Microsoft

Empowering the Automotive Industry

The new Road ahead for Connected and Autonomous Vehicles

Fran Dougherty – CTO
Automotive Industry
Microsoft Corp.

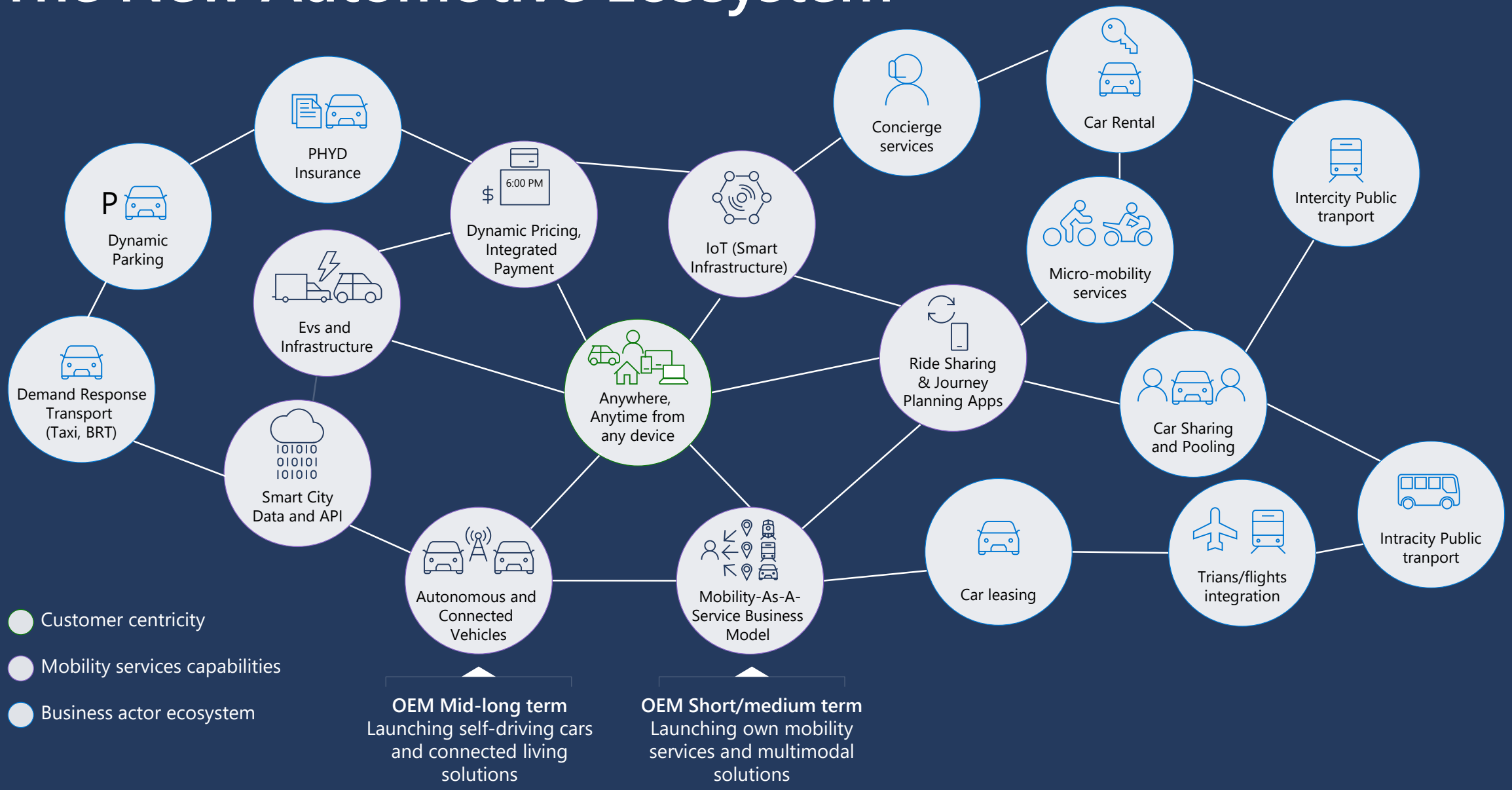
The automotive industry is transforming

By 2030

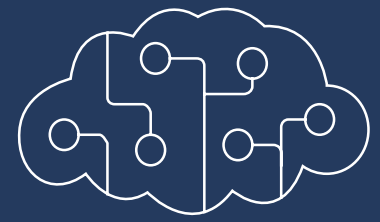
Autonomous	10-15%	of new cars projected to be fully autonomous
Connectivity	100%	of new cars projected to be connected, up from ~25% today
Electric	~25%	Share of new auto sales
Shared	32%	of miles driven on new cars will be in shared rides

