my enterprise with zero-trust

Increased Speed of Innovation (~1000x)

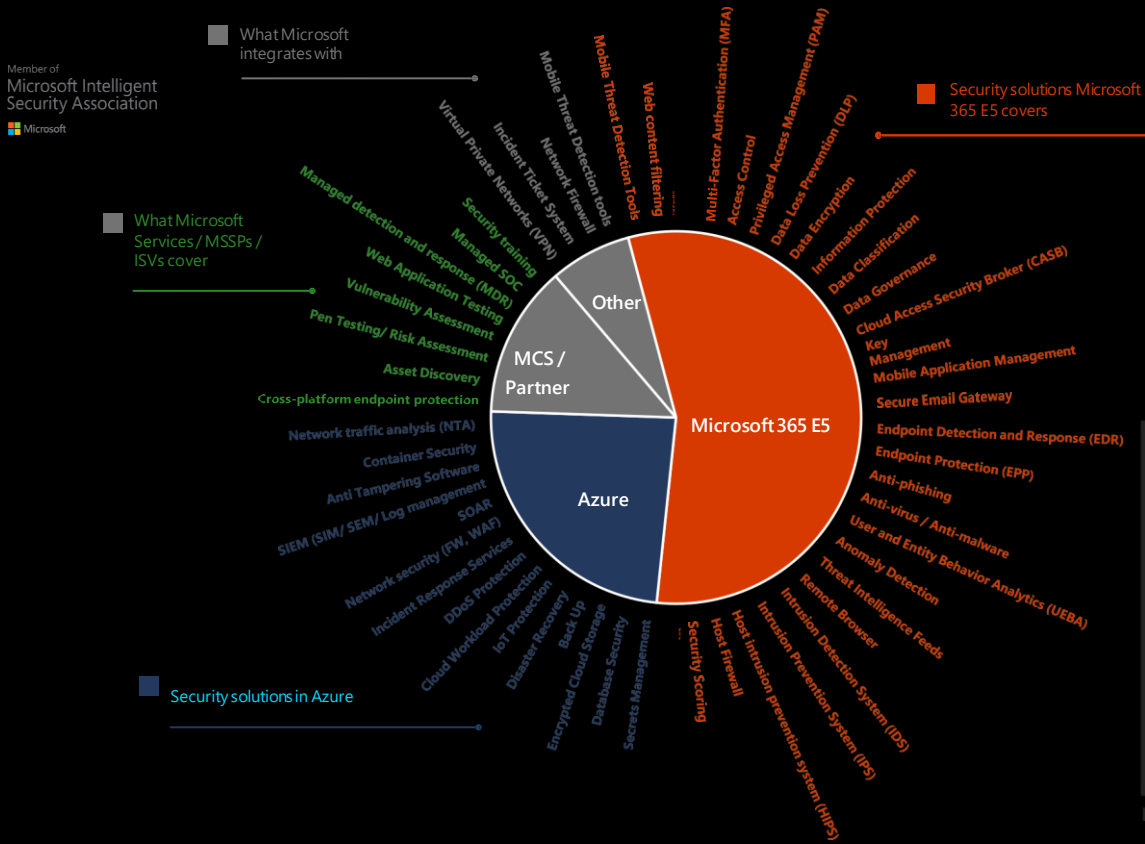
Empower to Innovate faster



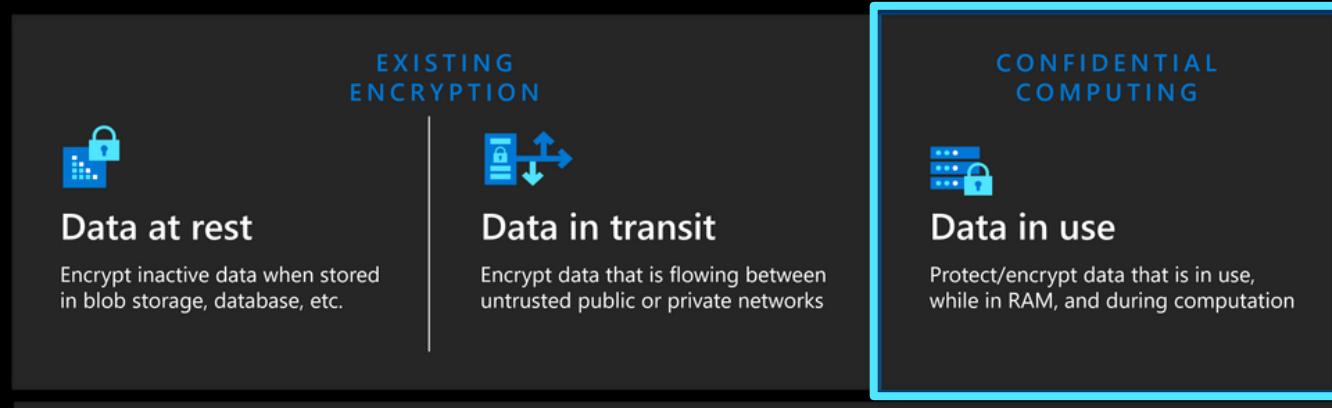
Infuse intelligence to differentiate and shorten time to market to compete better by unblocking my employees

in a multi-environment

CyberSecurity



Confidential Computing



Analyzing 63 trillion daily security signals

Unlocking AI-based multi-party services

The AI technology is here

Forbes

FORBES > INNOVATION > ENTERPRISE & CLOUD

What ChatGPT And Generative AI Mean For Your Business

CNN BUSINESS

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

VentureBeat

Microsoft gives businesses a GPT boost in Teams and Viva Sales

USA TODAY

New Bing with ChatGPT brings the power of AI to Microsoft's signature search engine

COMPUTERWORLD UNITED STATES

NEWS

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

Weeks after extending its multibillion dollar partnership with OpenAI, Microsoft has announced that new Teams AI capabilities will be underpinned by OpenAI's GPT-3.5 natural language model.

The Verge

MICROSOFT / TECH / ARTIFICIAL INTELLIGENCE

Microsoft launches Azure OpenAI service with ChatGPT coming soon / ChatGPT is coming to this Azure service soon, as businesses get to use new AI models in their own apps.

And the
impact is real

CARmax

Carmax estimates an individual would take 11 years to do what Azure OpenAI Service was able to do in days

PROGRESSIVE

Progressive is saving \$10M annually with AI-powered chatbots

EY Building a better
working world

EY is saving 250K hours of manual audit work per client using intelligent document automation

Why now? Generative AI

Artificial Intelligence

Machine Learning

Deep Learning

Generative AI



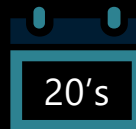
Artificial Intelligence

the field of computer science that seeks to create intelligent machines that can replicate or exceed human intelligence



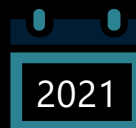
Machine Learning

subset of AI that enables machines to learn from existing data and improve upon that data to make decisions or predictions



Deep Learning

a machine learning technique in which layers of neural networks are used to process data and make decisions



Generative AI

Create new written, visual, and auditory content given prompts or existing data.

Artificial Intelligence
Innovation



Azure AI

Applications



Partner Solutions

Application Platform

AI Builder



Power BI



Power Apps



Power Automate



Power Virtual Agents

Scenario-Based Services

Applied AI Services



Bot Service



Cognitive Search



Form Recognizer



Video Indexer



Metrics Advisor



Immersive Reader

Customizable AI Models

Cognitive Services



Vision



Speech



Language



Decision



OpenAI Service

ML Platform



Azure Machine Learning



Ensure that artificial general intelligence (AGI) benefits humanity.



