Microsoft

車聯網及電動車 端到端的安全防護服務

For EV Cybersecurity Forum 3/3/2021

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Agenda

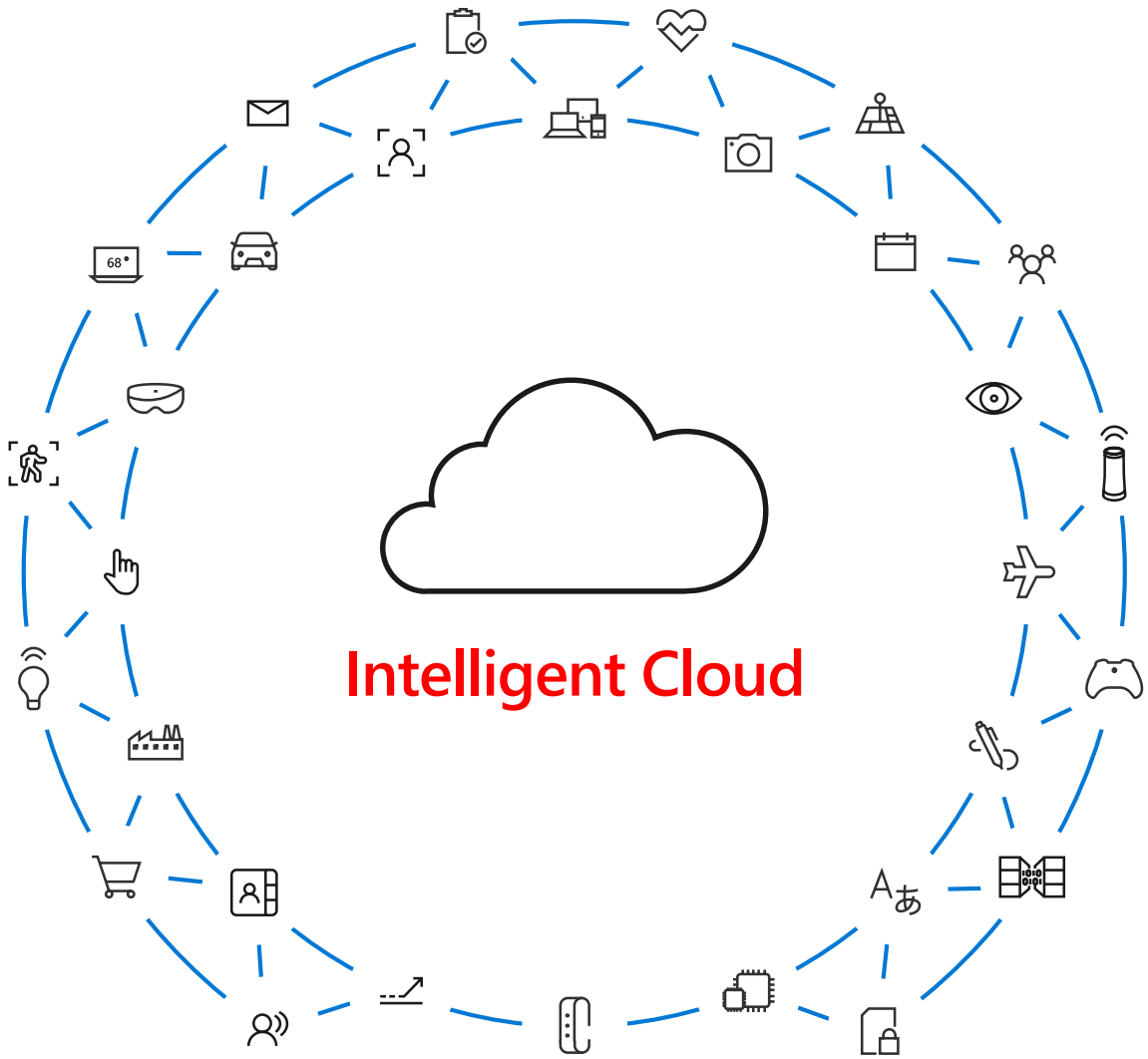
- Microsoft & Industrial Cybersecurity Trends
- Microsoft End-to-end Cybersecurity Offerings
  - IoT Security
  - EV Security
  - Best Practices
- Microsoft EV / Cybersecurity Ecosystem
- Summary