Sources: McKinsey; Accenture; Microsoft analysis

The New Automotive Ecosystem



Technology's Role



0101
1010

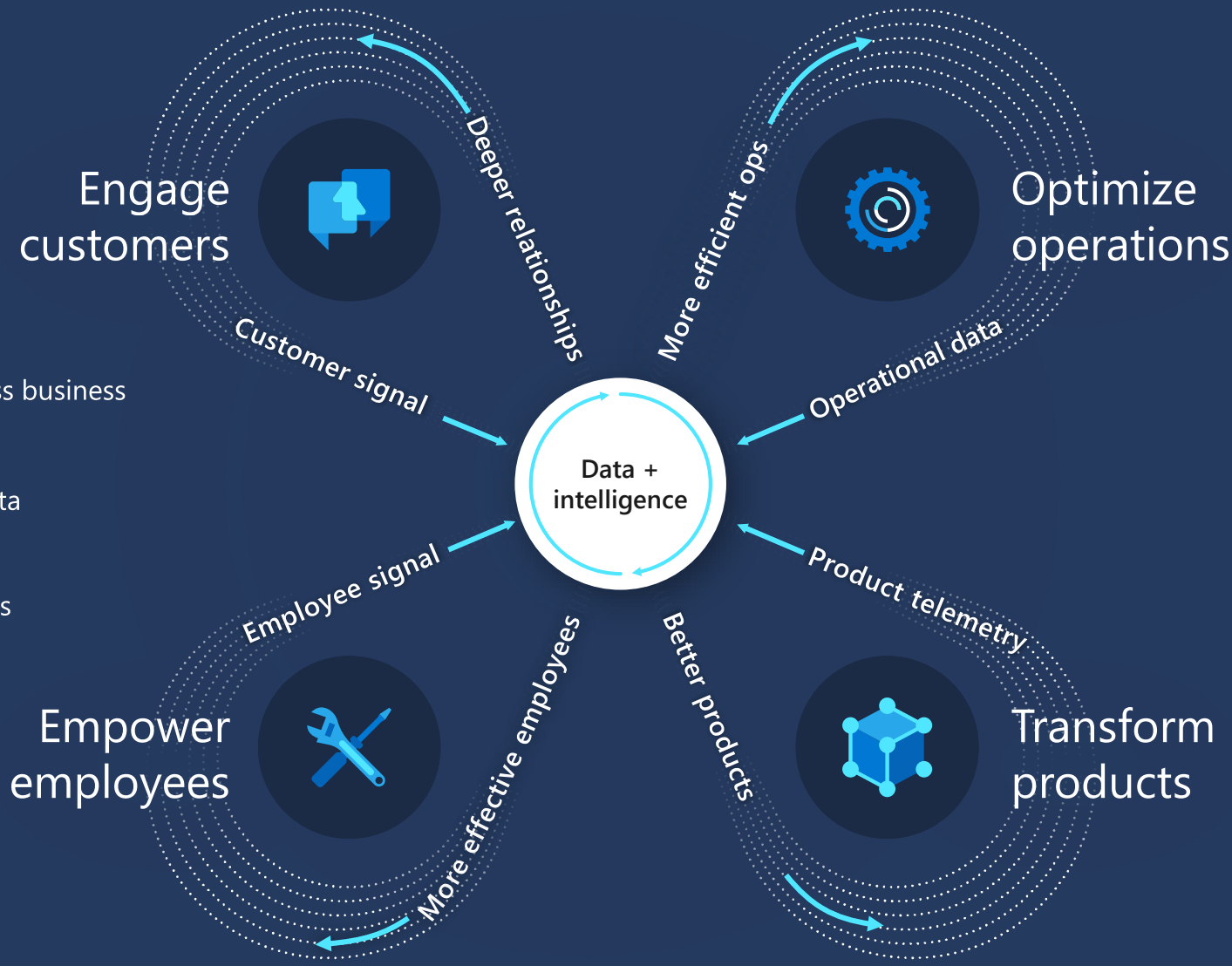
Ubiquitous computing

AI

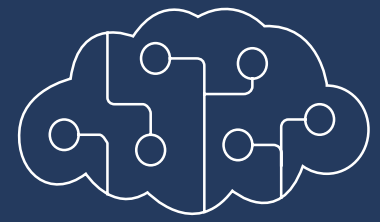
People-centered experiences

DIGITAL FEEDBACK LOOPS

1. **Data**
   Capture digital signal across business
2. **Intelligence**
   Connect and synthesize data
3. **Action**
   Improve business outcomes



Microsoft’s Role



Microsoft's Automotive digital transformation principles

Technology partners approach to automotive

1. Complements OEMs and Mobility Service providers – not compete
2. Ensures your data is always under your control
3. Guarantees the brand and customer experience belongs to you

Technology driven transformation

Connected Vehicle

Autonomous Development

Smart Mobility

Marketing, Sales, Service

Connected Factory

Emerging

Supporting end-to-end business transformation

Our digital transformation focus areas for the new automotive ecosystem

Connected Vehicle

- Connected Vehicle Services
- Predictive Maintenance
- Location-based Services
- Speech Services
- In-Car Productivity

Autonomous Development

- Massive Data Ingestion
- Simulation
- Data Mgmt. and Training Components
- AD Toolchain on Azure