Empower every person and organization on the planet to achieve more

Azure OpenAI Services

GPT-3

Codex

DALL·E

ChatGPT

GPT-4 preview



Deployed as part of your Azure subscription, secured by you, accessible only by you, and linked to your data sets and applications.



Large pre-trained AI models to unlock new scenarios.



Customized artificial intelligence models tailored to your data and hyperparameters.



Integrated responsible AI to detect and mitigate harmful uses.



Enterprise-level security with role-based access control (RBAC) and private networks.



Azure confidential computing enclaves to protect your data, custom designs and intellectual property.

GPT is a game changer allowing to converse in any language

GPT is a large generative language model

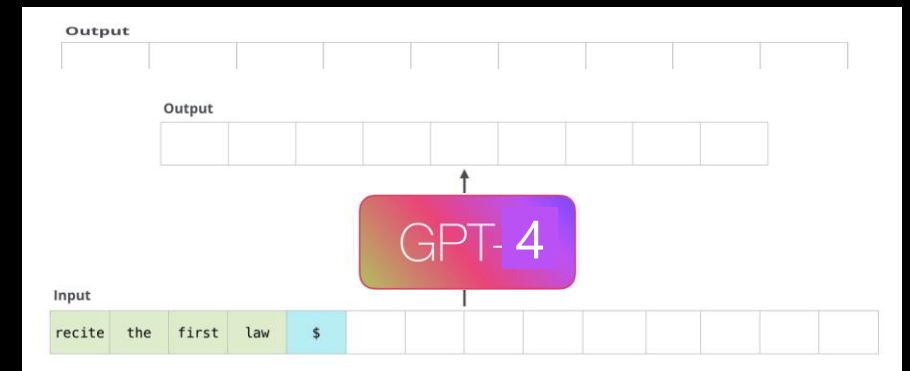
It works by predicting the next word, given a sequence of words and can do so for Natural Language Processing tasks it hasn't been trained on

After seeing just a few examples, it reaches state-of-the-art levels in some benchmarks such as machine *translation, summarization, Q&A*, and *decision-making tasks*

Dataset	Quantity (tokens)	Weight in training mix
Common Crawl (filtered)	410 billion	60%
WebText2	19 billion	22%
Books1	12 billion	8%
Books2	55 billion	8%
Wikipedia	3 billion	3%

GPT-3 was trained on an amount of data so great that it had no choice but to learn higher-level ways of manipulating language.

It learned the ability of learning.



With GPT Prompting is the new programming

The three settings we explore for in-context learning

Zero-shot

The model predicts the answer given only a natural language description of the task. No gradient updates are performed.

```
1 Translate English to French: ← task description
2 cheese => ..... ← prompt
```

One-shot

In addition to the task description, the model sees a single example of the task. No gradient updates are performed.

```
1 Translate English to French: ← task description
2 sea otter => loutre de mer ← example
3 cheese => ..... ← prompt
```

Few-shot

In addition to the task description, the model sees a few examples of the task. No gradient updates are performed.

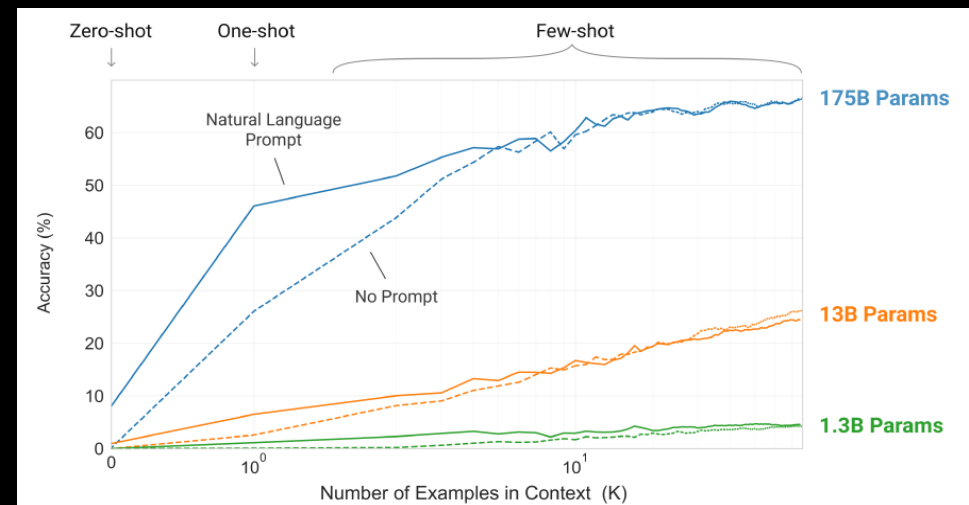
```
1 Translate English to French: ← task description
2 sea otter => loutre de mer ← examples
3 peppermint => menthe poivrée
4 plush girafe => girafe peluche
5 cheese => ..... ← prompt
```

GPT allows to provide a context and guidance to perform any complex task

Using Natural Language, in any language

Without programming

Larger models make increasingly efficient use of in-context information



These “learning” curves involve no gradient updates or fine-tuning, just increasing numbers of demonstrations given as conditioning

Solve a complex tax credit question

Using the IRS guidance below, answer the following questions using this format:

(1) For each criterion, determine and document whether it is met by the vehicle purchase. Let's think step by step: {Criterion} {explanation} {yes or no, or if the question does not apply then N/A}.

(2) After considering each criterion in turn, phrase the final answer as "Because of {reasons}, the answer is likely {yes or no}."

IRS guidance:

""

You may be eligible for a federal tax credit under Section 30D if you purchased a car or truck that meets the following criteria:

- Does the vehicle have at least four wheels?
- Does the vehicle weigh less than 14,000 pounds?
- Does the vehicle draw energy from a battery with at least 4 kilowatt hours that may be recharged from an external source?
- Was the vehicle purchased in a year before 2022?
 - If so, has the manufacturer sold less than 200,000 qualifying vehicles? (Tesla and GM have sold more than 200,000 qualifying vehicles.)
- Was the vehicle purchased in a year after 2022?
 - If so, is the vehicle present in the following list of North American-assembled vehicles? (The only electric vehicles assembled in North America are the Audi Q5, BMW 330e, BMW X5, Chevrolet Bolt EUV, Chevrolet Bolt EV, Chrysler Pacifica PHEV, Ford Escape PHEV, Ford F Series, Ford Mustang MACH E, Ford Transit Van, GMC Hummer Pickup, GMC Hummer SUV, Jeep Grand Cherokee PHEV, Jeep Wrangler PHEV, Lincoln Aviator PHEV, Lincoln Corsair Plug-in, Lucid Air, Nissan Leaf, Rivian EDV, Rivian R1S, Rivian R1T, Tesla Model 3, Tesla Model S, Tesla Model X, Tesla Model Y, Volvo S60, BMW 330e, Bolt EV, Cadillac Lyriq, Mercedes EQS SUV, and Nissan Leaf.)

""

Can I claim a federal tax credit for my Toyota Prius Prime bought in 2021?

Solution:

(1) For each criterion, determine whether it is met by the vehicle purchase

- Does the vehicle have at least four wheels? Let's think step by step.

The Toyota Prius Prime has four wheels, so the answer is yes.

- Does the vehicle weigh less than 14,000 pounds? Let's think step by step.

