

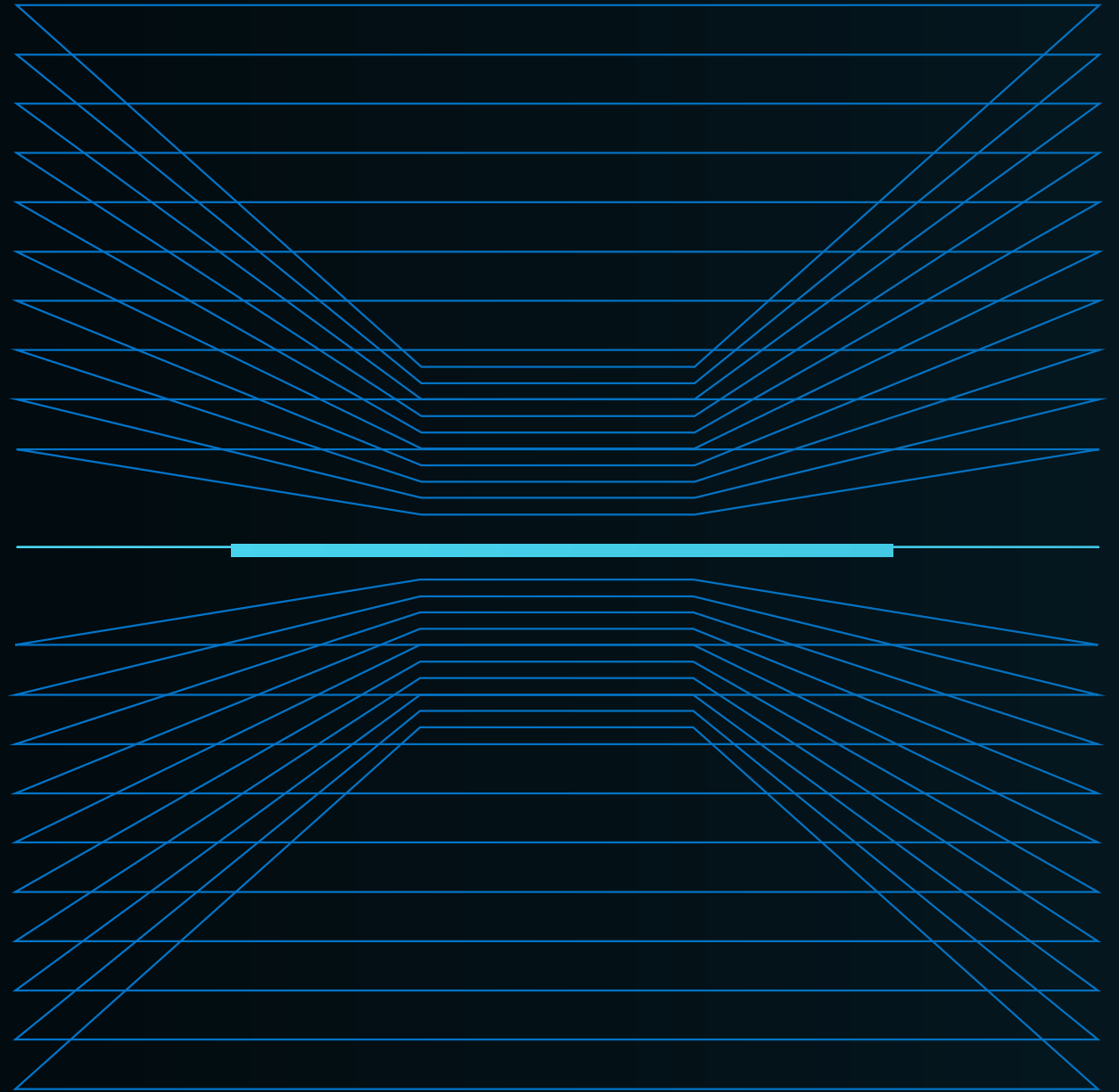


Satellite and the Cloud

- Microsoft vision for Gen AI
- Use cases in Telco & Agriculture
- Responsible AI

15 February 2024

Sonika Kapil
AI & App Chief Architect



The AI technology is here

87%

of organizations believe AI will give them a competitive edge¹

98%

of global executives agree AI foundation models will play an important role in their organizations' strategies in the next 3 to 5 years.²

\$60-100 Billion Annually

is the additional value generated as the impact of Generative AI on the for Telecommunication companies.