Smart Mobility

- Asset Management
- Fleet Operations Management
- Fleet Information Management
- Urban Mobility
- Data Marketplace

Marketing, Sales, Service

- Customer 360
- Digital marketing
- CRM
- Contact Center
- Dealer Management Services

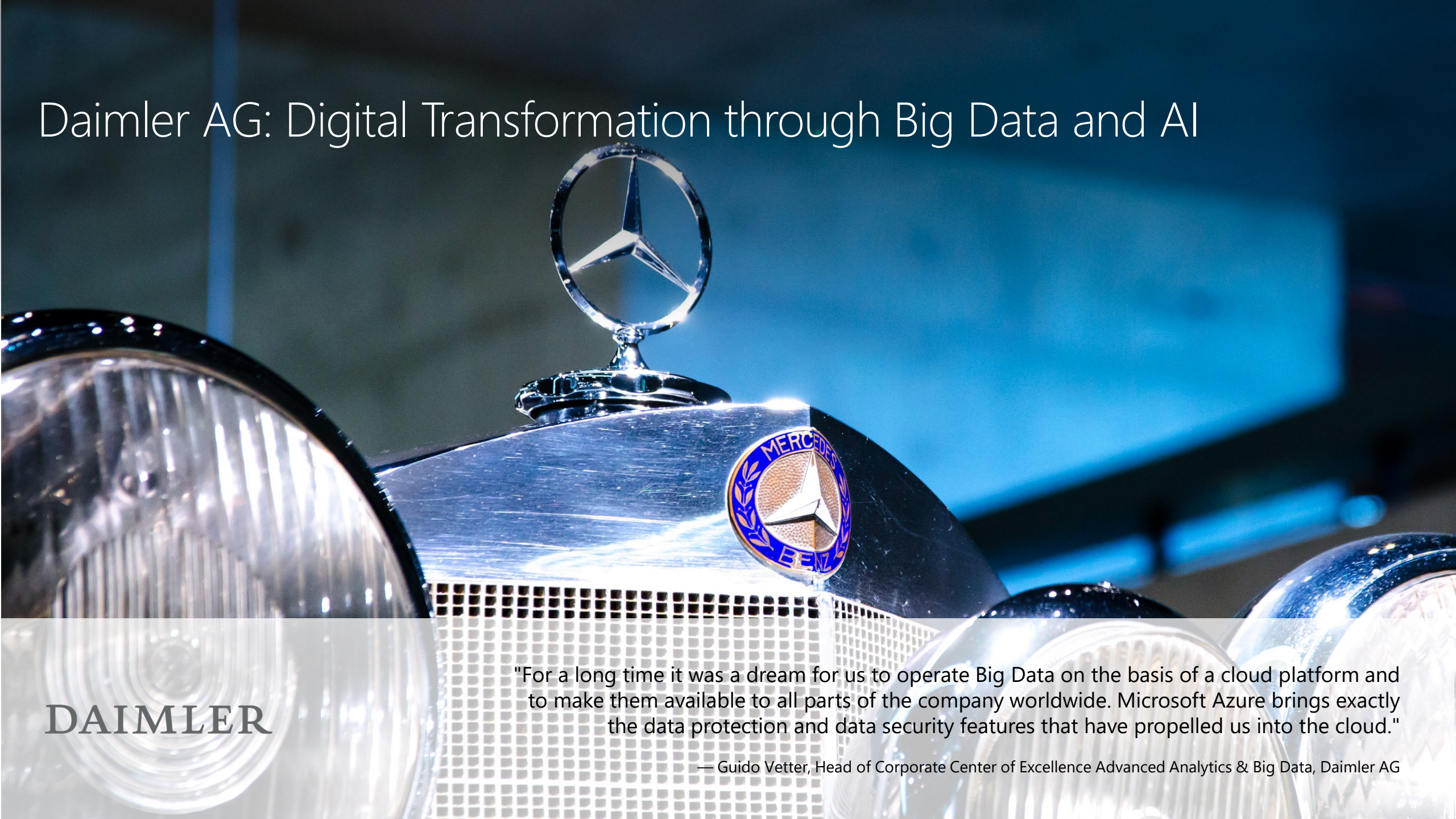
Intelligent Supply Chain

- Connected Factory
- Connected Supply Chain
- Intelligent Decision Making
- Smart Spaces