The Toyota Prius Prime weighs less than 14,000 pounds, so the answer is yes.

- Does the vehicle draw energy from a battery with at least 4 kilowatt hours that may be recharged from an external source? Let's think step by step. The Toyota Prius Prime has a battery with at least 4 kilowatt hours that may be recharged from an external source, so the answer is yes.

- Was the vehicle purchased in a year before 2022? Let's think step by step. The Toyota Prius Prime was purchased in 2021, which is before 2022, so the answer is yes.

- Was the vehicle purchased in a year after 2022? N/A

- If so, is the vehicle present in the following list of North American-assembled vehicles? N/A

(2) After considering each criterion in turn, phrase the final answer as "Because of {reasons}, the answer is likely {yes or no}."

Because the Toyota Prius Prime meets all of the criteria for a federal tax credit, the answer is likely yes.

Extract information from a contact center conversation transcript

You must extract the following information from the phone conversation below:

1. Call reason (key: reason)
2. Cause of the incident (key: cause)
3. Names of all drivers as an array (key: driver_names)
4. Insurance number (key: insurance_number)
5. Accident location (key: location)
6. Car damages as an array (key: damages)
7. Sentiment of the customer (key: customer_sentiment)
8. Customer's condition after the incident (key: customer_condition)
8. Injured people, names as an array if any, or 'No' if no one injured (key: injured_persons)
9. Topics, very short, asked by the agent to the customer as an array (key: agent_questions)
10. A short, yet detailed summary (key: summary)

Make sure fields 1 to 6 are answered very short, e.g. for location just say the location name. Please answer in JSON machine-readable format, using the keys from above. Format the output as JSON object called "results". Pretty print the JSON and make sure that is properly closed at the end.

Phone conversation: Hi there I just had a car accident and wanted to report it. OK, I hope you're alright and in safe place to have this conversation. Yes I'm fine tank you. Can you please describe me what happened? I was driving on the M23 and I hit another car. Are you OK? Yeah, I'm just a little shaken up. That's understandable. Can you give me your full name? Sure it's Sarah Standl. Do you know what caused the accident? I think I might have hit a pothole. Ok, where did the accident take place? On the M23 near junction 10. Was anyone else injured? I don't think so. But I'm not sure. OK, well we'll need to do an investigation. Can you give me the other drivers information. Sure, his name is John Radley. And your insurance policy number. Ok. Give me a minute. OK, it's 546452. OK, is there any damage to your car? Yes, Headlights are broken, and the airbags went off. Are you going to be able to drive it? I don't think so. I'm going to have it towed. Well, we'll need to get it inspected. I'll go ahead and order you a tow van. I'll also start the claim and we'll get everything sorted out. Thank you.

```
results = {  
  "reason": "Report a car accident",  
  "cause": "Hit a pothole",  
  "driver_names": ["Sarah Standl", "John Radley"],  
  "insurance_number": 546452,  
  "location": "M23 near Junction 10",  
  "damages": ["Headlights broken", "Airbags went off"],  
  "customer_sentiment": "Shaken up",  
  "customer_condition": "OK",  
  "injured_persons": "No",  
  "agent_questions": ["Describe what happened", "Driver names",  
    "Insurance policy number", "Accident location",  
    "Car damages", "Injured people"],  
  "summary": "Sarah Standl was driving on the M23 near junction 10  
    and hit another car. She thinks she might have hit a  
    pothole. The other driver was John Radley. Sarah Standl's  
    insurance policy number is 546452. There is damage to  
    the car, such as broken headlights and airbags going off,  
    so the car cannot be driven anymore. The customer is  
    OK, but shaken up. No one else was injured in the  
    incident."  
}
```

Extract project information from a review conversation

Hello Sylvie, how are you?

Hello Jean, I'm fine, thank you. How are you?

I'm fine too, thank you. I wanted to give you an update on the progress of the site which we started 3 months ago. We have finished the foundations and the exterior walls are being built.

That's great. And for the next steps, what is your schedule?

We plan to complete the exterior walls in the next couple of weeks, and then we'll focus on the interior walls and the roof. We should be able to complete these steps within four weeks. Then we'll start the interior work.

That's fine. And what risks of delay did you anticipate?

Potential risks include delays in the delivery of materials, adverse weather conditions and labor supply issues. We've taken steps to mitigate these risks, including making sure materials are ordered early enough and hiring extra workers for peak periods.

Great. I'm glad to see that you've anticipated these risks and taken steps to mitigate them.

Yes, we are committed to delivering this project on time and to the agreed upon specifications. We will continue to keep you informed of the progress and any changes in the schedule. Please do not hesitate to contact me if you have any additional questions or concerns.

Thank you, Jean. I will keep you informed if I need additional information.

Extract a schedule from the site, in Mermaid Markdown format.

Of course, here is the schedule in Mermaid markdown format:

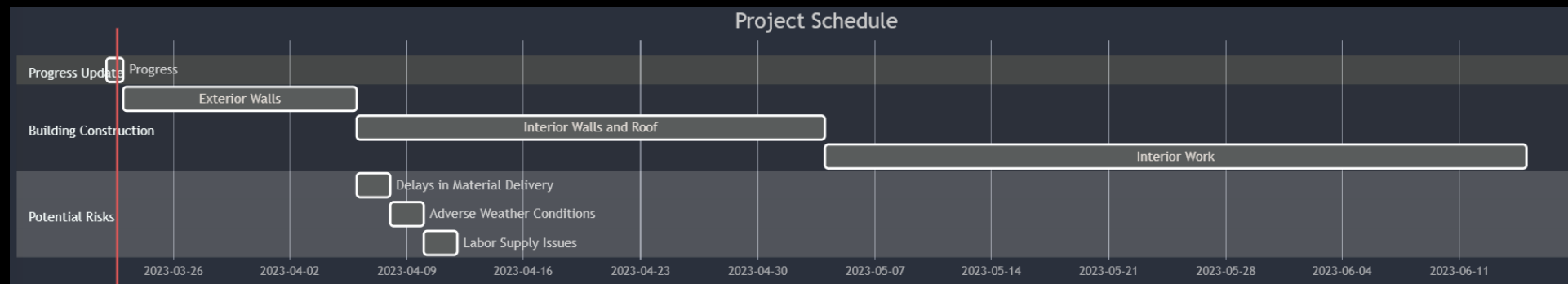
```
gantt
  title Project Schedule

  section Progress Update
  Progress : a1, 2023-03-22, 1d

  section Building Construction
  Exterior Walls : b1, after a1, 2w
  Interior Walls and Roof : b2, after b1, 4w
  Interior Work : b3, after b2, 6w

  section Potential Risks
  Delays in Material Delivery : r1, after b1, 2d
  Adverse Weather Conditions : r2, after r1, 2d
  Labor Supply Issues : r3, after r2, 2d
```

This code will generate a Gantt chart representing the schedule of the project with the different stages, their start and end dates as well as their status (completed or in progress).