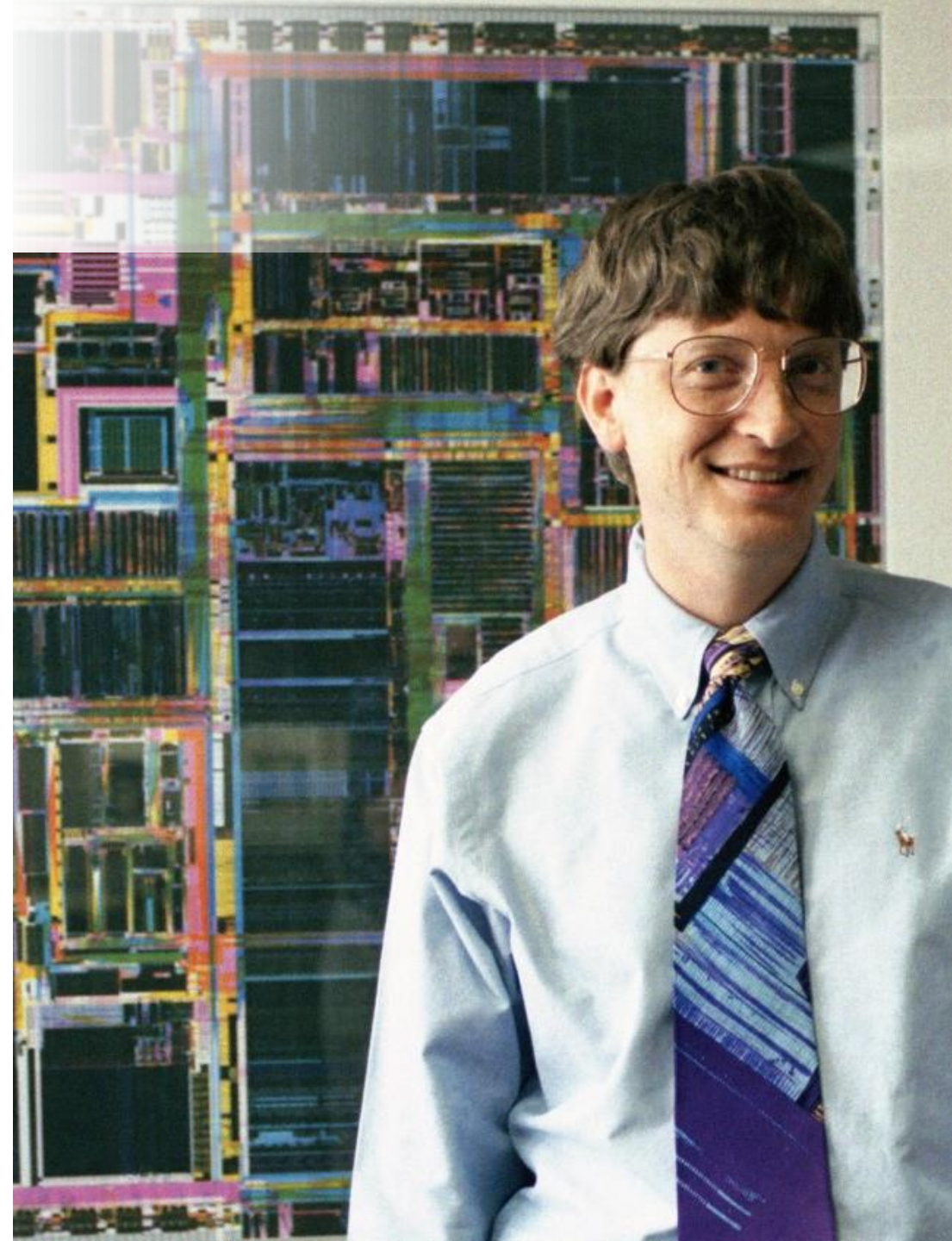
Source:

¹ [MIT Sloan Management Review](#)

² [AI for Everyone, Accenture](#)

³ [The Economic of Potential AI, McKinsey](#)

“Computers will one day see, hear, talk, and understand human beings.”



AI breakthroughs

- 2016 ● **Object recognition**
Human parity
- 2017 ● **Speech recognition**
Human parity
- 2018 ● **Machine reading comprehension**
Human parity
- 2019 ● **Machine translation**
Human parity
- 2020 ● **Conversational QnA**
Human parity
- 2021 ● **Image captioning**
Human parity
- 2021 ● **Question Answering**
Human parity



Ensure that artificial general intelligence (AGI) benefits humanity.



Empower every person and organization on the planet to achieve more

GPT-3.5 & GPT-4

Generate and Understand Text

Whisper

Understand & Transcribe
speech

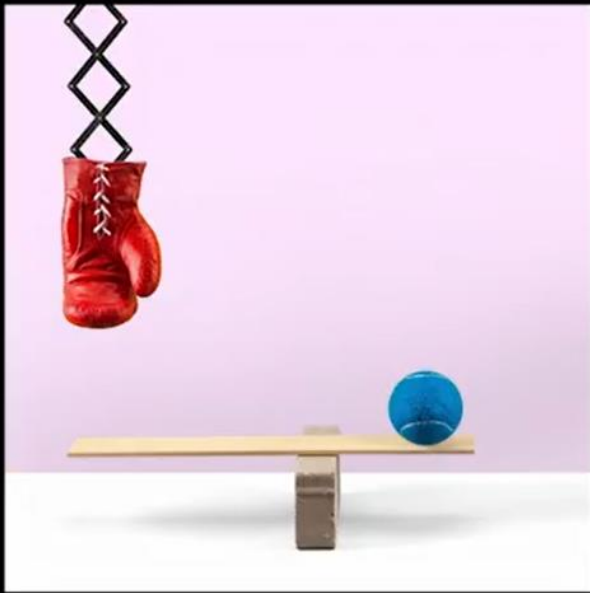
Codex

Generate and Understand Code

DALL·E 2 / 3

Generate images from text prompts

Multi Modal Models: Example GPT-4



What happens when the glove drops?