Emerging

- Blockchain
- Azure Kinect
- Quantum Computing

Daimler AG: Digital Transformation through Big Data and AI



DAIMLER

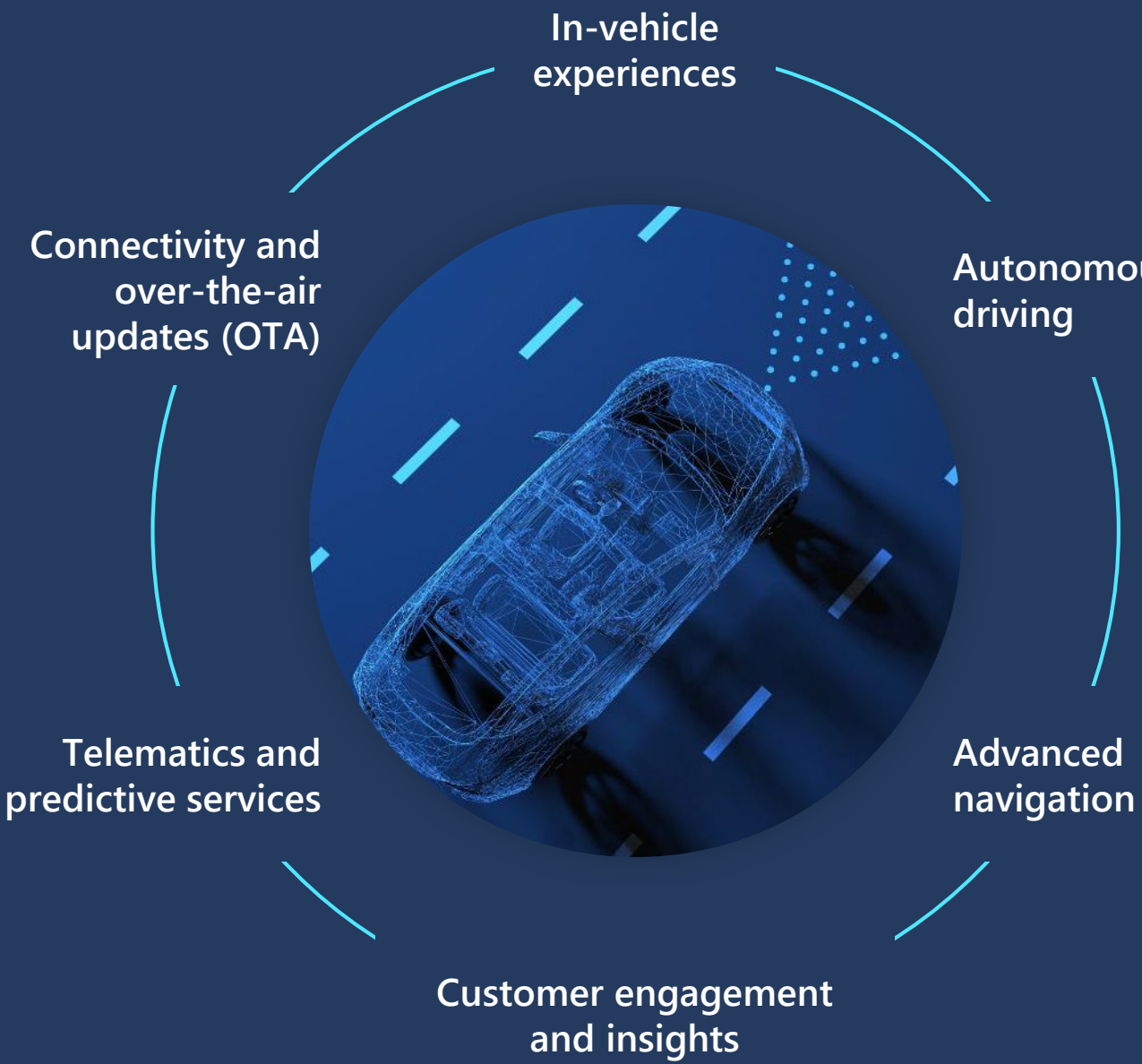
"For a long time it was a dream for us to operate Big Data on the basis of a cloud platform and to make them available to all parts of the company worldwide. Microsoft Azure brings exactly the data protection and data security features that have propelled us into the cloud."

— Guido Vetter, Head of Corporate Center of Excellence Advanced Analytics & Big Data, Daimler AG

Public Festival
FictionZ Music Festival
Main Artist Lineup:
Emm Che
Harvicii
Nadalûtte
Gili van Nili
Mel Itch
DJ Rupert
Monsieur O.
Hotel check-in
Main stage
Friday – Sunday
10:00am – 1:00am
Main stage
Friday – Sunday
6:00pm – 0:00am
Brunch

Microsoft Connected Vehicle Platform

Combining advanced cloud and edge computing services with a strong partner network to empower automotive companies to build connected driving experiences



cubic telecom DSA excelfore faurecia LG otonomo TATA COMMUNICATIONS TELENAV TERAKI TOMTOM WirelessCar