Explain complex information in everyday words

```
IDENTIFICATION DIVISION.  
PROGRAM-ID. ADDVAT.  
DATA DIVISION.  
WORKING-STORAGE SECTION.  
01 AMOUNT PIC 9(10)V99.  
01 CURRENCY PIC X(3).  
01 VAT-RATE PIC 9(2)V99.  
01 VAT-AMOUNT PIC 9(10)V99.  
01 TOTAL-AMOUNT PIC 9(10)V99.  
01 COUNTRY-TABLE.  
05 COUNTRY-ENTRY OCCURS 10 TIMES.  
10 COUNTRY-CODE PIC X(2).  
10 VAT-RATE PIC 9(2)V99.  
LINKAGE SECTION.  
01 RETURN-VALUE PIC 9(10)V99.  
01 INPUT-AMOUNT PIC 9(10)V99.  
01 INPUT-CURRENCY PIC X(3).  
PROCEDURE DIVISION USING INPUT-AMOUNT, INPUT-CURRENCY, RETURN-VALUE.  
MOVE INPUT-AMOUNT TO AMOUNT  
MOVE INPUT-CURRENCY TO CURRENCY  
PERFORM VARYING I FROM 1 BY 1 UNTIL I > 10  
IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "AT"  
COMPUTE VAT-RATE = 20.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "BE"  
COMPUTE VAT-RATE = 21.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "DE"  
COMPUTE VAT-RATE = 19.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "DK"  
COMPUTE VAT-RATE = 25.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "ES"  
COMPUTE VAT-RATE = 21.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "FR"  
COMPUTE VAT-RATE = 20.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "IE"  
COMPUTE VAT-RATE = 23.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "IT"  
COMPUTE VAT-RATE = 22.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "NL"  
COMPUTE VAT-RATE = 21.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "SE"  
COMPUTE VAT-RATE = 25.0  
END-IF  
COMPUTE VAT-AMOUNT = AMOUNT * VAT-RATE / 100  
COMPUTE TOTAL-AMOUNT = AMOUNT + VAT-AMOUNT  
END-PERFORM  
MOVE TOTAL-AMOUNT TO RETURN-VALUE  
GOBACK.
```

Explain this code for a Business Decision Maker

This is a program written in COBOL, a programming language commonly used in business applications.

The program calculates the value-added tax (VAT) for a given amount in a specific currency based on the VAT rate for a list of countries.

The program takes three input parameters: the amount to be calculated, the currency of the amount, and a list of countries with their corresponding VAT rates.

The program uses a loop to iterate over the list of countries and determines the VAT rate for the given country based on its country code.

Once the VAT rate is determined, the program computes the VAT amount and adds it to the original amount to calculate the total amount, which is returned as the output.

Overall, this program can be used by a business that needs to calculate the VAT for a given amount in different countries.

By using this program, the business can ensure that it is calculating the correct amount of VAT for each country, which can help them comply with local tax laws and regulations.

Can you identify from which geography the targeted countries are from?

Based on the country codes and VAT rates in the code, we can see that some European Union (EU) member countries are included such as Austria (AT), Belgium (BE), Germany (DE), Denmark (DK), Spain (ES), France (FR), Ireland (IE), Italy (IT), and the Netherlands (NL). We can also see Sweden (SE) included, which is not an EU member country but is located in Europe.

So, based on this information, we can make an educated guess that the targeted countries in this program are primarily from Europe. However, this is just a guess, and without additional information or context, it is impossible to say for sure.

Modernize applications

```
IDENTIFICATION DIVISION.  
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DATA DIVISION.  
WORKING-STORAGE SECTION.  
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ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "ES"  
  COMPUTE VAT-RATE = 21.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "FR"  
  COMPUTE VAT-RATE = 20.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "IE"  
  COMPUTE VAT-RATE = 23.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "IT"  
  COMPUTE VAT-RATE = 22.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "NL"  
  COMPUTE VAT-RATE = 21.0  
ELSE IF COUNTRY-TABLE(COUNTRY-ENTRY(I)).COUNTRY-CODE = "SE"  
  COMPUTE VAT-RATE = 25.0  
END-IF  
COMPUTE VAT-AMOUNT = AMOUNT * VAT-RATE / 100  
COMPUTE TOTAL-AMOUNT = AMOUNT + VAT-AMOUNT  
END-PERFORM  
MOVE TOTAL-AMOUNT TO RETURN-VALUE  
GOBACK.
```

Could you translate the code to typescript?

```
function addVAT(inputAmount: string, inputCurrency: string): number | undefined {  
  const amount: number = parseFloat(inputAmount);  
  const currency: string = inputCurrency.toUpperCase();  
  const countryTable: { [countryCode: string]: number } = {  
    "AT": 20.0, "BE": 21.0, "DE": 19.0, "DK": 25.0, "ES": 21.0,  
    "FR": 20.0, "IE": 23.0, "IT": 22.0, "NL": 21.0, "SE": 25.0  
  };  
  for (const [countryCode, vatRate] of Object.entries(countryTable)) {  
    if (currency === countryCode) {  
      const vatAmount: number = amount * vatRate / 100;  
      const totalAmount: number = amount + vatAmount;  
      return Math.round(totalAmount * 100) / 100;  
    }  
  }  
  return undefined;  
}
```


Understand a customer booking history

```
RP/KULMHOBAA/KULMHOSAA
FY/IT 8FEB23/2308Z 59W78V
000 ON/ABXXXAM/CXXXXXXXXXAJ MR(ADT)
000 OS/MH5483 O 10MAR 5 SZBXSP LK1 0930 1050/NN *1A/E*
000 05/MH5470 O 15MAR 3 XSPSZB LK1 1635 1755/NN *1A/E*
000 OP/APE TEST@TEST.COM
000 OP/APN MH/M+617713456122/EN/ABXXXAM/ (XXXXXXXXXAJ MR(ADT)
000 OP/APN MH/E+TEST@TEST.COM/EN/ABXXXAM/ (XXXXXXXXXAJ MR(ADT)
000 OT/TKXL 09FEB/0917/KULMHOBAA
000 OR/SSR CCMMHHK1 61770000022/EN/ABXXXAM/ (XXXXXXXXXAJ MR(ADT)
000 OR/SSR CTCEMHHK1 TEST//TEST.COM/EN/ABXXXAM/ (XXXXXXXXXAJ MR(ADT)
000 KO/RM FOTV MH-009000316/MH-FAILED/VERIFY CARD NUMBER/
ABXXXAM/CXXXXXXXXXAJ MR(ADT)
000 KO/RM PRICING ENTRY FXP/R, UP,SZB.SZB/A-OMHFY/MH5483 O
10MAR SZBXSP/MH5470 O 15MAR XSPSZB/ABXXXAM/
CXXXXXXXXXAJ MR(ADT)
000 KO/RM* EMAIL:TEST@TEST.COM/GB
```

Describe what this is about

This appears to be a Passenger Name Record (PNR) history. A PNR is a record in the database of a computer reservation system (CRS) that contains the itinerary for a passenger or a group of passengers traveling together.

This PR history is about a customer booking a flight and traveling with Malaysia Airlines

- The customer is traveling with an ADT (Adult) ticket.
- The passenger is flying from Kuala Lumpur to Singapore on March 10th and returning on March 15th with flight numbers MH5483 and MH5470
- The passenger has an email address and phone number for contact : TEST@TEST.COM and +617713456122

There was an issue with verifying the credit card number used for payment: 61770000022

Analyze Financial Report Information

Microsoft est le premier géant technologique américain à dévoiler son bilan financier pour le dernier trimestre de 2021 et deuxième trimestre de l'année fiscale 2022, qui s'étendait de septembre à décembre. Comme sur l'exercice précédent, la firme de Redmond voit ses revenus boostés par son business cloud.

Microsoft profite de la pandémie

Au total, Microsoft bat les prédictions des analystes et enregistre un chiffre d'affaires de 51,7 milliards de dollars, soit une hausse de 20 % par rapport à l'année précédente. Ses profits nets ont quant à eux grimpé de 21 % pour atteindre les 18,8 milliards de dollars.