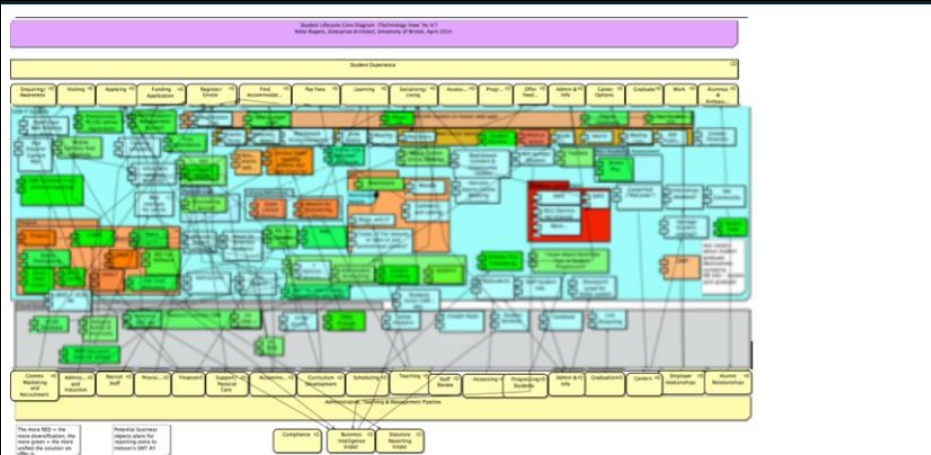
It will hit the wood plank and the ball will fly up



What is unusual about this image?

The unusual thing about this image is that a man is ironing clothes on an ironing board attached to the roof of a taxi.

AI in IT Architecture / Processes



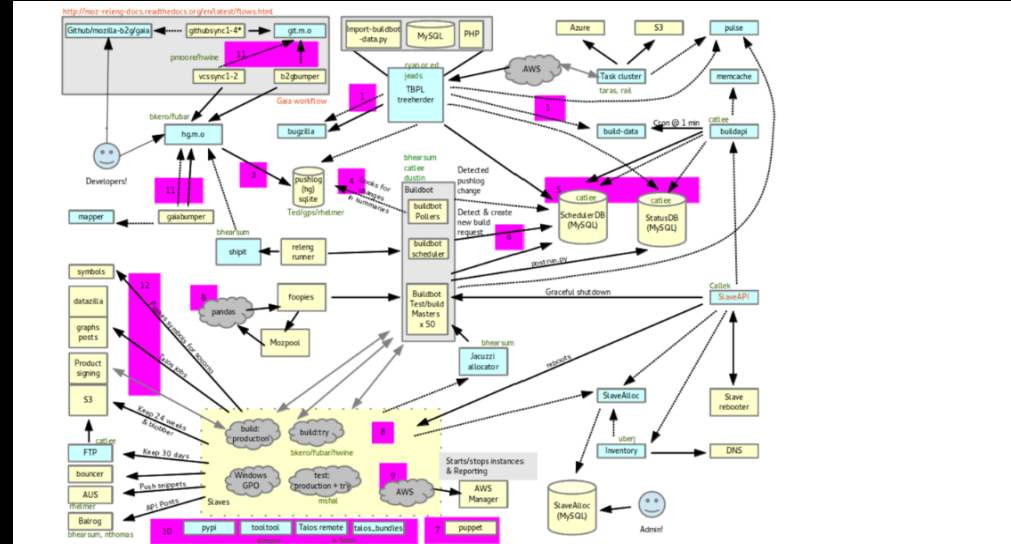
You are an IT Enterprise Architect. Can you create a functional specification for the IT Architecture Drawing. Be as concise as possible .

Functional Specification for IT Architecture: Student Lifecycle

1. Introduction

This document provides a functional specification for the IT architecture of the Student Lifecycle. The architecture focuses on key components from the beginning of a student's journey, such as awareness and application, to the end, including alumni engagement.

2. Student Experience Pipeline



You are an IT Enterprise Architect. Can you describe what is going on in the image ?

Certainly! The image provides a visual representation of an intricate software development, integration, and deployment pipeline. I'll break it down:

1. Development & Source Control:

- **Developers:** Primary users who contribute to the codebase and related assets.
- **GitHub/mozilla-b2g/gaia & Other Repositories:** Represents GitHub repositories where code is stored and managed.
- **Bugzilla, hg.m.o, etc.:** Indicates other platforms and repositories involved in the development and issue tracking process.

