



Azure for Automotive

addressing connected vehicle challenges

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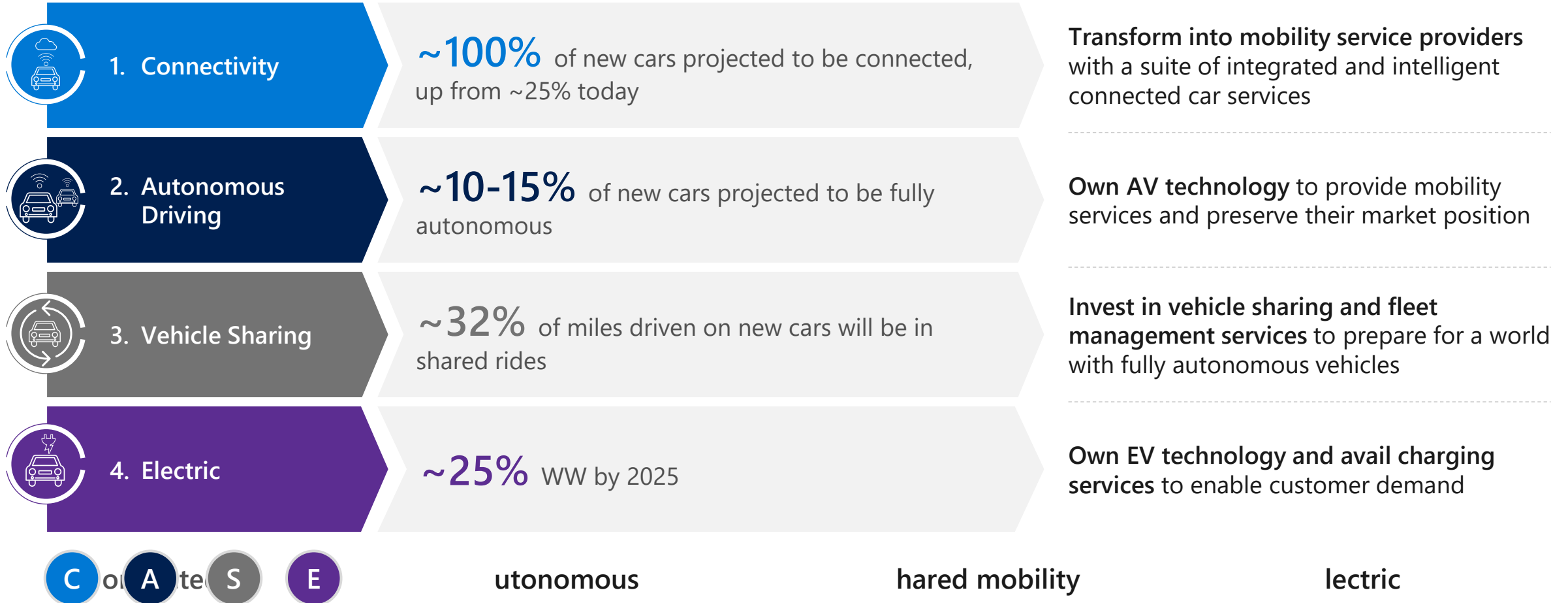
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The Automotive Industry is at a Transformational Moment

The industry is being transformed by a combination of **key technology and business model trends**:

As a result, **automakers need to:**

By 2030...



Microsoft's perspective for automotive

Innovative scenarios



Connected vehicles



Autonomous vehicle development



Smart mobility services



Connected marketing, sales and service



Factory of the Future



Intelligent supply chain



Workforce transformation



Customer outcomes

Connecting OEMs to vehicles & customers with in-car experiences

Teaching cars how to see. Leveraging cloud to accelerate simulations

Creating new multi-modal transport options for urban mobility

Transforming customer engagement channels and experiences

Augment industrial automation with IoT, cloud-based computing, AI, and mixed reality