Une fois de plus, les services cloud de l'entreprise, qui comprennent Azure et Office 365, connaissent un succès retentissant puisqu'ils ont généré 22,1 milliards de dollars à Microsoft et ont augmenté de 32 % par rapport à la même période de 2020. La firme bénéficie grandement de la pandémie de Covid-19 et des mesures de confinement qui en ont suivi. Avec le télétravail, la demande en infrastructures cloud a explosé, à tel point que ce marché pourrait passer de 385 milliards de dollars en 2021 à 809 milliards de dollars en 2025, selon le cabinet d'études International Data Corp repris par le Wall Street Journal. Microsoft est le second plus grand fournisseur de services cloud avec près de 20 % de parts de marché derrière Amazon Web Services, qui en occupe plus de 40 %. Le télétravail a également fait augmenter la demande en appareils électroniques. Ainsi, les revenus des licences Windows provenant des fabricants de PC ont augmenté de 25 % au cours du dernier trimestre de 2021, tandis que les ventes d'ordinateurs Surface de la société ont augmenté de 8 %. Même son de cloche pour LinkedIn, qui a vu ses revenus croître de 37 %.

« La technologie numérique est la ressource la plus malléable dont dispose le monde pour surmonter les contraintes et réimaginer le travail et la vie de tous les jours. Alors que la part de la technologie dans le PIB mondial continue d'augmenter, nous innovons et investissons sur des marchés divers et en pleine croissance, avec une pile technologique sous-jacente commune et un modèle d'exploitation qui renforce une stratégie, une culture et un sens de l'objectif communs », déclare Satya Nadella, PDG de Microsoft.

Microsoft a d'énormes ambitions en matière de gaming

Malgré la pénurie de semi-conducteurs qui impacte de nombreuses industries et a notamment freiné les ventes de Xbox, le chiffre d'affaires de Microsoft dans le domaine du gaming a augmenté de 8 % par rapport à l'année précédente, les ventes de matériel progressant de 4 %. Par ailleurs, le service de jeux par abonnement de Microsoft, Game Pass, a récemment atteint 25 millions d'abonnés, soit une hausse d'environ 39 % par rapport à l'année dernière.

La Xbox Series S.

Malgré la pénurie, les ventes de Xbox Series S ont augmenté. Photographie : Billy Freeman / Unsplash

La semaine passée, Redmond a démontré son immense ambition dans ce secteur en annonçant le rachat d'Activision Blizzard pour 68,7 milliards de dollars. Si elle est validée, cette acquisition sera la plus importante de l'histoire de Microsoft, permettant à des franchises très populaires à l'instar de Call of Duty, Candy Crush, Overwatch ou encore World of Warcraft d'entrer dans le catalogue de la firme.

« Avec notre projet d'acquisition d'Activision Blizzard annoncé la semaine dernière, nous investissons pour permettre aux gens de jouer plus facilement à de grands jeux où, quand et comme ils le souhaitent. Et aussi pour façonner l'avenir des jeux à mesure que se développent des plateformes telles que le métavers », explique Satya Nadella. Microsoft a bien compris que le jeu vidéo n'était plus réservé aux consoles et aux ordinateurs, et cherche absolument à développer un service de streaming de haute qualité multiplateformes.

Quelques nuages à l'horizon

Malgré une bonne performance sur ce trimestre, les actions de Microsoft en bourse ont légèrement chuté à l'annonce des résultats. Cela peut notamment s'expliquer par les résultats d'Azure : le service a enregistré une hausse de 46 % contre 48 % pour le trimestre précédent. « Le fait qu'ils fassent état d'une décélération des revenus de leur segment à la croissance la plus rapide suscite des inquiétudes chez certains investisseurs, qui craignent que le rythme de croissance de cette division ait déjà atteint son apogée », a déclaré David Wagner, un gestionnaire de portefeuille de la société d'investissement Aptus Capital Advisors, qui détient des actions de Microsoft.

Reste à voir si la firme continue de voir ses revenus augmenter autant lors du prochain trimestre et parvient à inverser la tendance. Cela semble néanmoins compliqué avec un retour à la normale qui se profile dans les mois à venir.

Explain what has been the Xbox sales and why

Xbox turnover has been steadily increasing over the past year, largely due to the increased demand for cloud services and electronic devices due to the COVID-19 pandemic and the resulting shift to remote work.

Microsoft's gaming division has also seen a 8% increase in turnover, despite the shortage of semiconductors that has impacted many industries, including Xbox sales.

This increase can be attributed to the success of Microsoft's gaming subscription service, Game Pass, which has reached 25 million subscribers, an increase of 39% from the previous year.

Microsoft's acquisition of Activision Blizzard for 68.7 billion dollars is further evidence of the company's ambitions in the gaming industry.

Extract the key figures of turnover, evolution for each product category in JSON format

```
{
  "Microsoft": {
    "Total Turnover": "51.7 billions USD",
    "Total YoY Growth": "20%",
    "Cloud Services Turnover": "22.1 billions USD",
    "Cloud Services YoY Growth": "32%",
    "Windows Licenses Turnover": "N/A",
    "Windows Licenses YoY Growth": "25%",
    "Surface Sales Turnover": "N/A",
    "Surface Sales YoY Growth": "8%",
    "LinkedIn Turnover": "N/A",
    "LinkedIn YoY Growth": "37%",
    "Gaming Turnover": "N/A",
    "Gaming YoY Growth": "8%"
  },
}
```

Reinvent the shopping experience



5 recipes titles for 5 dinners for a family of four.
Group all the ingredients needed for all the recipes, by grocery segment and add up the quantities needed, to produce a shopping list.

Here are five recipe titles for five dinners for a family of four, along with a grocery list for the ingredients:

- Baked Chicken Parmesan
- Beef and Broccoli Stir-Fry
- Spaghetti Carbonara
- Pork Chops with Apples and Onions
- Fish Tacos

These recipes are healthy, flavorful, and use a variety of ingredients to provide a balanced meal for your family. Feel free to adjust quantities based on your specific needs and preferences.

Meat and Seafood:

- Boneless chicken breasts (4)
- Sirloin steak (1 lb)
- Boneless pork chops (4)
- White fish (1 lb)
- **Bakery:**
- Breadcrumbs (1 cup)

Produce:

- Broccoli florets (3 cups)
- Red bell pepper (1)
- Yellow onion (2)
- Garlic (3 cloves)
- Apples (2)
- Green cabbage (1/2 head)
- Avocado (1)
- Lime (1)
- Jalapeno (1)
- Cilantro (1/4 cup)

Spices and Herbs:

- Italian seasoning (1 tsp)
- Salt and pepper
- Thyme (1 tsp)
- Rosemary (1/2 tsp)
- Chili powder (1 tsp)
- Paprika (1 tsp)
- Cumin (1 tsp)

Dairy:

- Grated parmesan cheese (1 1/2 cup)
- Shredded mozzarella cheese (1 cup)
- Heavy cream (1 cup)
- Condiments and Sauces:
- Marinara sauce (1 cup)
- Olive oil (2 tbsp)
- Low-sodium soy sauce (1/4 cup)
- Hoisin sauce (2 tbsp)

Baking Supplies:

- All-purpose flour (1/2 cup)
- Eggs (2)
- Sugar (1 tsp)
- Brown sugar (2 tbsp)
- Grains and Pasta:
- Spaghetti (1 lb)
- Corn tortillas (8)

Miscellaneous:

- Bacon (8 oz)
- Cornstarch (1 tbsp)

Build an interactive search on your own documents

GPT + Enterprise data | Sample Chat Ask a question Azure OpenAI + Cognitive Search

Clear chat Developer settings

Does my plan cover annual eye exams?