Microsoft Worldview

Ubiquitous Computing

Artificial Intelligence

User-centric Experience



Solutions that span cloud and edge

Intelligent Edge

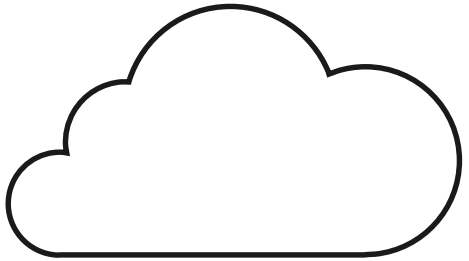
AI + IoT

Connected Places

End to end Security

5G Scenarios

Digital Twins



Intelligent Cloud

IoT & Edge Device Support

- Azure RTOS
- Azure Sphere
- Azure IoT Device SDK
- Azure IoT Edge
- Azure Stack Edge

Solutions

Azure IoT Solutions

- Azure IoT Central (SaaS)

Azure Services for IoT

- Azure IoT Hub
- Azure IoT Hub Device Provisioning Service
- Azure Digital Twins
- Azure Time Series Insights
- Azure Maps
- Azure Stream Analytics

Microsoft | Security Solutions Products Operations Partners Resources Trust Center

January 27, 2021

Microsoft surpasses $10 billion in security business revenue, more than 40 percent year-over-year growth

Vasu Jakkal CVP, Security, Compliance and Identity

[Microsoft Security Blog 2021.1.27: #ZeroTrust #IT/OTSecurity #SecurityMatureModel]

Microsoft Security

400,000 customers use Microsoft to:

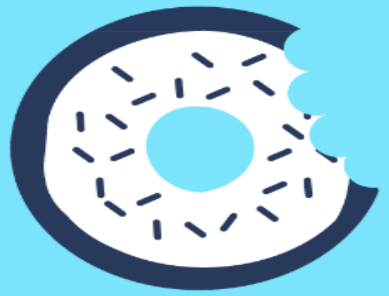
Protect devices

2.5 billion daily cloud-based detections blocked almost **6 billion** threats on endpoints in 2020.

6 billion kilometers will get you all the way from Earth to Pluto.

Secure identities

Every day, more than **30 billion authentications** are processed across Azure AD's **425 million** users.



30 billion is **3 times** the number of donuts consumed in the US each year.

Collaborate safely

In 2020, more than **30 billion** email threats were blocked by Defender for Office 365.

30 billion standard first class letters would weigh almost the same as **100 Seattle Space Needles!**

Ensure compliance

Each month, compliance solutions process more than **5 billion** document classifications.

That's almost 2,000 per second or **24 times faster than a hummingbird flaps its wings!**

