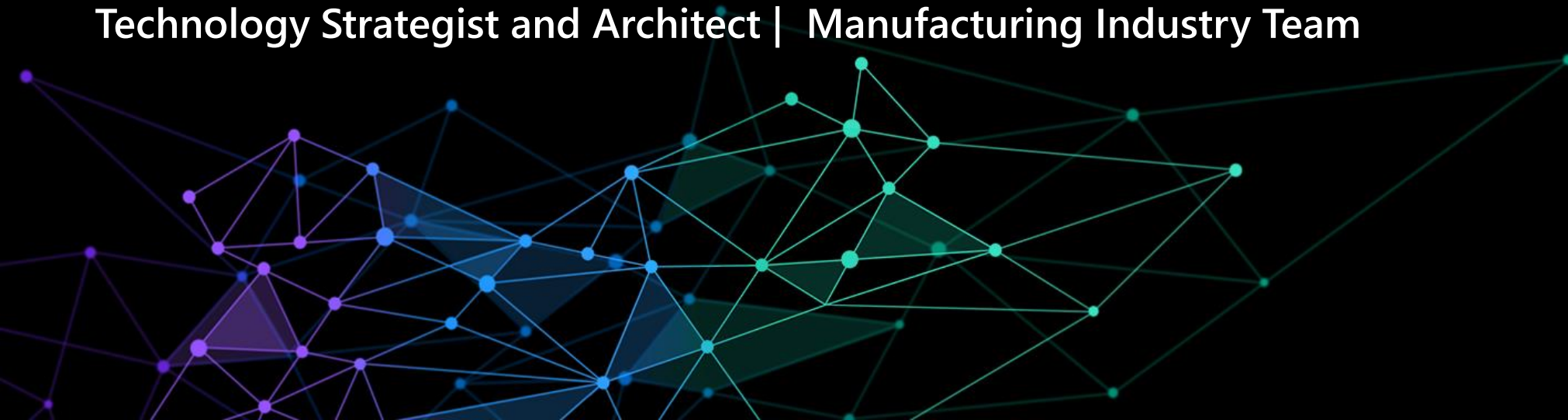


# Applying Artificial Intelligence to your Factory Today

Jomit Vaghela

Technology Strategist and Architect | Manufacturing Industry Team



# Why now?

**\$40B**

Estimated additional  
revenue/shifting revenue  
driven by AI in three years

**85%**

Enterprises using  
AI by 2020

AI advancements

Pervasive data

Cloud compute



PC

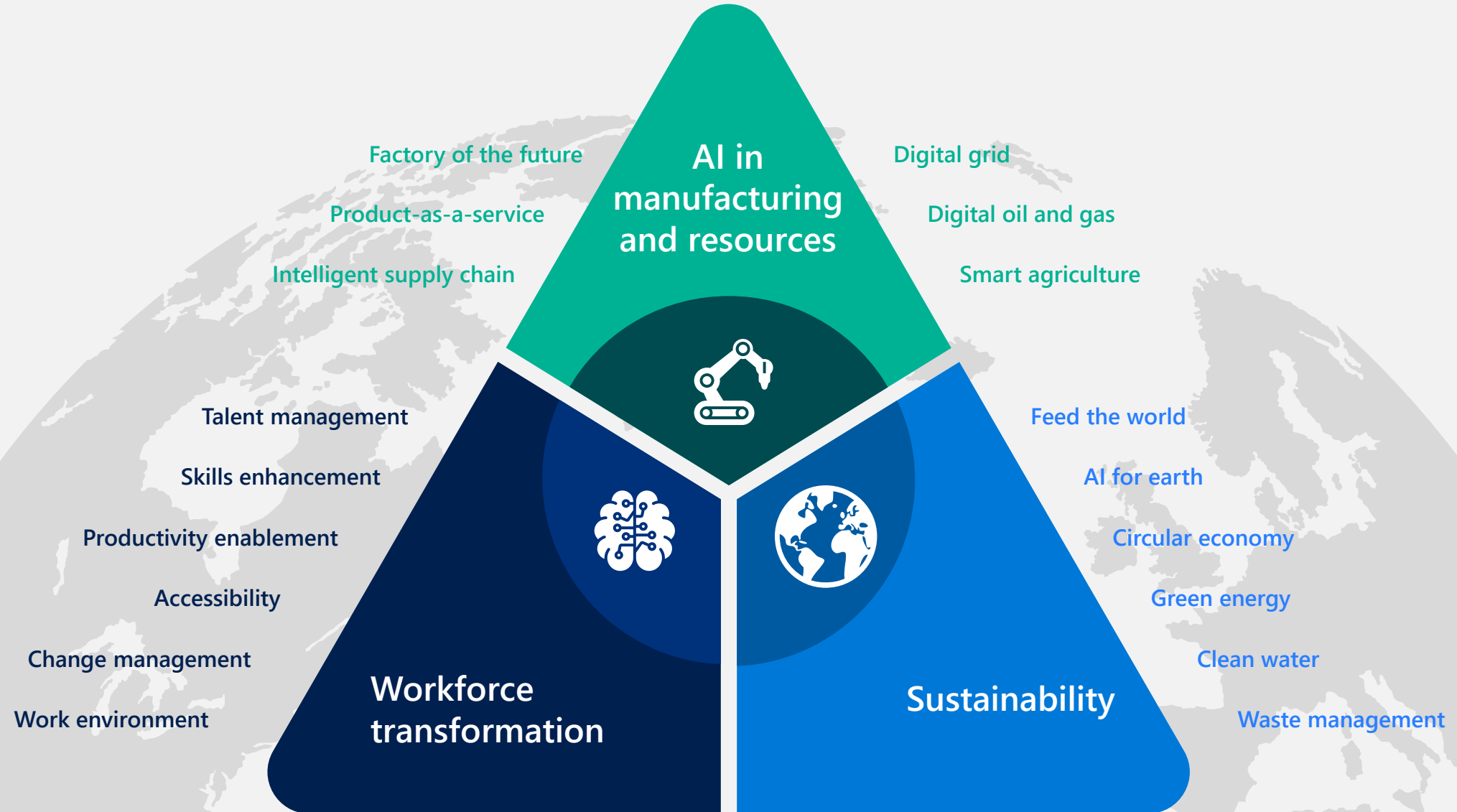


Web

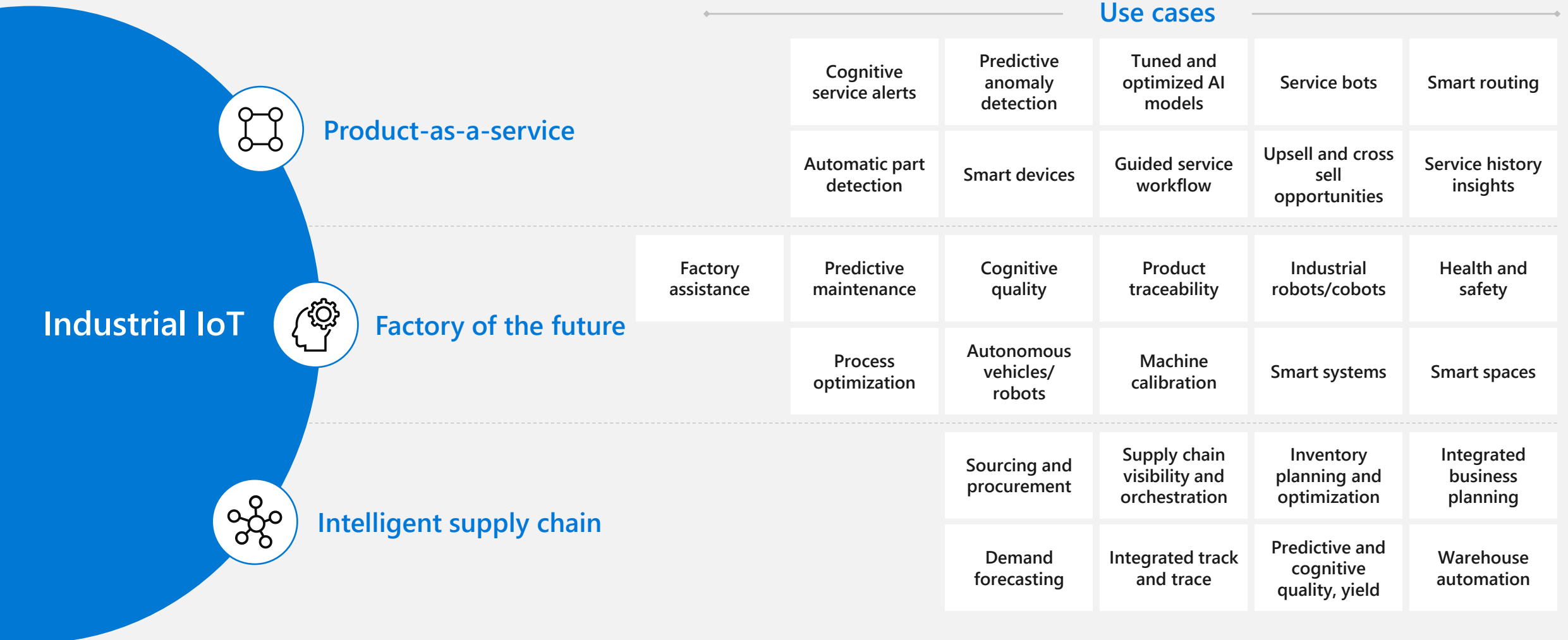


AI

# Achieve your business objectives with AI



# AI in Manufacturing use cases



# Automated Machine Learning for Improving yield

## Objective

Reduce the current scrap rate of over 15% analyzing machine sensor data, machine vision inspection data from end of line, and operator inspection data gathered in post cure process.

## Solution

Build machine learning model to predict batch quality in near real-time and provide a dashboard for Manufacturing operations team to make decisions based on that