Both Northwind Health Plus and Standard plans offer coverage for vision exams ¹. Northwind Health Plus offers coverage for vision exams, glasses, and contact lenses, while Northwind Standard only offers coverage for vision exams and glasses.

Citations: [1. Benefit_Options-2.pdf](#)

Hearing too?

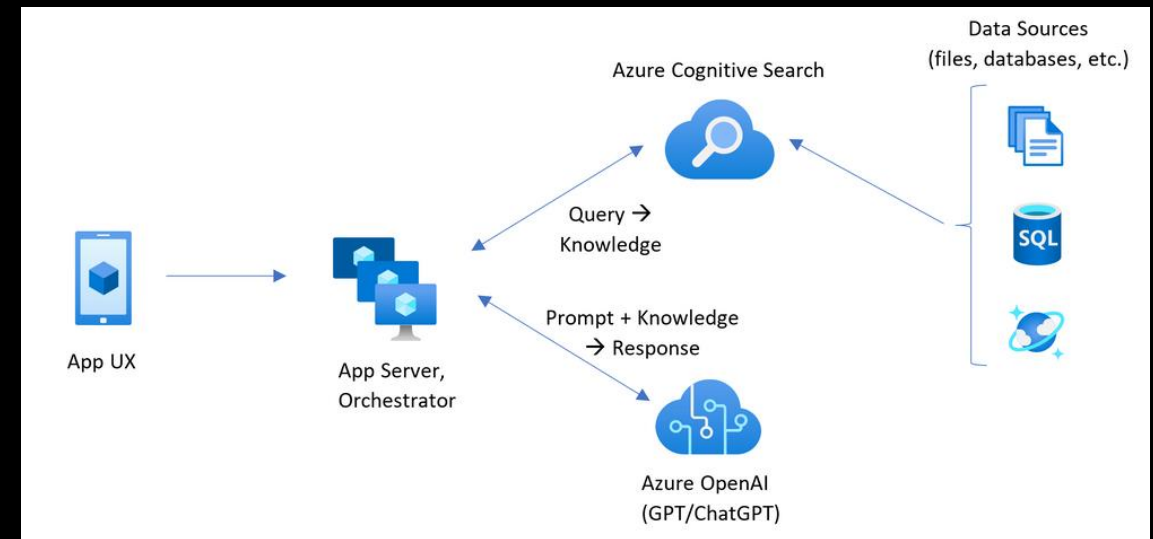
Both Northwind Health Plus and Standard plans offer comprehensive hearing care coverage, including hearing tests and evaluations, hearing aids, and other associated services. You can receive hearing care services from any in-network provider and enjoy comprehensive coverage for all hearing care services ¹ ².

Citations: [1. Northwind_Health_Plus_Benefits_Details-29.pdf](#)
[2. Northwind_Standard_Benefits_Details-29.pdf](#)

Follow-up questions: [Does Northwind Health Plus cover hearing aids?](#)
[What is Northwind Standard's coverage for hearing tests?](#) [What are "other associated services"?](#)

Type a new question (e.g. does my plan cover annual eye exams?)

<https://github.com/Azure-Samples/azure-search-openai-demo>





Dynamics 365 Connected Spaces | Smart Store Analytics

Intelligent stores



Automate operational processes backed by real-time data.

Shorten checkout lines and maximize customer satisfaction.

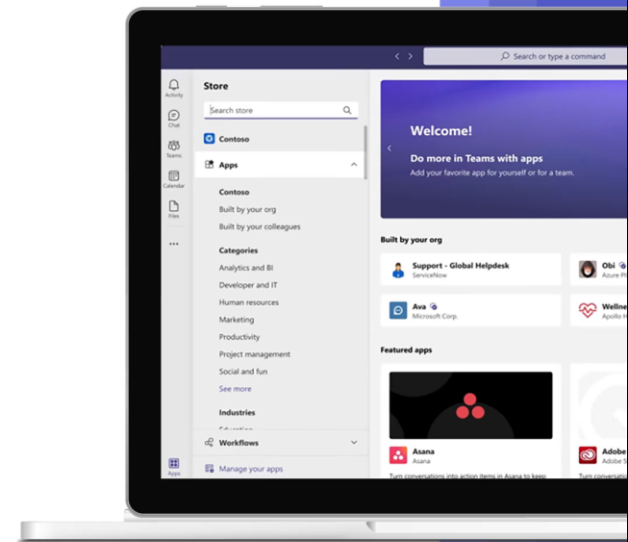
Analyze customer behavior and display effectiveness to maximize sales.

Offer grab & go shopping experiences and increase conversions and decrease friction across the shopping journey.

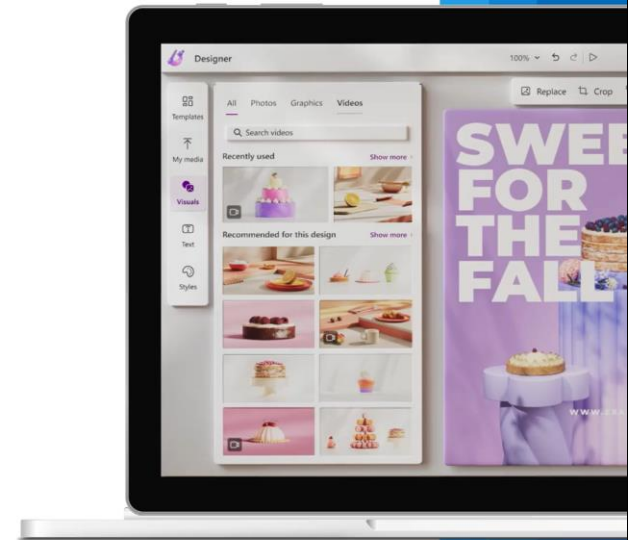
Enhance in-store experiences and operational efficiency with predictive models that optimize store traffic, targeted marketing, demand forecasting, and workforce and energy optimization.



Microsoft Teams Automation



Microsoft 365 Designer



Connect

Unify

Analyze

Act

Dynamics 365 Customer Insights | Retail channel churn model

Unified customer profiles

Get a 360° view of customer profiles by unifying data across all customer touchpoints and systems.

Enrich customer profiles for a more robust understanding.

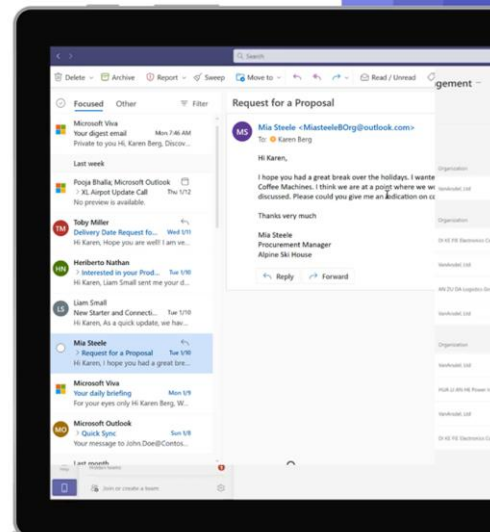
Make better decisions with powerful analytics that reach down to the customer level, including predictive churn risk.