Detect threats

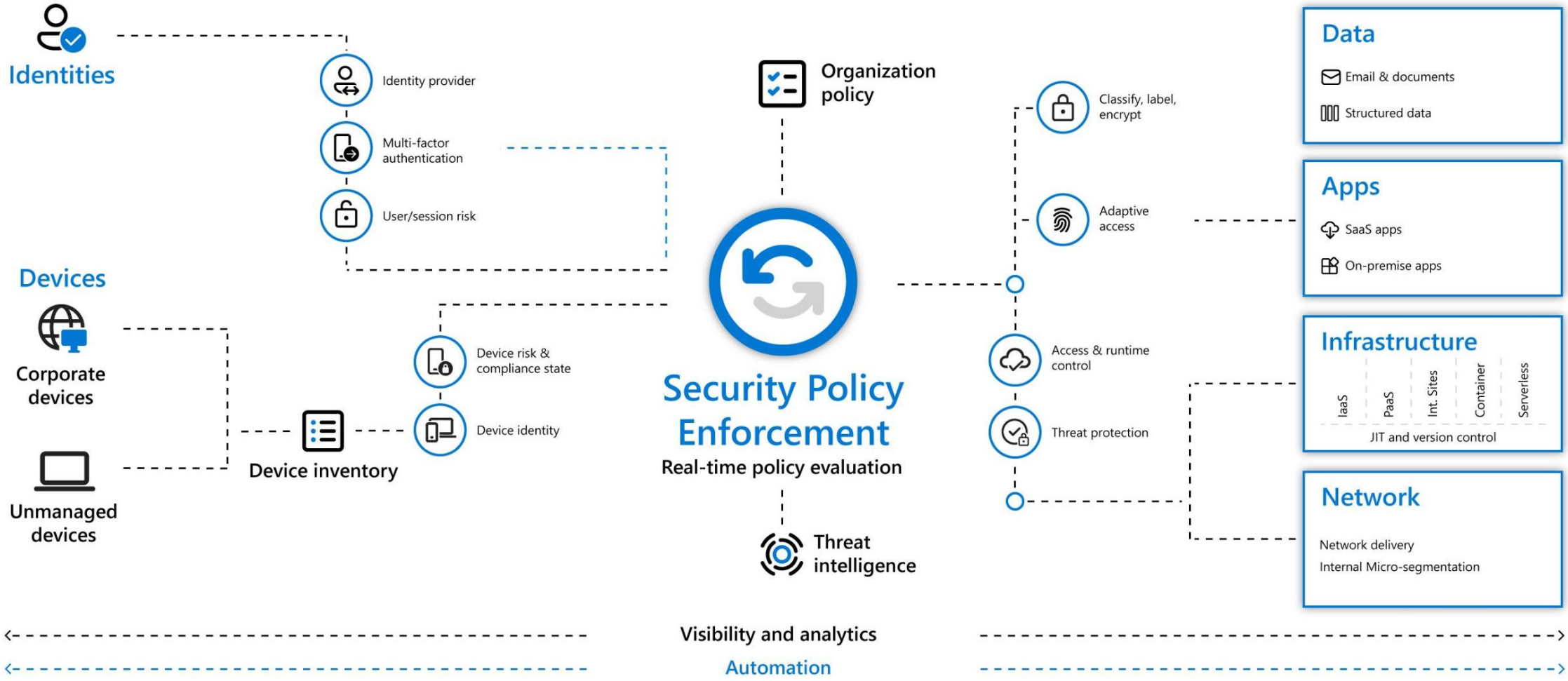
Azure Sentinel analyzes over **4 petabytes** of data each month from Azure, Amazon Web Services, on-prem, and more!

That's **211,000 times** the size of Wikipedia, every month!

Zero Trust Defined

Zero Trust Principles

- Verify explicitly
- Use least privileged access
- Assume breach



Zero Trust Security: #SecurityFeedbackLoop #Identities #Devices #DataAppInfraNetwork

How Garner defines Operational Technology (OT) Security

"The practices and technologies used to protect *people, assets and information* involved in the monitoring and/or control of physical devices, processes and events."*

Manufacturing, energy & water utilities, smart buildings, chemicals, pharmaceuticals, oil & gas, transportation & logistics, mining, life sciences, retail, …

*Gartner: OT Security Best Practices 2018/9/14

Differences between IT & OT security

IT Security

OT Security

Differences between IT & OT security

IT Security

Data confidentiality & privacy

Standard protocols & devices

High levels of connectivity

Multiple layers of controls & telemetry

OT Security

Safety & availability

Specialized protocols, devices & legacy OS platforms

Traditionally air-gapped

Little or no visibility into IoT/OT risk

IoT/OT risk = business risk

Financial

Destructive malware shuts down factories worldwide, causing billion of dollars in losses (WannaCry, NotPetya, LockerGoga, Ekans, …).

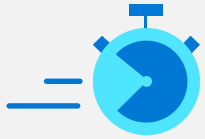
IP Theft

Manufacturers are 8x more likely to be attacked for theft of IP like proprietary formulas and designs than other verticals (DBIR).

Safety

Safety controllers in petrochemical facility compromised with purpose-built back door in TRITON attack.

Zero Trust for IoT/OT — Recommendations



Verify explicitly.

Implement least privileged access.

Assume compromise.

Apply basic hygiene.

Patch where possible.

Implement Multi-factor Authentication.

Train employees.