## Benefits

- Reduced scrap rate and overall improved yield
- Better understanding of the sensor values and parameters affecting a batch quality.
- Integration with real-time machine data coming out of PLCs.

# Computer Vision for Quality Assurance

A red semi-truck is shown from a front-three-quarter view, driving on a two-lane road that curves into the distance. The background features rolling green hills and mountains under a sky with soft, white clouds. The truck is positioned in the center-left of the frame, moving towards the right.

## Objective

Over 1,500 trucks each year to dealerships which did not match the customer order specifications (missing lights or grab handles etc.) and had to be reworked. Customer needed an additional QA process.

## Solution

A computer vision solution that compares the Bill of Material (BOM) with the finished cab content and identifies any rework prior to the truck leaving the factory.

## Benefits

- Millions of dollars per annum saved in quality rework and improved dealership and customer experience.
- Reduced reliance on manual quality inspections and redeployment of quality personnel to other functions.



# Automated Machine Learning for forecasting

## Objective

Sales and operations planning teams wanted to improve sales forecasts for key products and geographies to improve demand prediction and alignment of sales and operational resources.

## Solution

Build machine learning models using historical data from CRM, ERP and legacy systems

## Benefits

- Improved forecasts for products and geographies.
- Reduced time and touch points to create forecasts for sales and operations
- Improved visibility into demand for sales and operations planning.