Reduced parts inventory costs by 10-15% using integrated business planning

Use technology to attract, train, and retain your next generation workforce



VOLVO

PACCAR



SCANIA

Microsoft for Automotive

Our approach to automotive:



Partner not Compete

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0110010
0110101

Your Data is Your Data



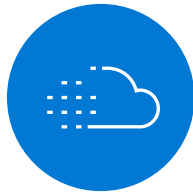
Amplify your Brand



Privacy is a Human Right



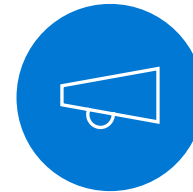
**Connected
Vehicle**



**Autonomous
Development**



**Smart
Mobility**



**Marketing,
Sales, Service**



**Intelligent
Supply Chain**



**Emerging
Technology**

- Vehicle Services
- Connectivity
- Location-based Services
- Speech Services
- In-Car Productivity
- OTA

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

- Fare and Toll Management
- Traffic and Transit Management
- Fleet and Asset Management
- Parking Management
- Data Marketplace

- Customer 360
- Digital marketing
- CRM
- Contact Center
- Dealer Management Systems
- Predictive Maintenance

- Connected Factory
- Connected Suppliers
- Intelligent Supply Chain Management
- Intelligent Spaces

- Blockchain
- Azure Kinect
- Quantum Computing

Why Microsoft Azure?

What is Azure?



Edge Devices

Azure Stack Hub

Azure Stack Edge

Azure Sphere

Azure Kinect

HoloLens



Serverless

Web

Mobile

Mixed Reality

Containers

Events + Integration

Databases

Analytics

AI + Machine Learning

Internet of Things

Media



Infrastructure

Compute

Networking

Storage

Security

Identity



Tools

Visual Studio

GitHub

Power Apps

Power BI

Global



61 Azure regions

Largest geographical footprint of any cloud provider with more than **60** Azure regions

Secure



Microsoft Cyber Defense Operations Center

>3,500 full-time security professionals

6.5 trillion global signals daily

\$1 billion annual cybersecurity investment

Compliant

91 Compliance offerings

GLOBAL

- ISO 27001:2013
- ISO 27017:2015
- ISO 27018:2014
- ISO 22301:2012
- ISO 9001:2015
- ISO 20000-1:2011
- SOC 1 Type 2
- SOC 2 Type 2
- SOC 3
- CIS Benchmark
- CSA STAR Certification
- CSA STAR Attestation
- CSA STAR Self-Assessment
- WCAG 2.0 (ISO 40500:2012)

U.S. GOVT

- FedRAMP High
- FedRAMP Moderate
- EAR
- ITAR
- DoD DISA SRG Level 5
- DoD DISA SRG Level 4
- DoD DISA SRG Level 2
- DFARS
- DoE 10 CFR Part 810
- NIST SP 800-171
- NIST CSF
- Section 508 VPATs
- FIPS 140-2
- CJIS
- IRS 1075
- CNSSI 1253

INDUSTRY

- PCI DSS Level 1
- GLBA (US)
- FFIEC (US)
- Shared Assessments (US)
- SEC 17a-4 (US)
- CFTC 1.31 (US)
- FINRA 4511 (US)
- SOX (US)
- 23 NYCRR 500 (US)
- OSFI (Canada)
- FCA + PRA (UK)
- APRA (Australia)
- FINMA (Switzerland)
- FSA (Denmark)
- RBI + IRDAI (India)
- MAS + ABS (Singapore)
- NBB + FSMA (Belgium)
- AFM + DNB (Netherlands)
- AMF + ACPR (France)
- KNF (Poland)
- European Banking Authority (EBA)
- FISC (Japan)
- HIPAA BAA (US)
- HITRUST Certification
- GxP (FDA 21 CFR Part 11)
- MARS-E (US)
- NHS IG Toolkit (UK)
- NEN 7510:2011 (Netherlands)
- FERPA (US)
- CDSA
- MPAA (US)
- FACT (UK)
- DPP (UK)