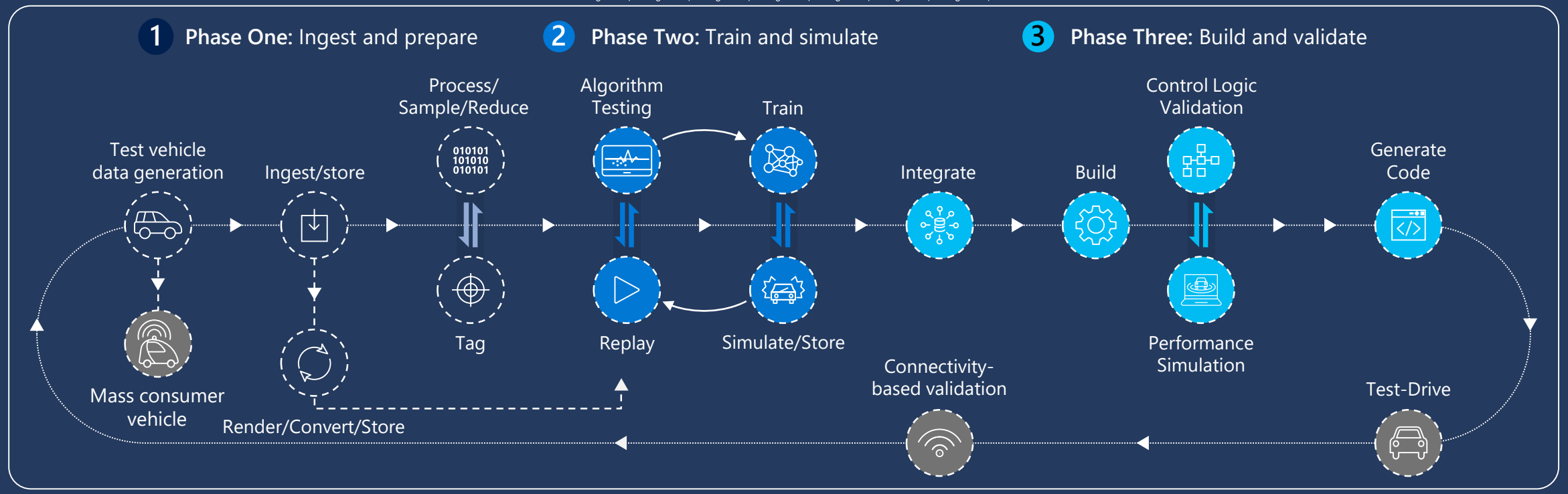
"Volkswagen, as one of the world's largest automakers, and Microsoft, with its unique technological expertise, are outstandingly well-matched. Together, we will play a key role in shaping the future of auto-mobility"

— **Dr. Herbert Diess,**
CEO of Volkswagen

Seamless
Internet Access
Alliance
Intelligent Cloud
Mobility &
Infotainment Services
Maintenance &
Remote Diagnostics
Safety
Upgrades
AI &
Analytics
RENAULT NISSAN MITSUBISHI
DIGITAL CHASSIS
One single connected
vehicle platform for
200 GLOBAL
MARKETS

Autonomous development workflow & partner ecosystem

Massive Data | Computational Intensity | Traceability | Integration | AI Models



APPLIED INTUITION · FEV · accenture · udelv · figure eight · Ascent · AV SIMULATION · CORETEK Services · Altair · Siemens PLM Software SIEMENS · esi · TATA CONSULTANCY SERVICES · LG Electronics · Baidu 百度 · NVIDIA · American Center for Mobility CONNECTED. AUTOMATED. VALIDATED. · cognata · aras corp · INTEMPORA · DXC.technology · EQUINIX · ANSYS

Azure Express Route
Azure Storage
Azure Data Box

Azure Compute
Azure Batch AI
Cognitive Services

Databricks & HDInsight
Azure Machine Learning
Cycle Cloud

Azure IoT Edge
Azure Kubernetes Service
Azure Key Vault, AAD

Audi AG: Digital Transformation through Big Data and AI

"Thanks to the cloud, the question of storage capacity and computing power has finally been answered. We can fully concentrate on developing and securing our technical solutions for automated and autonomous driving".

— **Adrian James,**
Head of Automated Driving Safety, AUDI AG

Key Industry Ecosystem Engagements

American Center for Mobility
CONNECTED. AUTOMATED. VALIDATED.

- Cloud and Analytics partner for ACM, an autonomous and smart mobility test facility
- Leveraged by all OEMs, tier ones and technology start ups
- Engaged with ACM to develop standards

Baidu 百度 apollo

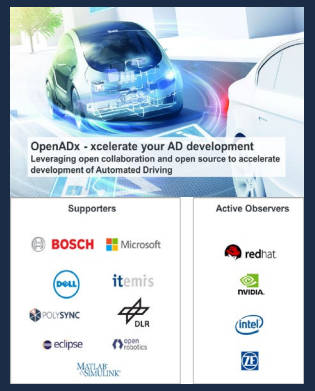
- Open source AD Platform
- 200+ Member Consortium
- Microsoft is the cloud provider for Project Apollo worldwide except for China