# Accounts Payable Bot for Improved Service

## Objective

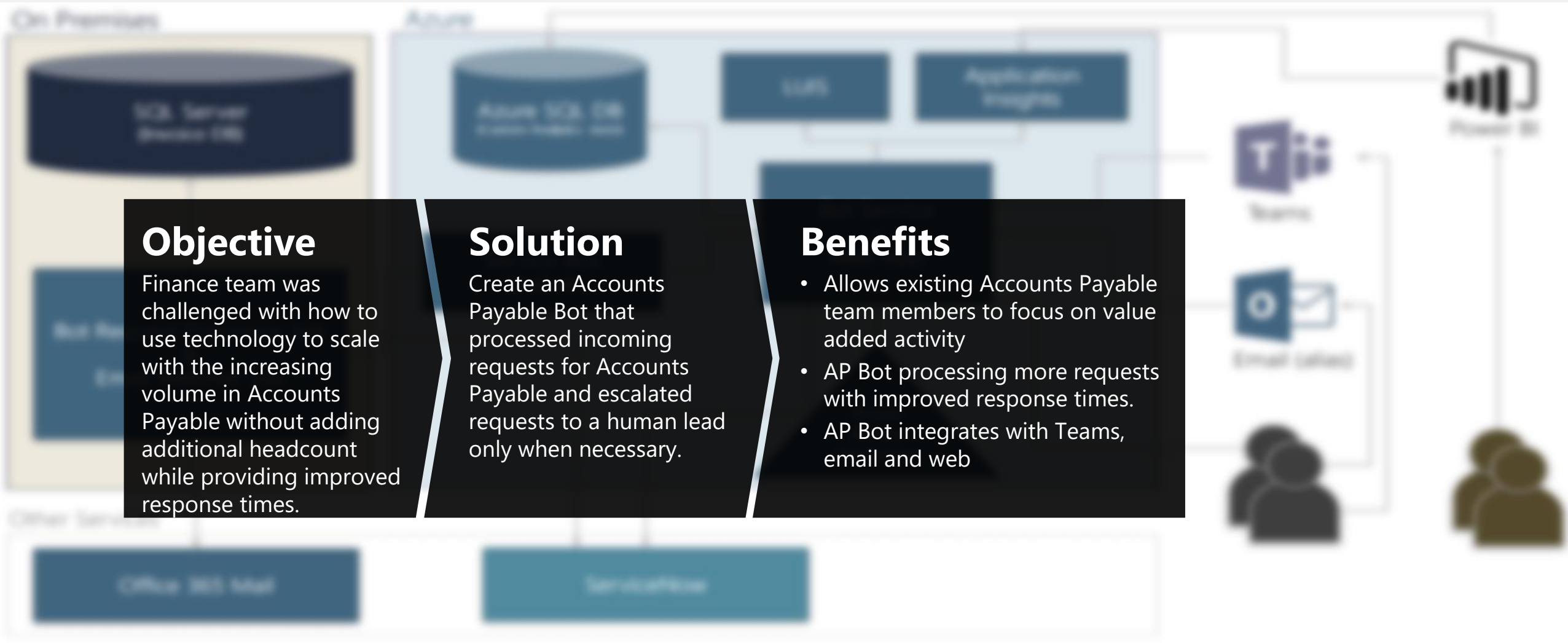
Finance team was challenged with how to use technology to scale with the increasing volume in Accounts Payable without adding additional headcount while providing improved response times.

## Solution

Create an Accounts Payable Bot that processed incoming requests for Accounts Payable and escalated requests to a human lead only when necessary.