REGIONAL

- Argentina PDPA
- Australia IRAP Unclassified
- Australia IRAP PROTECTED
- Canada Privacy Laws
- China GB 18030:2005
- China DJCP (MLPS) Level 3
- China TRUCS / CCCPPF
- EU EN 301 549
- EU ENISA IAF
- EU Model Clauses
- EU – US Privacy Shield
- GDPR
- Germany CS
- Germany IT-Grundschutz workbook
- India MeitY
- Japan CS Mark Gold
- Japan My Number Act
- Netherlands BIR 2012
- New Zealand Gov CIO Framework
- Singapore MTCS Level 3
- Spain ENS High
- Spain DPA
- UK Cyber Essentials Plus
- UK G-Cloud
- UK PASF

2 Mil

miles
intra-datacenter fiber

72+

Tb per second
backbone

60+

Azure regions

100+

datacenters

Millions

of servers

Global Scale

<https://azure.microsoft.com/en-us/global-infrastructure/regions/>

2 Mil

miles
intra-datacenter fiber

72+

Tb per second
backbone

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Azure regions

100+

datacenters

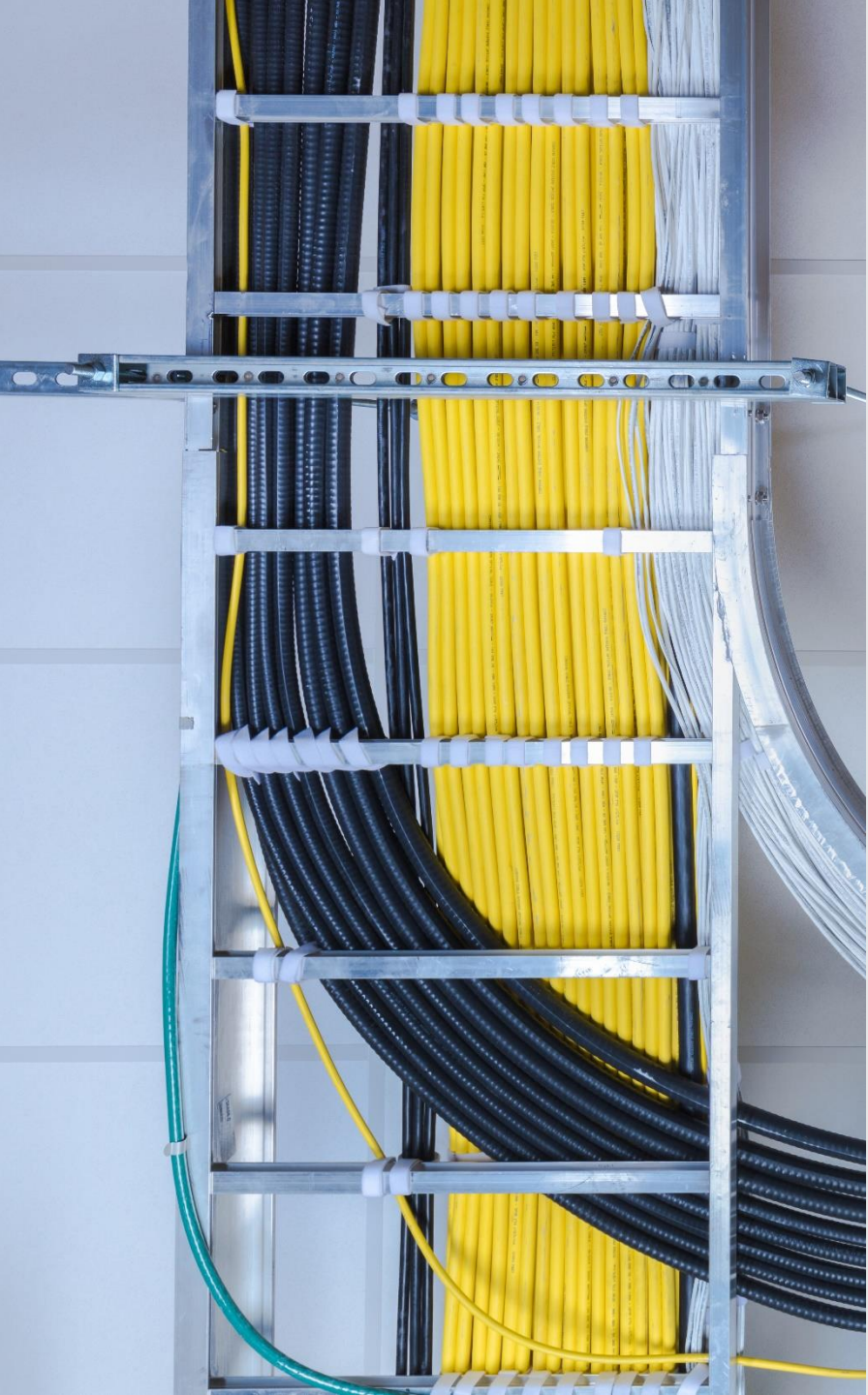
Millions

of servers



Global Scale

<https://azure.microsoft.com/en-us/global-infrastructure/regions/>



One of the largest networks on the planet



Inter and intra regional connectivity



Terrestrial & subsea network



Interconnection

Azure: Trusted

Global



ISO 27001



ISO 27018



ISO 27017



ISO 22301



SOC 1 Type 2



SOC 2 Type 2



SOC 3



CSA STAR
Self-Assessment



CSA STAR
Certification



CSA STAR
Attestation

Regional



Argentina
PDPA



EU
Model
Clauses



UK
G-Cloud



China
DJCP



China
GB 18030



China
TRUCS



Singapore
MTCS



Australia
IRAP/CCSL



New
Zealand
GCIO



Japan My