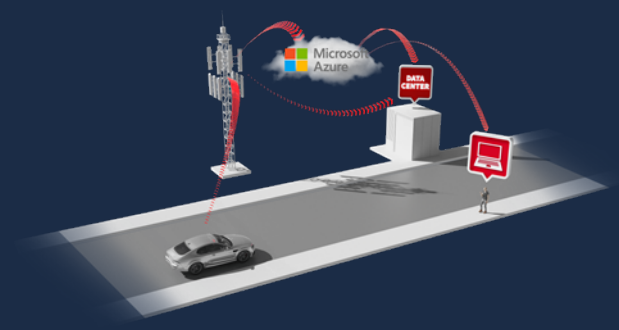
BOSCH

- OpenADx
- Interoperable Eclipse Framework

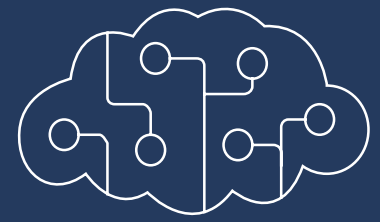
L3Pilot Driving Automation

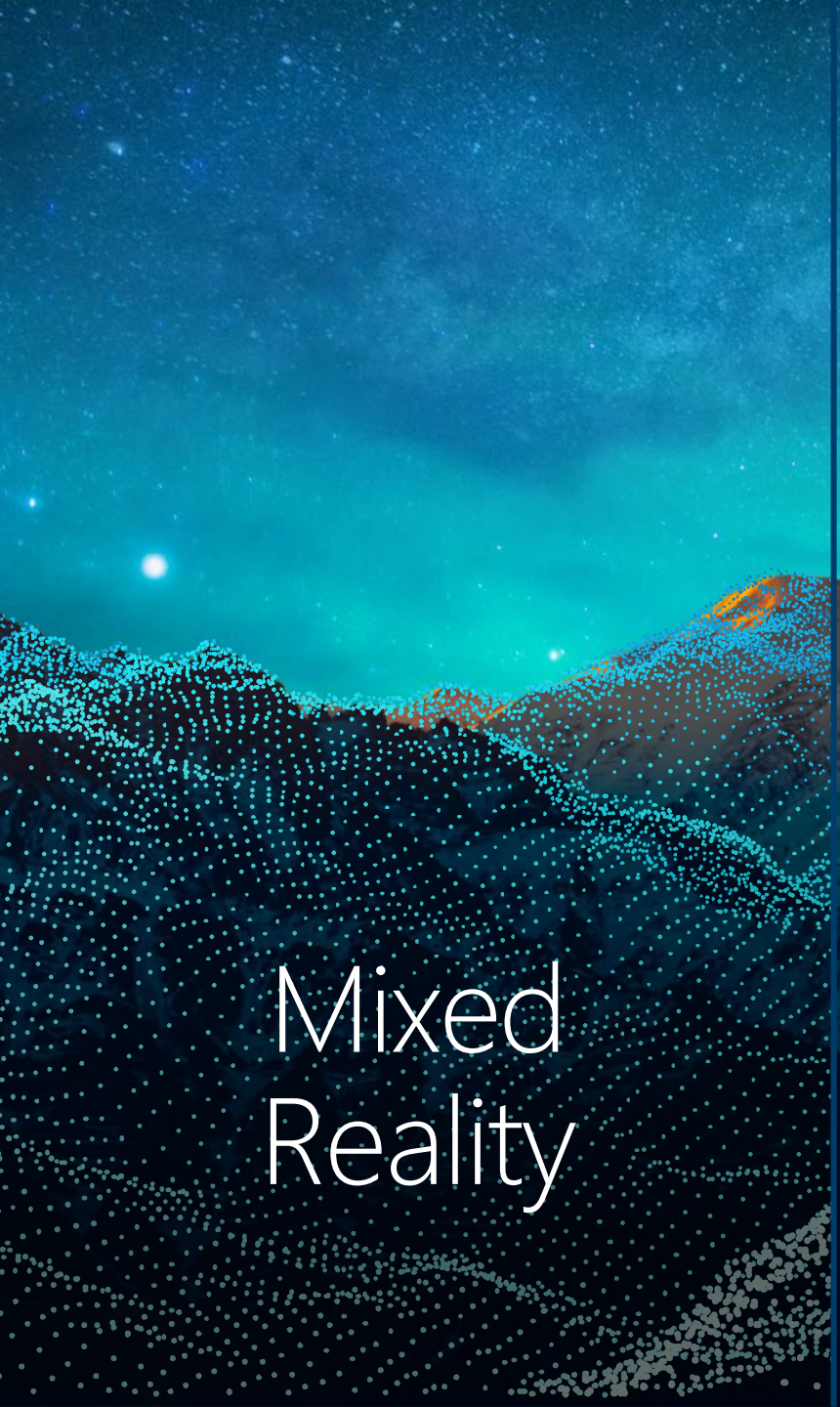
- Collaborate with FEV on L3pilot.eu
- Enable SAE Level 3 functions to be tested in fleets while minimizing the number of errors in order to ready them for series production in the follow-up of the study.