## Benefits

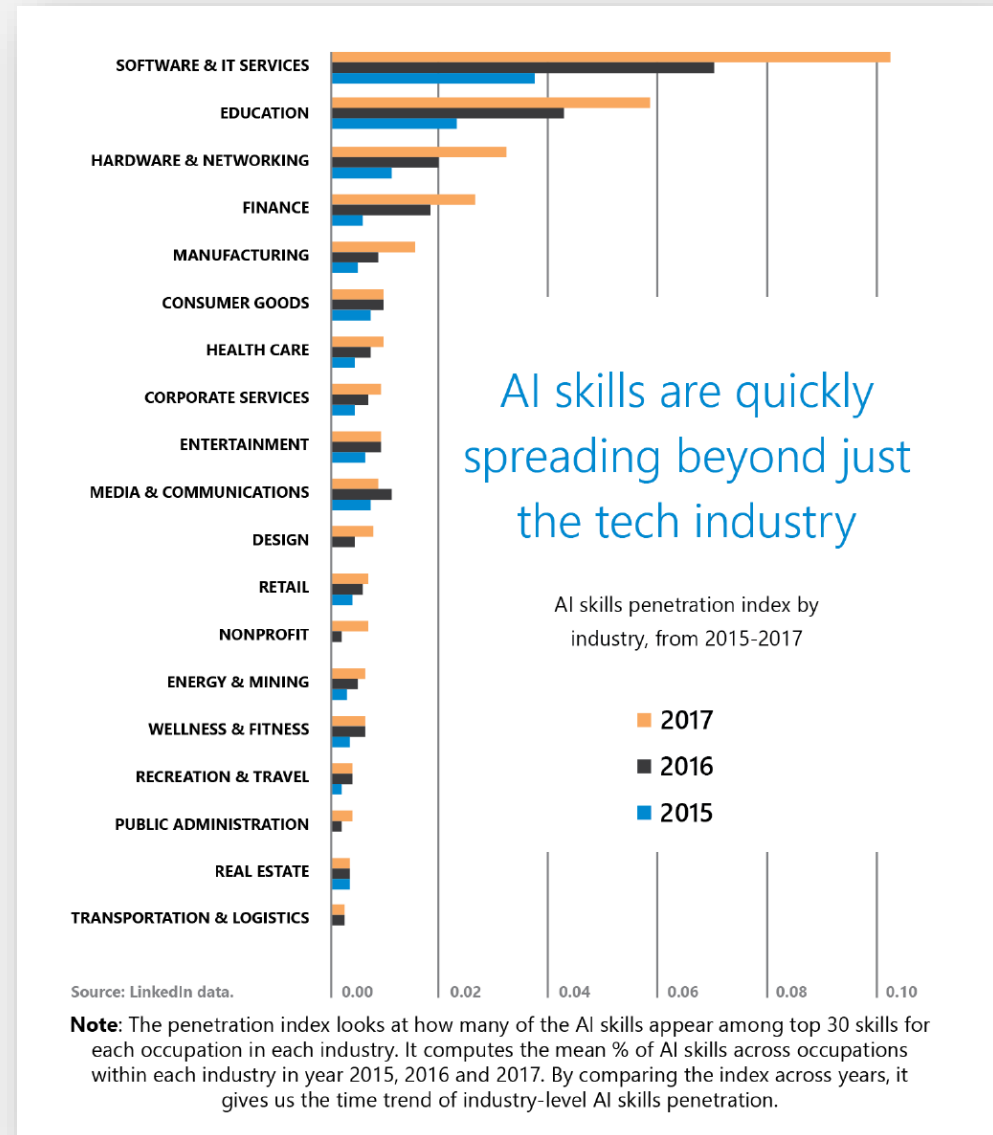
- Allows existing Accounts Payable team members to focus on value added activity
- AP Bot processing more requests with improved response times.
- AP Bot integrates with Teams, email and web





# Challenges around AI in manufacturing

## #1. . . Skillset



# Challenges around AI in manufacturing

## #2. . . Data! Data! Data!

*I can't make bricks without clay...*

### Source Systems

Supply Chain data  
Factory data  
Customer data  
Connected Product data  
External data  
...

### Enterprise Needs

Governance  
Compliance  
Security  
Discovery  
...

# Challenges around AI in manufacturing

## #3... AI Strategy

Like any emerging technology AI/ML projects are also encountering barriers

Information programs fail because of:

- **Not tying** the **program to business process and strategy**
- **Retrospective reporting** unsuitable for managing businesses
- Failure to see clear incremental **value** delivered
- The organization not being numerically or analytically **literate**
- Poor **expectation management** and communications
- Not getting the **data right**
- No ability to **measure impact**
- Not having a data & AI **roadmap**
- Starting from **scratch**
- **Organizational dynamics, effective change management**
- **Ethical** concerns
- Lack of **readiness** in several areas
- Lack of **talent**, limited pool of expert resources
- Model management and bias

"It's rarely because of technology"

Hence, a look at innovation lifecycle in an organization and its management is key.

# Customer Story

## Daimler AG launches a new cloud platform for data-driven innovation



Vanessa Ho  
Feb 20, 2019



Daimler AG is both a world leader in commercial vehicles and premium cars, and a pioneer in innovative mobility. The work requires processing enormous amounts of confidential, business-critical data, but until recently, the automaker had a problem. Its on-premise data platform, built five years ago, lacked the flexibility and scalability needed for big data projects, while Daimler's strict security standards – more rigorous than what's legally required – prevented the company from moving data into the cloud.