Number Act



ENISA
IAF



Japan CS
Mark Gold



Spain
ENS



Spain
DPA



India
MeitY



Canada
Privacy Laws



Privacy
Shield



Germany IT
Grundschutz
workbook

Industry



PCI DSS
Level 1



CDSA



MPAA



FACT UK



Shared
Assessments



FISC Japan



HIPAA/
HITECH Act



HITRUST



GxP
21 CFR Part 11



MARS-E



IG Toolkit UK



FERPA



GLBA



FFIEC

U.S. Gov



Moderate
JAB P-ATO



High
JAB P-ATO



DoD DISA
SRG Level 2



DoD DISA
SRG Level 4



DoD DISA
SRG Level 5



SP 800-171



FIPS 140-2



Section 508 VPAT



ITAR



CJIS



IRS 1075

Reliable infrastructure for your innovation

On-demand
global scale

55 regions

**Global
network** More than 160 edge
sites and 20,000
peering connections

150 VM size
options

Best for Microsoft
workloads

Best hybrid cloud experience
for Windows Server

Run SQL in Azure VMs
most cost-effectively

Comprehensive protection
for hybrid environments

Linux, Open Source,
and Red Hat

~50% of Azure VMs
run Linux

1.4x growth
of Linux

 Co-located support
with Red Hat

Purpose-built
infrastructure



vmware®

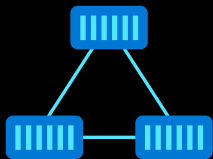
ORACLE®

NetApp®

CRAY

Efficient application development

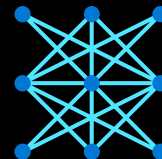
Characteristics of modern applications



Containers



Managed
Databases



Artificial
Intelligence

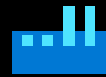


Serverless

Azure IoT

Broadest portfolio

Industry solution accelerators



Fully managed services



Azure IoT Central



Azure Security Center for IoT



Dynamics Connected Field Service