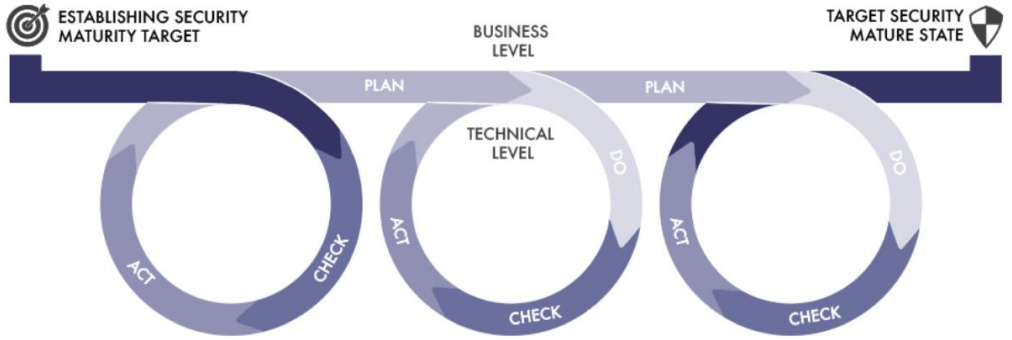
Implement continuous monitoring.

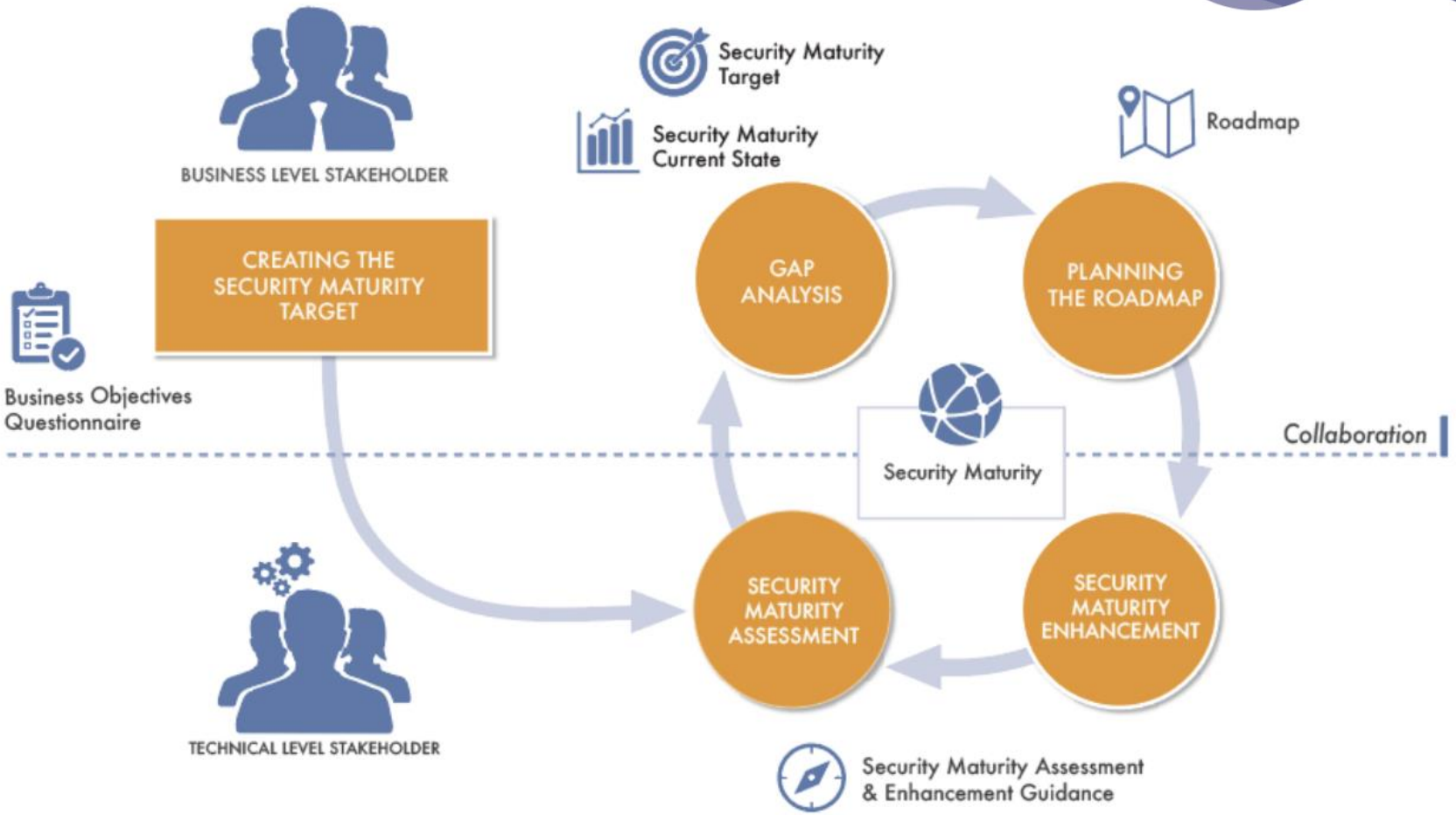
Detect unauthorized or compromised devices with behavioral anomaly detection.