To solve the problem, Daimler launched eXtollo, the company's new cloud platform for big data and advanced analytics. Developed with Microsoft, the platform uses [Azure Key Vault](#), a service that safeguards encryption keys and secrets, including certificates, connection strings and passwords.



Guido Vetter, head of Daimler's Corporate Center of Excellence Advanced Analytics & Big Data

The solution paved the way for Daimler to migrate its data lake to the cloud, with eXtollo now serving internal business units around the world, including production, finance, sales, marketing and research. Hosted on Azure, the platform also enables more artificial intelligence (AI) projects that help Daimler accelerate innovation, better serve its customers and shape the future of mobility.

To learn more about eXtollo and Daimler's work with big data, Transform chatted with Guido Vetter, head of Daimler's Corporate Center of Excellence Advanced Analytics & Big Data.

### TRANSFORM: What challenges did you have with your on-premise data platform?

VETTER: We had a monolithic environment and limited capacity. The requests and demands for service from Daimler's business units were so massive that we were not able to scale the calculation power to what we needed. We had our units competing for calculation resources and we had to schedule and plan who was calculating when. But with Azure, the big advantage is we scale up, we compute, we pay, we scale down.

### TRANSFORM: How did Azure Key Vault help?

VETTER: Azure Key Vault was the lever for us to move into the cloud. The biggest challenge for us internally is that we process confidential data. We don't want this data to leak anywhere. But with "bring your own key" in Azure Key Vault, we are in control of the data and encryption material. Nobody but us can use the data. Combined with services like [Azure Active Directory](#), it gives us all the data protection and security we need to make sure everything is to our highest standards of security.

### TRANSFORM: How long did it take you to develop eXtollo?

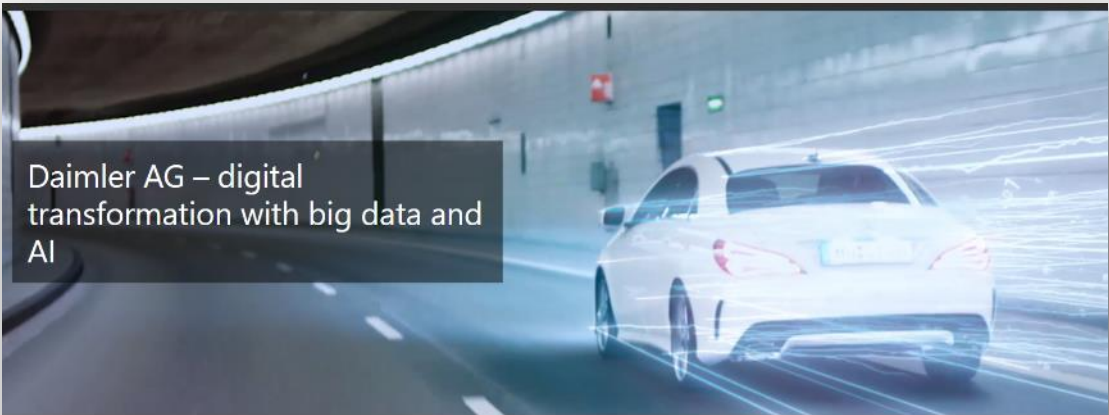
VETTER: We launched the idea of eXtollo in workshops with Microsoft in January 2018. Then we went live for Europe in April. It was a three-month exercise and a lot of the time we spent validating concepts. We went live in the U.S. in October and later in Asia. So, we have in nine months of almost-global coverage. It was lightning-fast. Cloud is really bringing us the speed and the flexibility to do that.