Top use cases for

Generative AI



Enterprise ChatGPT
Better knowledge mining



Intelligent Call Centers
Better analytics and service



Build your own copilot
Your data. Your apps. Your people



Content Generation
New products and services



Hyper-personalization
Better sales and marketing

Generative AI for Telecommunication Industry



Customer

- Sentiment Analysis
- Virtual Assistant
- Predictive & Personalized Marketing
- Advanced Human-like Virtual Agent
- Customized Hyper-Personalized Offers



Network

- Network Analytics
- Optimization
- Operations & Planning
- Security & Slicing
- Resource Allocation
- Intelligent Infrastructure



Operations

- Developer Velocity
- Fraud detection
- Conversation Data Modeling
- Predictive Maintenance
- Quality of Service
- Smart Billing



Productivity

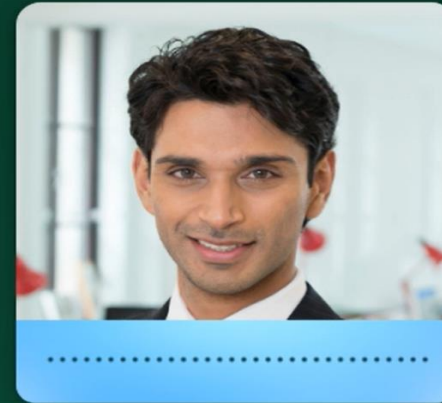
- Business process automation
- Content creation
- Inventory management
- Knowledge management
- Field tech assistant
- Sales lead & script generation
- Work management (Customized and Assistant to Email & Writing, meeting summary etc.)

Agent



Madison:
Hi, Adrian. Thank you for calling Woodgrove Ba|

Customer



Backend

```
{  
  "speaker": "Madison",  
  "message": "Hi,  
Adrian. Thank you for|
```

Azure OpenAI Service Suggestions

Adrian, thank you for contacting WoodGrove Bank. I'm Madison, and I'm here to provide you with assistance. How are you doing today?|





Vodafone created TOBi, a conversational bot that can respond in text, video and images.

“We used Azure Cognitive Services and Microsoft Bot Framework to deliver an instantly responsive, personal expert into our customers’ pockets. Providing this constant access to help is key to our customer care strategy.”

— Jacobs, Group Head of Operations Transformation, Vodafone

[Read full story here](#)

Situation

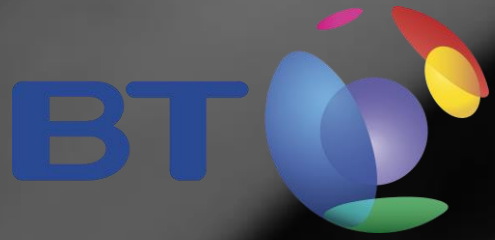
As one of the world’s largest telecommunications companies, Vodafone embarked on a digital transformation journey to become a technology company. It wanted to use AI to improve the speed and quality of its customer service.

Solution

Using a range of features and capabilities in Microsoft Azure Cognitive Services, such as Text to Speech and Custom Voice, the company created a multilingual voice assistant to better anticipate customers’ needs.

Impact

TOBi holds 30 million conversations per month, helping customers quickly and easily in 15 languages across 15 markets. Vodafone has experienced a 12 percent reduction in call center contacts and reduced customer operation costs.



Kevin Lee (Chief Digital Officer, Consumer Division at BT Group) shares how BT Group is using generative AI to build an innovative new digital assistant called Aimee, the Digital Assistance to help answer the customer query and the exciting possibilities that they can unlock with Microsoft Power Virtual Agents.



What's next – Transform your chatbot towards Human-like Experience



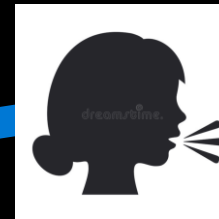
"Smart, Fast and informative"

- Fast Learning
- Advanced Reasoning
- Creative answer
- Summarize & Diarization context
- Supervised CTA
- NLP condition



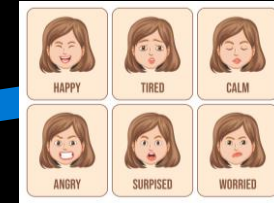
"She more solutive"

- Integration API
- Improve problem resolution



"She can talk"

- Advance CTA and functionality
- Voice input and answer



"She's fun and expressive"

- Live expression virtual 3D



Shop Easily With Talking Avatar

Here are some things Talking Avatar can help you with:

What is the warrenty for women's hiking boots?

Do you have a tent for two people?

How many bonus points do I have?

When will my order arrive?

Hello, my name is Lisa. How can I help you?