Produce more effective marketing such as emails, advertising, web personalization, and in-store interactions with a comprehensive view of each shopper.

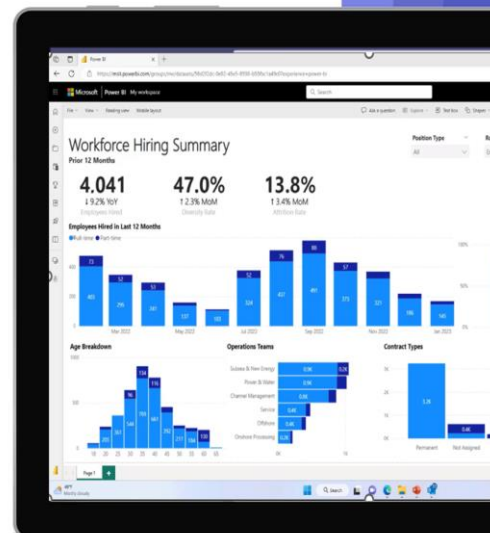
Help retain customers and increase lifetime value using AI/ML with purchase and behavior data to identify, predict, and mitigate customer churn.



Viva Sales



AI augmented Power BI





Dynamics 365 Customer Insights | Azure Synapse Analytics
Microsoft Clarity | Smart Store Analytics

Operational analytics



Predict customer and operational needs with an intelligent view of the customer informed by AI and analytics.

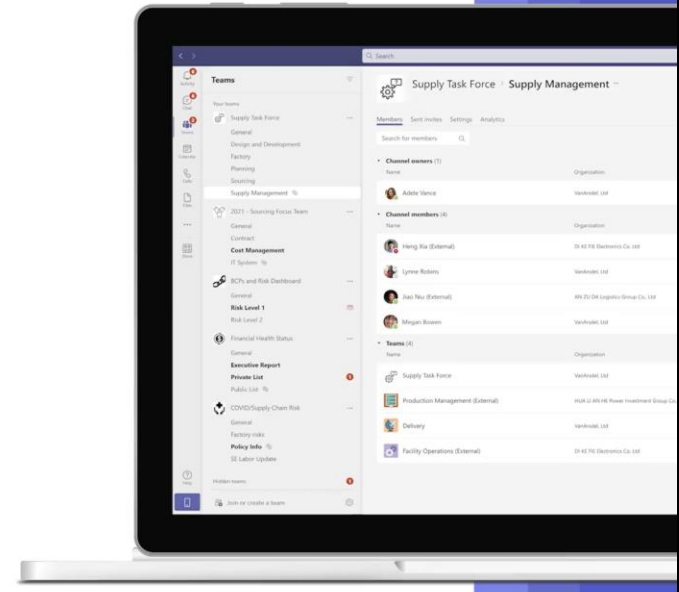
Monitor and interpret online engagement with heatmaps, high-definition anonymized recordings, and more.

Maximize the value of your data by unifying data integration, warehousing, and analytics.

Enhance in-store experiences and operational efficiency with predictive models that optimize store layout, product catalog, shelf placement, and inventory.

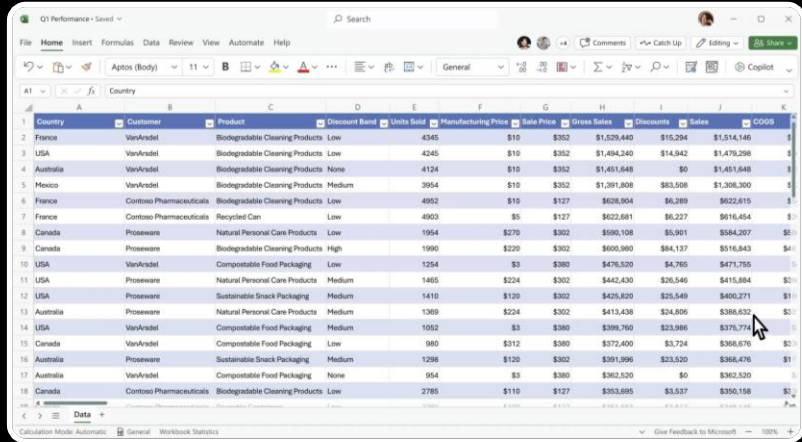


Microsoft Teams Teams Connect



Microsoft 365 Copilot

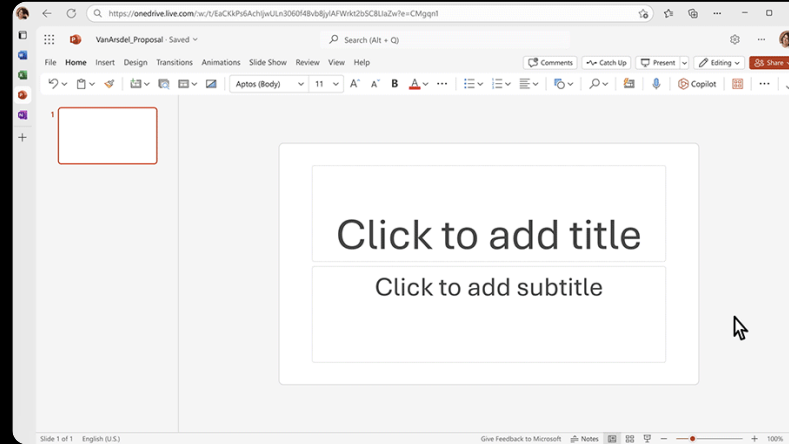
Copilot in Excel



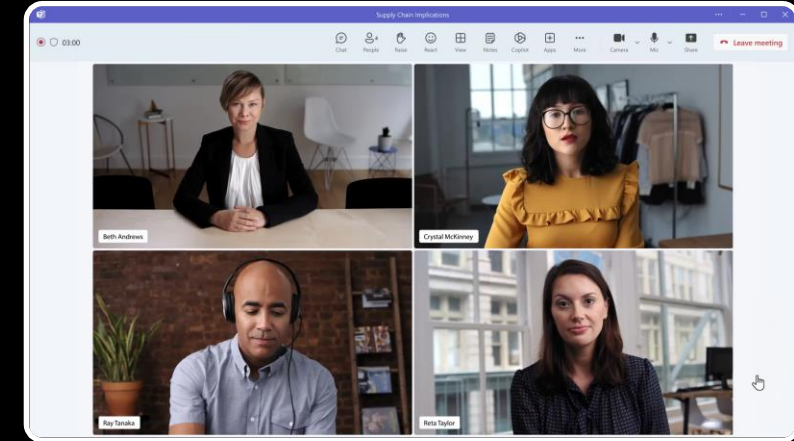
The screenshot shows the Microsoft Excel interface with a data table. The table has columns for Country, Customer, Product, Discount Band, Units Sold, Manufacturing Price, Sales Price, Gross Sales, Net Income, and COGS. The data is organized by country and product type. A Copilot icon is visible in the top right corner of the ribbon.