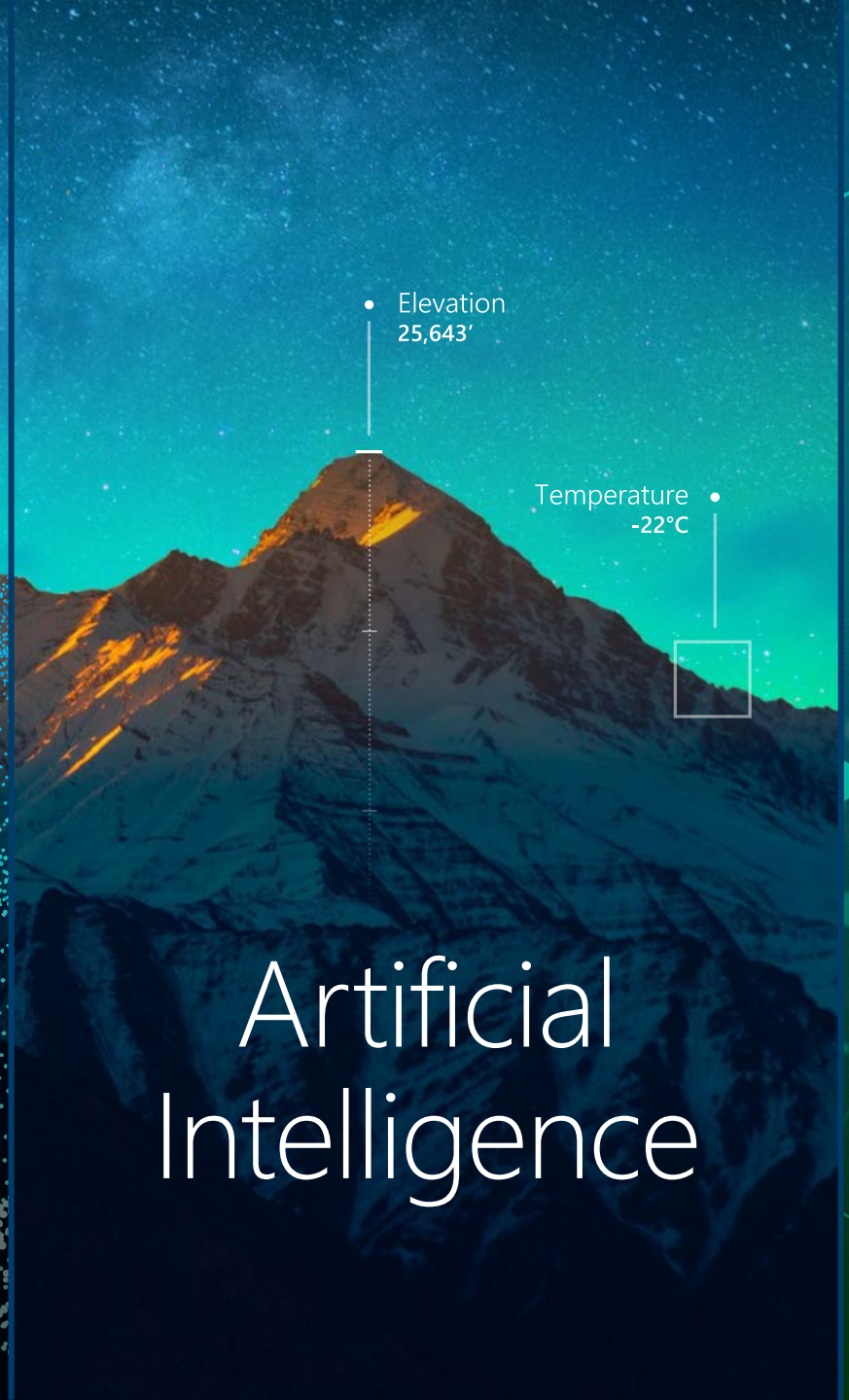


What's Next?