The image and voice in this video are generated by AI, not recorded



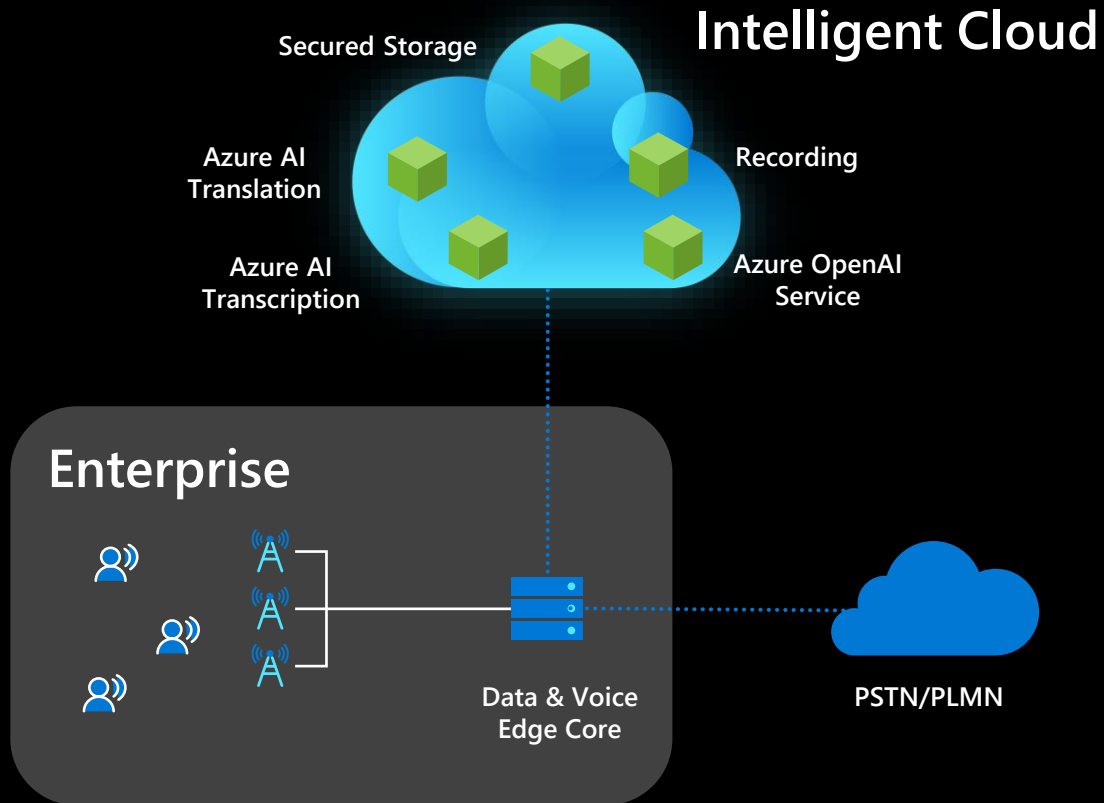
Press the mic to start talking

Reimagine PSTN & Mobile Voice

Infuse your voice network with AI to create next generation services

AI Powered Capabilities

- Real-time transcription of PSTN voice calls
- Transcripts stored in subscriber vault, indexed, and searchable
- Real-time translation
- Intelligent fraud / spam detection
- Automated call notes / summary
- In-conversation voice assistant



The Challenge

We need to increase **food production** and decrease **environmental impact**



Over **820 million** people worldwide suffer from hunger



More than **2 billion** people lack vital nutrients



50% more food is needed by 2050.
40% food wasted.



31% GHG emissions from agri-food systems,
70% fresh water use

Data-driven Agri-Food systems

Bringing data to the cloud enables key insights for individuals and organizations.



Agrochemical
and Seeds

Agriculture
equipment

Agriculture retail,
farm coop,
agronomist

Farmer

Co-ops

Food processing

Distribution

Retailer

Consumer

30%

of Crop inputs
wasted due to lack
of reliable data &
tools

8x

Increase in farm
data generation in
next 10 years

>99%

Calories consumed
from <1% of plants

500

Hours facility prod
downtime, on avg
at \$25K/hour

3-10%

Commission fee
charged by food
brokers

\$10B

Spend by Big CPG
in 2020 for
consumer analytics

67%

Consumers want
full food ingredient
transparency

When this data is shared, we unlock greater efficiencies and productivity across the supply chain.