Country	Customer	Product	Discount Band	Units Sold	Manufacturing Price	Sales Price	Gross Sales	Net Income	COGS
France	Vanafleet	Biodegradable Cleaning Products	Low	4245	\$10	\$332	\$1,520,440	\$15,204	\$1,514,149
USA	Vanafleet	Biodegradable Cleaning Products	Low	4245	\$10	\$332	\$1,404,240	\$14,042	\$1,479,298
Australia	Vanafleet	Biodegradable Cleaning Products	None	4124	\$10	\$332	\$1,401,648	\$0	\$1,401,648
Mexico	Vanafleet	Biodegradable Cleaning Products	Medium	3954	\$10	\$332	\$1,301,808	\$83,508	\$1,208,300
France	Contans Pharmaceuticals	Biodegradable Cleaning Products	Low	4952	\$10	\$127	\$628,904	\$6,289	\$622,615
France	Contans Pharmaceuticals	Recycled Can	Low	4903	\$5	\$127	\$622,601	\$6,227	\$616,454
Canada	Proseans	Natural Personal Care Products	Low	1954	\$270	\$302	\$589,108	\$5,901	\$584,207
Canada	Proseans	Biodegradable Cleaning Products	High	1990	\$220	\$302	\$600,980	\$84,137	\$516,843
USA	Vanafleet	Compostable Food Packaging	Low	1254	\$3	\$380	\$476,520	\$4,765	\$471,755
USA	Proseans	Natural Personal Care Products	Medium	1465	\$224	\$302	\$442,430	\$26,540	\$415,894
USA	Proseans	Sustainable Snack Packaging	Medium	1410	\$120	\$302	\$425,820	\$25,549	\$400,271
Australia	Proseans	Natural Personal Care Products	Medium	1369	\$224	\$302	\$413,438	\$24,806	\$388,632
USA	Vanafleet	Compostable Food Packaging	Medium	1052	\$3	\$380	\$398,760	\$23,986	\$374,774
Canada	Vanafleet	Compostable Food Packaging	Low	980	\$512	\$380	\$372,400	\$3,724	\$368,676
Australia	Proseans	Sustainable Snack Packaging	Medium	1298	\$120	\$302	\$391,996	\$23,020	\$368,976
Australia	Vanafleet	Compostable Food Packaging	None	954	\$3	\$380	\$362,520	\$0	\$362,520
Canada	Contans Pharmaceuticals	Biodegradable Cleaning Products	Low	2785	\$110	\$127	\$353,695	\$3,537	\$350,158

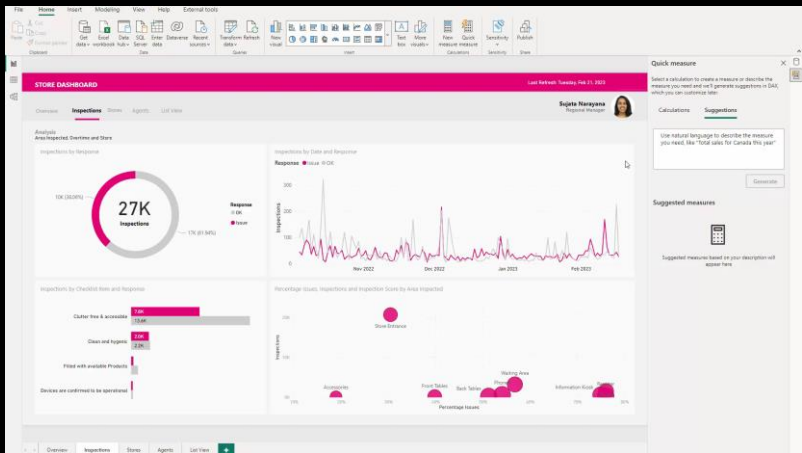
Copilot in PowerPoint



Copilot in Teams



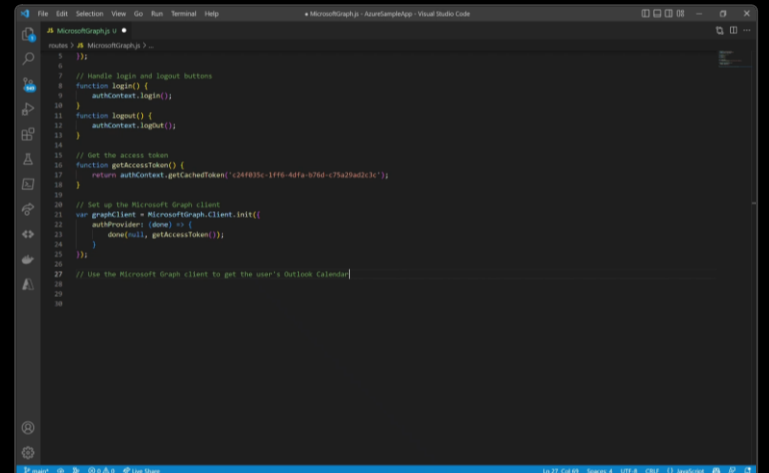
Copilot in Power BI



Copilot in Viva



Github Copilot



```
MicrosoftGraph v...
1
2
3
4
5 // Handle login and input buttons
6 function login() {
7   authContext.login();
8 }
9
10 function login() {
11   authContext.login();
12 }
13
14 // Get the access token
15 function getAccessToken() {
16   return authContext.getCachedToken('24f835c-1ff6-46fa-b76d-c79a29d02c3c');
17 }
18
19 // Set up the Microsoft Graph client
20 var graphClient = MicrosoftGraphClient.init({
21   authProvider: (done) => {
22     done(null, getAccessToken());
23   }
24 });
25
26 // Use the Microsoft Graph client to get the user's Outlook calendar
27
28
29
30
```




Empower people to turn insights into actions

Maximize the value of your data



- Create a **360 view of the customer** with AI-powered identity resolution
- **Automatically build custom reports** based on behavior data with no code/low code tools

Elevate the shopping experience



- Leverage AI and machine learning to **deliver personalized results**
- **Connect all your operations** on a unified commerce platform

Build a real-time, sustainable supply chain



- **Track inventory and make informed supply decisions** with analytics and machine learning
- Utilize AI-enriched demand forecasting to help **enable on-time delivery of products**

Empower the store associate



- Leverage Teams to connect your team and **facilitate real-time collaboration**
- **Build low-code solutions** with bots and automated workflows to handle repetitive tasks

Microsoft Cloud

Runs on trust

Your data is your data

Data is stored encrypted in *your Azure subscription*

Your data is not used to train the base AI models

Azure OpenAI service is provisioned in *your Azure subscription*

A fine-tuned model remains in *your Azure subscription* and is never transferred to the base AI models

Your data is protected by the most comprehensive enterprise compliance and security controls

Encryption with customer-managed keys

Data and metadata remain in the *region of your choice*

Virtual Private Networks, Role Based Access Control

Virtual Private Networks, Role Based Access Control

Soc2, ISO, HIPPA, CSA STAR compliance

Put responsible AI into action



Most comprehensive responsible AI and data privacy standards

Building AI products responsibly



Apply responsible AI guidelines and standards throughout the software development lifecycle

Systematically test Cognitive Services for fairness and invest in diverse training data

Partner with experts in research to invent new solutions such as watermarking for synthetic audio content

Customers own and control their data

Providing tools for customers to use AI responsibly



Provide tools to help others understand, protect, and control their AI at every stage of innovation

Model explainability, interpretability and reproducibility capabilities

Responsible AI documentation & guidelines

Ensuring responsible use of AI



Limited access application process validates customers, scenario, and location

Active enrollment verification feature for Custom Neural Voice and Speaker Recognition protects end users

Content filtering and abuse detection built into the Azure OpenAI Service to help customers build safe high-quality applications



The opportunity is yours to
lead the AI transformation
with the Microsoft Cloud

"The only way to discover the limits of the possible is to go beyond them and to go towards the impossible."

Arthur C. Clarke, Author

Thank you!