Developer services

Azure IoT Hub

Azure IoT Edge

Azure Digital Twins

Azure Maps

Azure Time Series Insights

Azure Stream Analytics

Microsoft Azure

Infrastructure | Data | AI | App Dev

Azure IoT Ecosystem

Industries



Automotive



Retail



Industrial



Healthcare



Security & Surveillance



Energy

SaaS

Azure IoT Central
IoT SaaS

Microsoft Connected Field Service
Field Service SaaS

PaaS

IoT solution accelerators

Remote monitoring

Predictive maintenance

Connected factory

PaaS Services & Device Support



Device Support



Data & Analytics Services



Visualization & Integration Services



Edge Support



IoT Services

Open source support

DevOps

Nagios



Management



Applications



App frameworks and tools



Databases and middleware



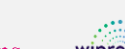
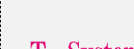
Infrastructure



IoT Partners

System Integrators (SIs)

accenture



GISV/ISV



Distributors



Hardware



Security

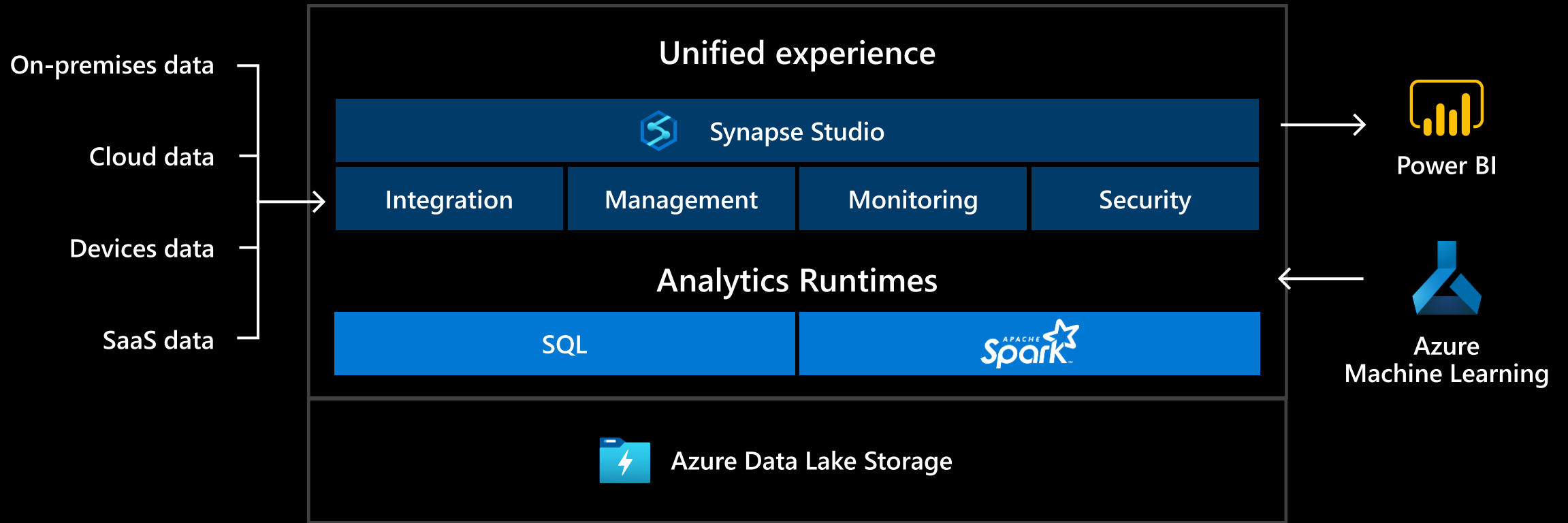


1,000's of Azure IoT certified devices



Data, AI & Analytics

Limitless data warehouse with unmatched time to insights



An aerial, long-exposure photograph of a busy city intersection at night. The image shows multiple lanes of traffic with light trails from cars and trucks in various colors (white, yellow, red, blue). The intersection is surrounded by dark green trees and some urban infrastructure like streetlights and traffic signals. The overall scene is dynamic and captures the flow of traffic in a complex urban environment.