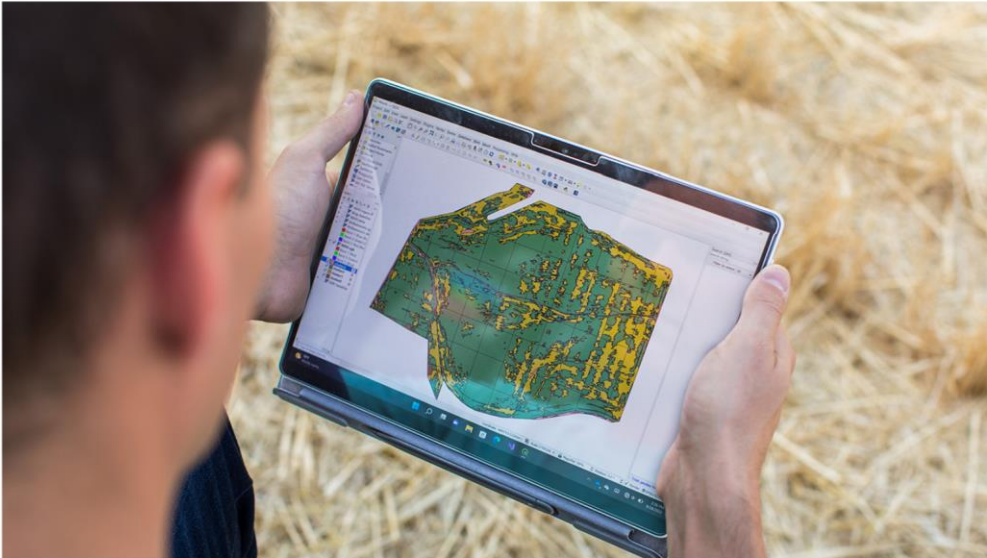
FarmVibes.AI - Microsoft Research

FarmVibes.AI

October 6, 2022

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Extracting intelligence from farm data and remote sensing sources



No single data source gives us the complete information about a farm. Sensors capture temporal data for a location, satellites or drones give spatial information at an instant in time, and neither have enough information extract details about properties below the soil's surface.

FarmVibes.AI - Microsoft Research

#2 Repo in Agriculture on Github

**GitHub - microsoft/farmvibes-ai:
FarmVibes.AI: Multi-Modal GeoSpatial ML
Models for Agriculture and Sustainability**

Copilots in Agriculture



Farmer

Decision making for seeds, purchases, management



Agronomist

Communicate with farmer & advisories



Policy Maker

Make policy documents accessible to farmers



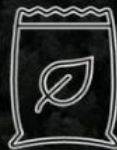
Banker

Communicate with farmers about loans, insurance



Supply Chain

Coordinate w/ farmers on prices, food standards



Ag Retailer

Help farmers with purchasing decisions



Ag/Data Scientist

AI workflow automation



Food Manufacturing

Help farmers meet C standards

- Carbon soil sensor
- Satellite images
- Drones
- Manual carbon measurement
- Field sensors
- Farm activity data



Storage —
Common data model (CDM)



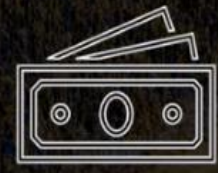
FarmVibes.AI
+
Bayer Ag powered AI services



Farm context



User query



Budget

=



Agri Copilot

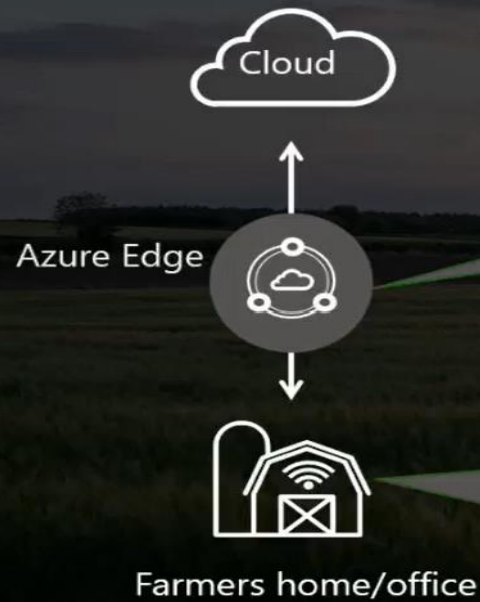
I am a cotton farmer in India, and found a worm on the flower. What is it?

Without a clearer image, it is difficult to accurately identify the worm. However, based on its location on the flower and its appearance, it could be a caterpillar of the cotton bollworm (*Helicoverpa armigera*). This pest is known to feed on cotton flowers and can cause damage to the crop.



LLM's on the edge

Scenario 1: In the farm office



Based on the last drone flight you did 3 days ago, and the FarmVibes insights collected from those, these are the fields that need an inspection:

- *Farm 12, northeast corner*
- *Farm 33, middle plot*
- *Farm 40, southeast corner*

I want to go an inspect my fields with abnormal patterns today, please build me a schedule

LLM's on the edge

Scenario 2: In the farm

I see my corn crop has dark black spots on the leaves after 12 weeks of growth. My farm is in Washington, what can it be?

What do the black spots measure? How many do you see?

They are around 1/8th an inch and more than 50 in a single leaf.