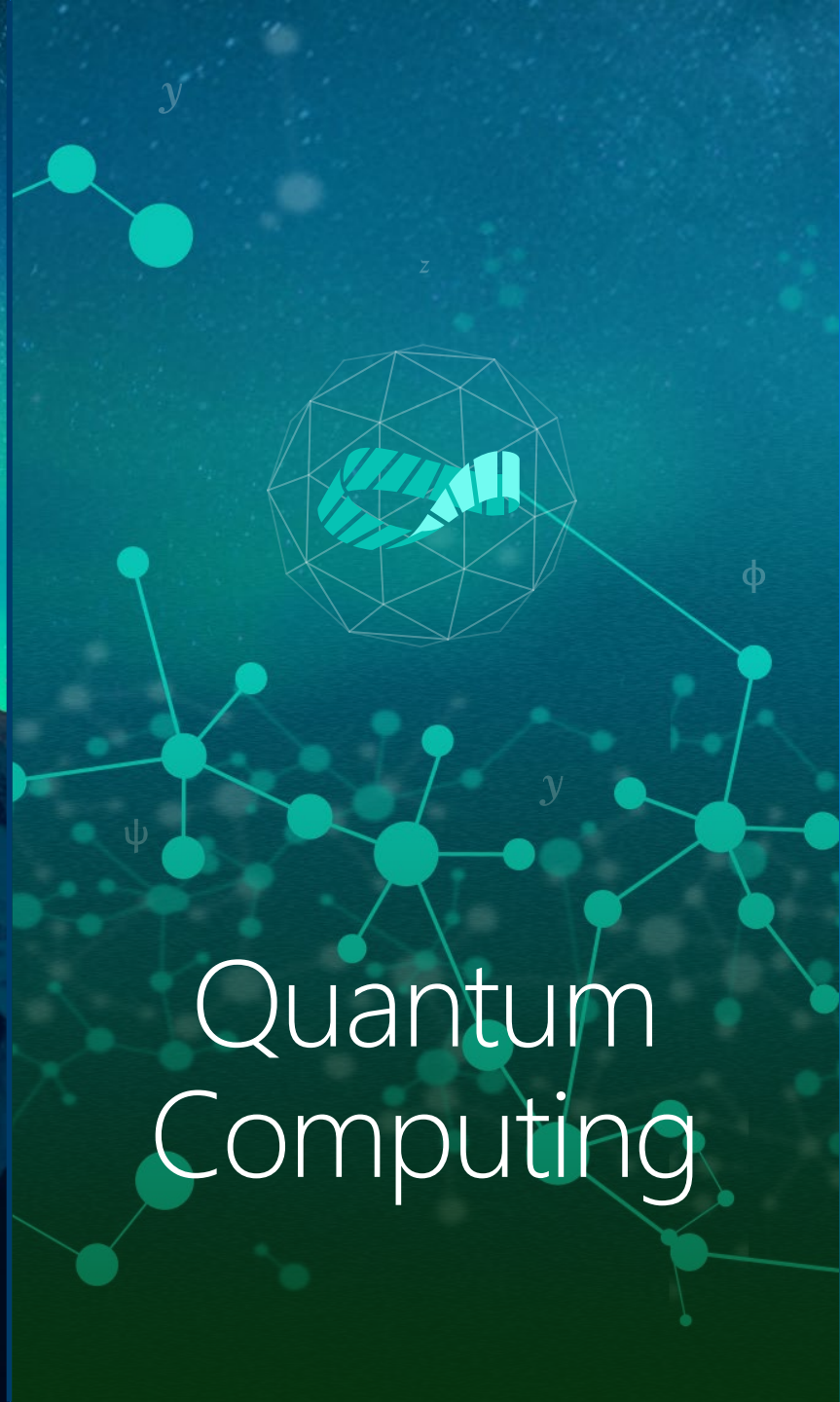




Mixed Reality



Artificial Intelligence



Quantum Computing

Microsoft CityNext

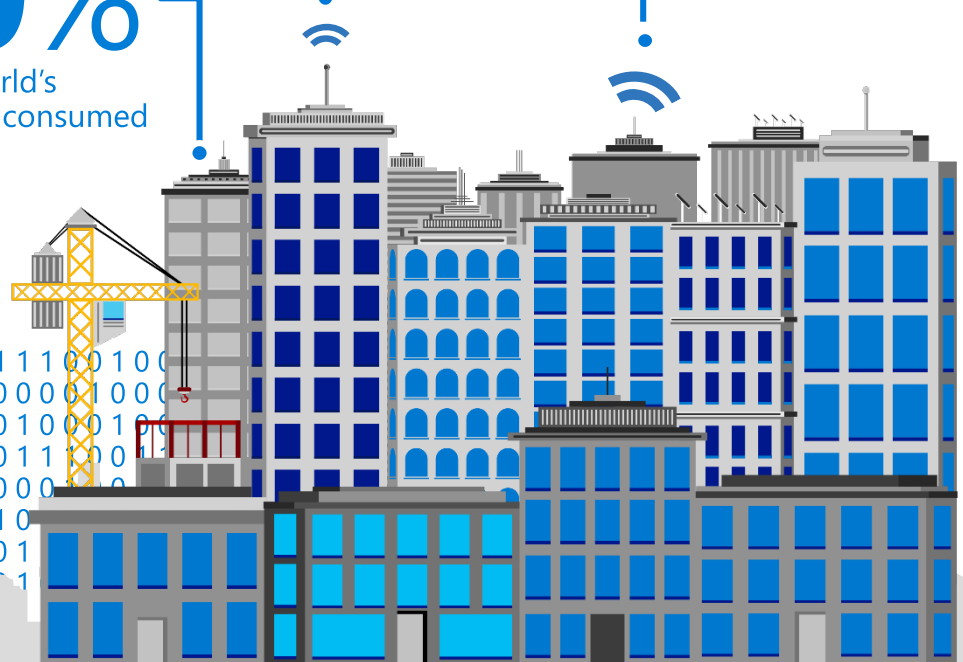
EMPOWERING CITIES & CITIZENS

Cities are where the action is

4.8 billion
people will live in in cities by 2025

80%
of the world's energy is consumed in cities

80%
of GDP is created in cities



OPEN MOBILITY FOUNDATION

Stanford

ALLIANCE TO SAVE ENERGY
using less. doing more.

Smart Transportation Council

Thank you

Fran Dougherty

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