Connected vehicles: Case Studies



Connecting OEMs to vehicles & customers with in-car experiences





Connected vehicles technology



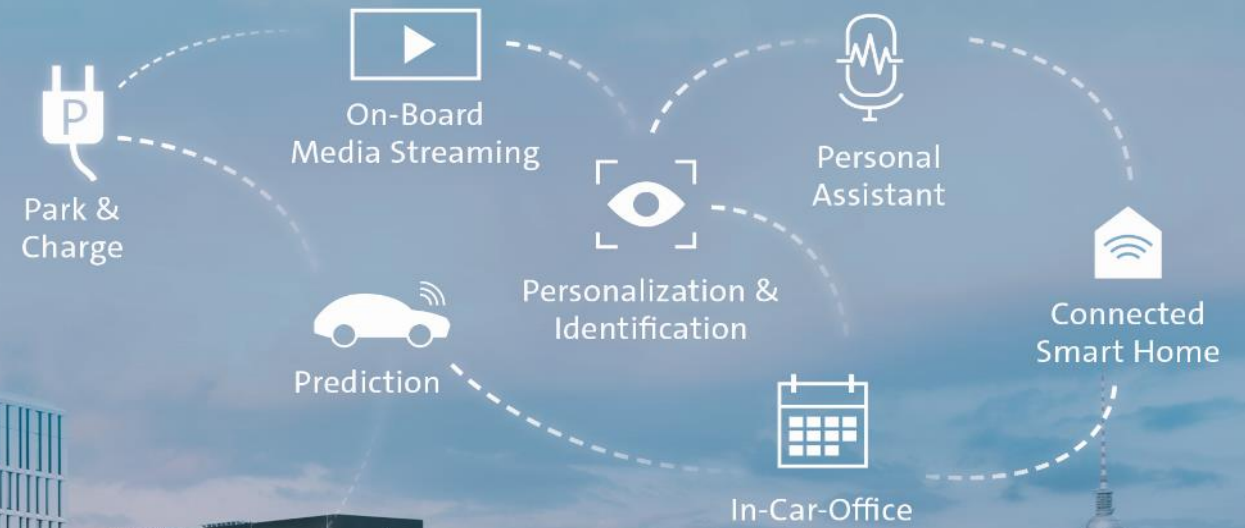
Microsoft Azure IoT |
Microsoft Connected Vehicle Platform

Microsoft
Partners¹



1. Representative partners, not a complete list

VOLKSWAGEN AUTOMOTIVE CLOUD



Challenge

Transform into a digital services-driven company to create a seamless experience for drivers

Strategy

Create a Volkswagen Automotive Cloud powered by Microsoft's Azure cloud and IoT Edge platform.

Results

Provide consistent mobility services and optimize the connections between its vehicles, cloud-based platform, and customer-centric services for its entire brand portfolio

"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





Challenge

Connect to vehicles and share digital features across multiple models and brands for consumers in different regions around the world.

Strategy

Create auto industry's first global and most ambitious connected vehicle program utilizing Azure cloud, AI and IoT technologies

Results

Alliance Intelligent Cloud that provides enhanced remote diagnostics, continuous software deployment, firmware updates and access to infotainment services.



DIGITAL CHASSIS

One single connected vehicle platform for

“Today we are deploying a vehicle connectivity platform that will transform the digital experience of our customers. We are introducing the most powerful and far-reaching connected vehicle platform”

— Kal Mos, Global Vice President of Alliance Connected Vehicles at Renault-Nissan-Mitsubishi



Deliver personalized mobility services

Challenge

Keep up with the rising customer demand for personalized mobility services.

Strategy

Build an OEM branded customizable intelligent personal assistant on Microsoft Azure, while owning customer data in the cloud

Results

Provides a digital assistant that is familiar with vehicle functions and constantly learns the driver to provide a personalized contextual experience .



"We are building this platform as a foundation for our future services and experiences... and Microsoft Azure and Azure services gave us the right tools."

— Thom Brenner, Vice President of Digital Life, BMW Group