### TRANSFORM: What are some use cases for eXtollo?

VETTER: We do a lot of forecasting cases. In the past, it took days to

### Daimler and Microsoft

With Microsoft as a strategic partner, Daimler and its brands are world-class digital companies with a long history of cloud- and AI-powered projects. Daimler [efficiently manages](#) 400,000 global suppliers with its procurement system on Azure and [accelerates software](#)



## Daimler AG – digital transformation with big data and AI

# DAIMLER

February 20, 2019



- Customer  
Daimler AG
- Products and Services  
Azure Data Factory  
Azure Data Lake Store  
Azure Databricks (AI)  
Azure HDInsight  
Azure Key Vault  
Azure SQL Data Warehouse  
Azure SQL Database

- Industry  
Automotive
- Organization Size  
Corporate (10,000+ employees)
- Country  
Germany
- Downloads  
[CustomerStory\\_Daimler\\_FN\\_final.pdf](#)

Share this story



Daimler AG's requirements for data protection and data security go above and beyond the statutory provisions. Consequently, the task of cloud migration represented quite a challenge for the successful automotive corporation – that is, until those in charge learned about Azure Key Vault. This solution allows them to keep the cryptographic keys entirely in their own control and to enable fast, worldwide access to their big data applications, which are in high demand across the entire corporation.

Daimler AG is one of the world's most successful automotive companies. As the parent company of Mercedes-Benz Cars, Daimler Trucks, Mercedes-Benz Vans and Daimler Buses, Daimler is one of the largest providers of premium cars and the largest commercial vehicle manufacturer in the world. Daimler Financial Services offers financing, leasing, fleet management, insurance, financial investment funds and credit cards, as well as innovative mobility services.

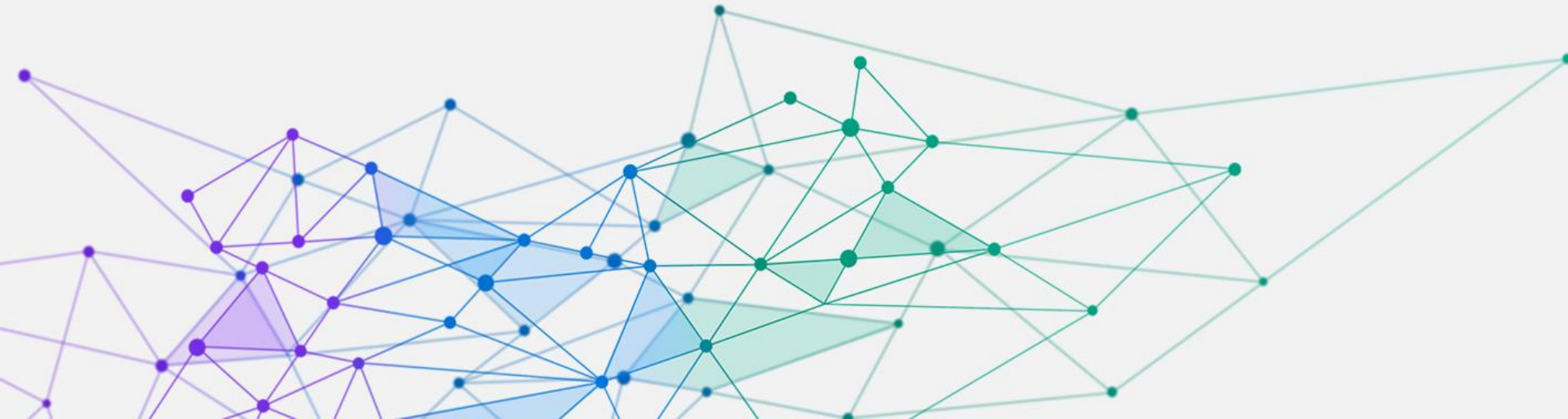
The automotive industry has long since moved on from the mindset of "higher, faster, further" – in other words, more horsepower, more speed and more features. At the heart of Daimler's efforts are the specific needs and desires of drivers and the continual improvement of product quality. As the company is active worldwide in a broad range of customer segments, the requirements and profiles of their customers are correspondingly diverse – a classic field of application for big data analyses.

[Read more...](#)

[Read more...](#)

***Demo:***

*Enabling Citizen Data Scientists*



# Resources

- [The Future Computed: AI & Manufacturing book](#)
- [Assess your AI readiness](#)
- [AI Business School](#)
- [AI School](#)
- [Microsoft AI Principles](#)