*It seems you have "Tar Spot" disease in your field. Tar spot is caused by *Phyllachora maydis*, a fungus that infects the corn leaves and creates black spots called stroma.*



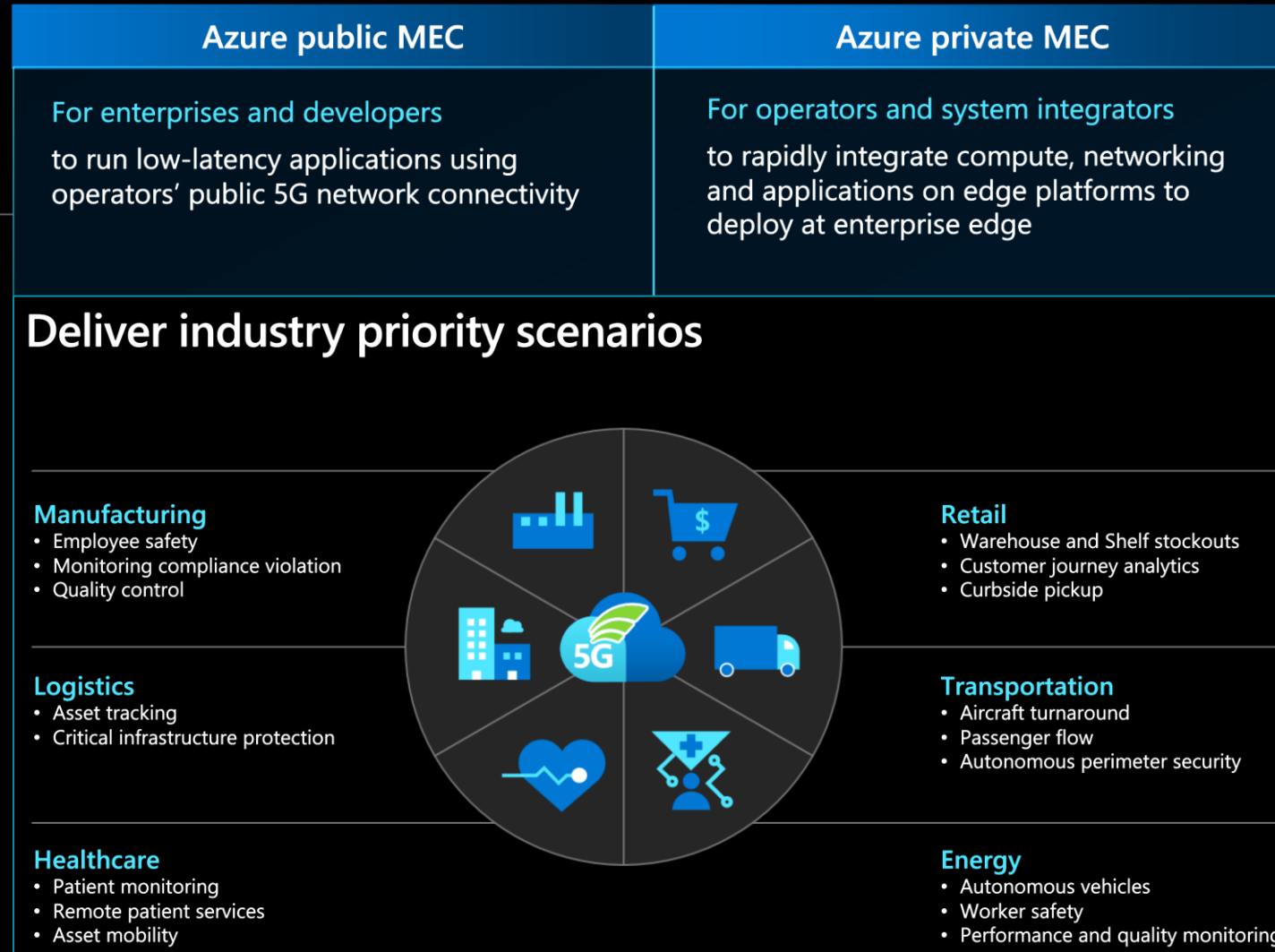
Challenge: Connectivity & Compute



Multi Access Edge Compute



Solution



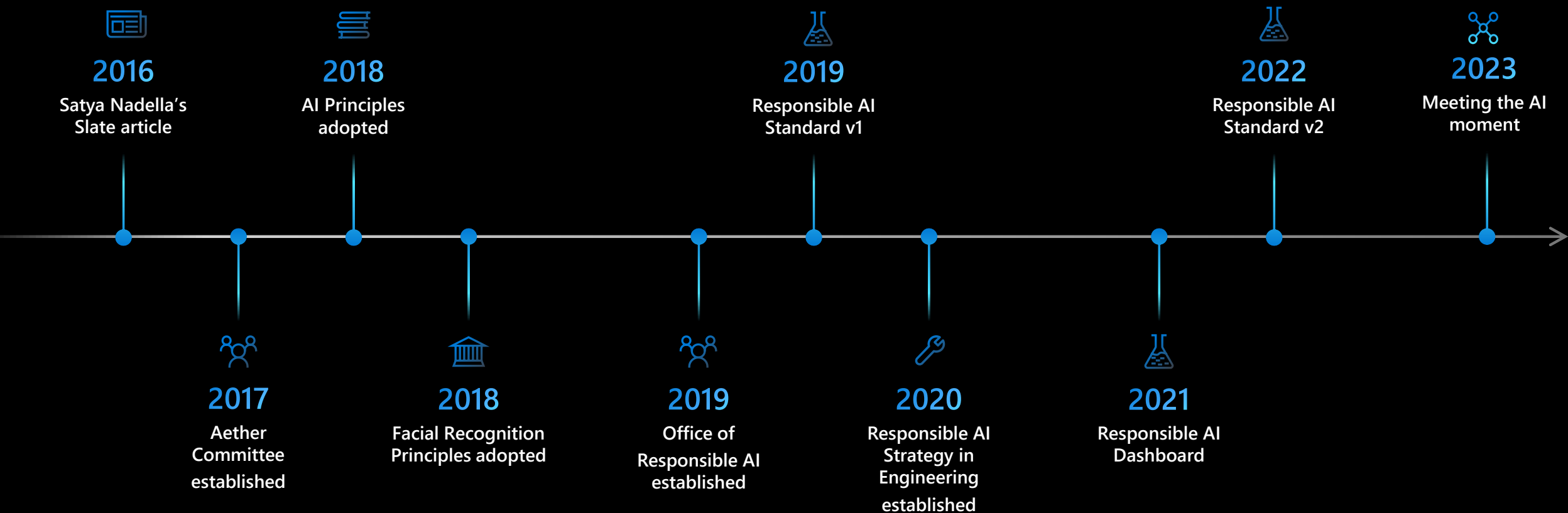
Why Responsible AI is important

2016



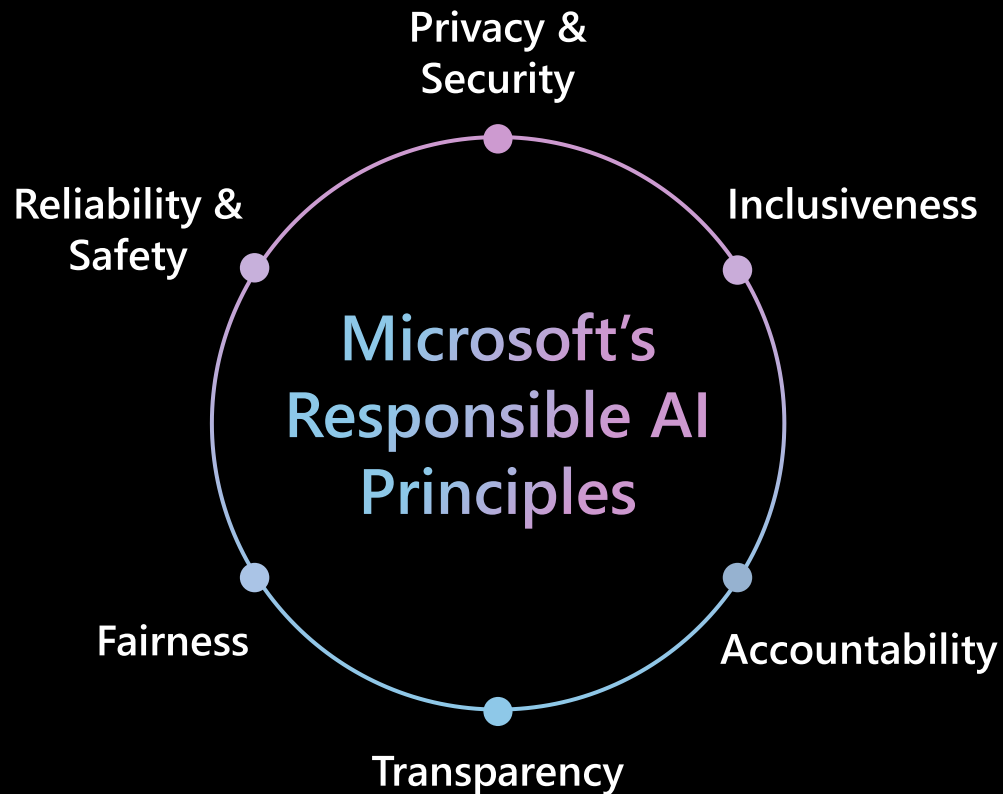
[Learning from Tay's introduction - The Official Microsoft Blog](#)

Our Responsible AI journey



Microsoft Cloud

Runs on trust



Your data is your data

Your data from any fine-tuning is not used to train the foundational AI models

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

Governance

Responsible AI Standard

<https://query.prod.cms.rt.microsoft.com/cms/api/am/binary/RE5cmFI>

Microsoft Responsible AI Standard, v2

GENERAL REQUIREMENTS

FOR EXTERNAL RELEASE

June 2022