Automate incident response (**SOAR**).

Unify IT, IoT, and OT security monitoring and governance in your SOC (**Chip Level Security**).

Security Mature Model





[Industrial Internet Consortium: SMM Description & Intended Use 2018.4.19: #PDCA]

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End to End Security with Azure IoT

Securely connect millions of devices…

…over a secure internet connection…

…to Microsoft Azure – built with security from the ground up

Device Security

X.509 Certificate Based Identity and Attestation
Device Provisioning, Authorization & Management
Support for Diverse Hardware Secure Modules

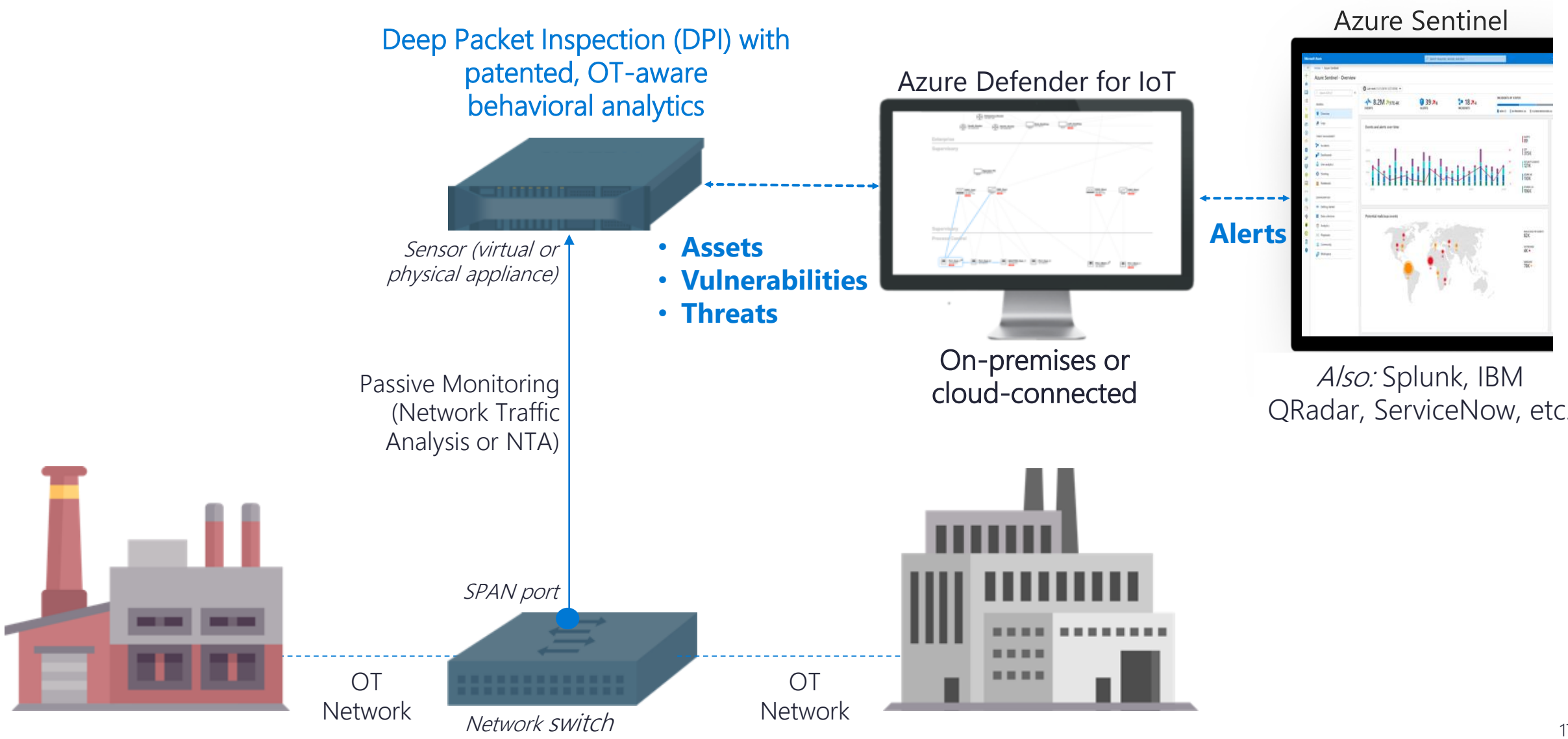
Connection Security

X.509/TLS-Based Handshake and Encryption

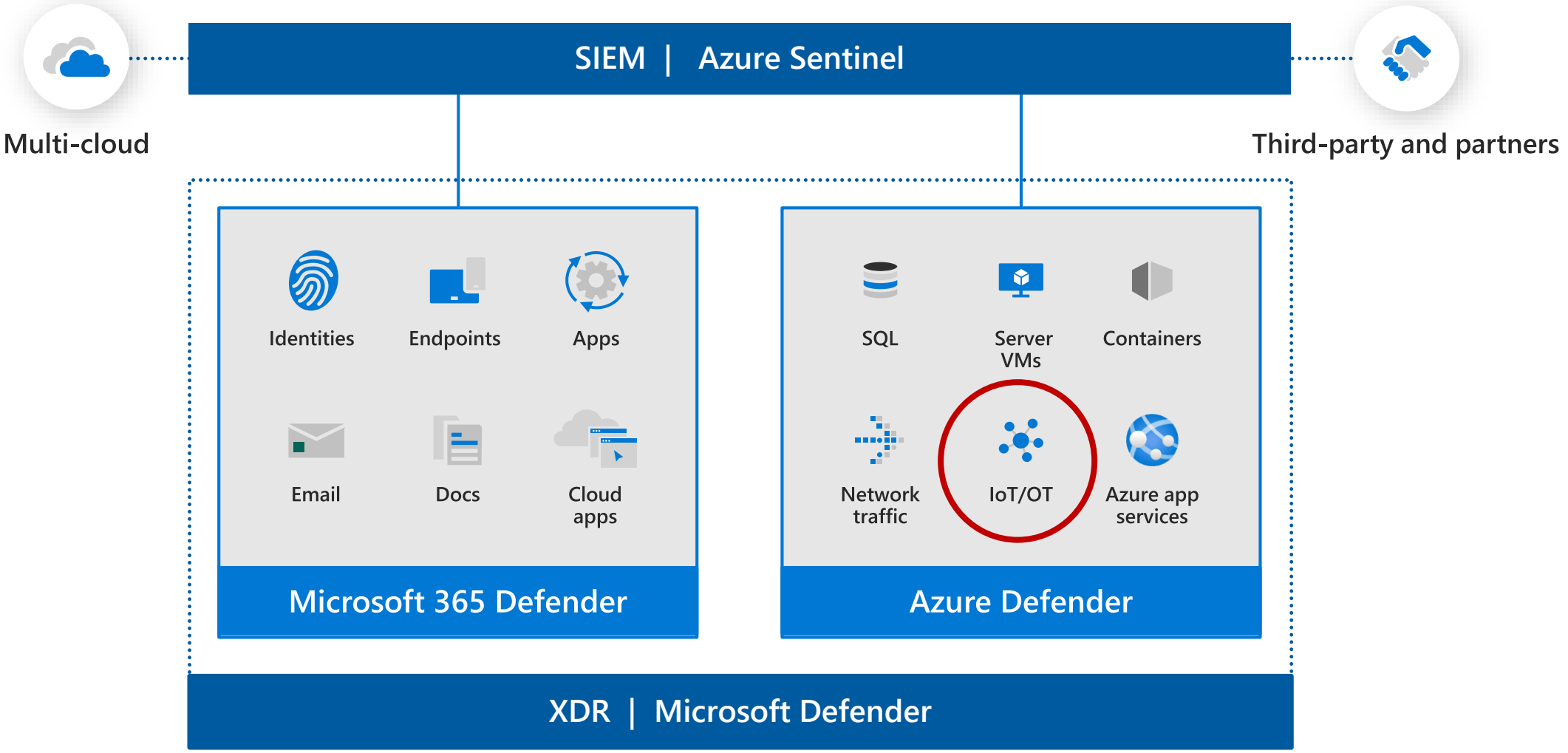
Cloud Security

Azure Security Center | Azure Active Directory
Key Vault | Policy-Based Access Control

Rapid deployment with zero performance impact

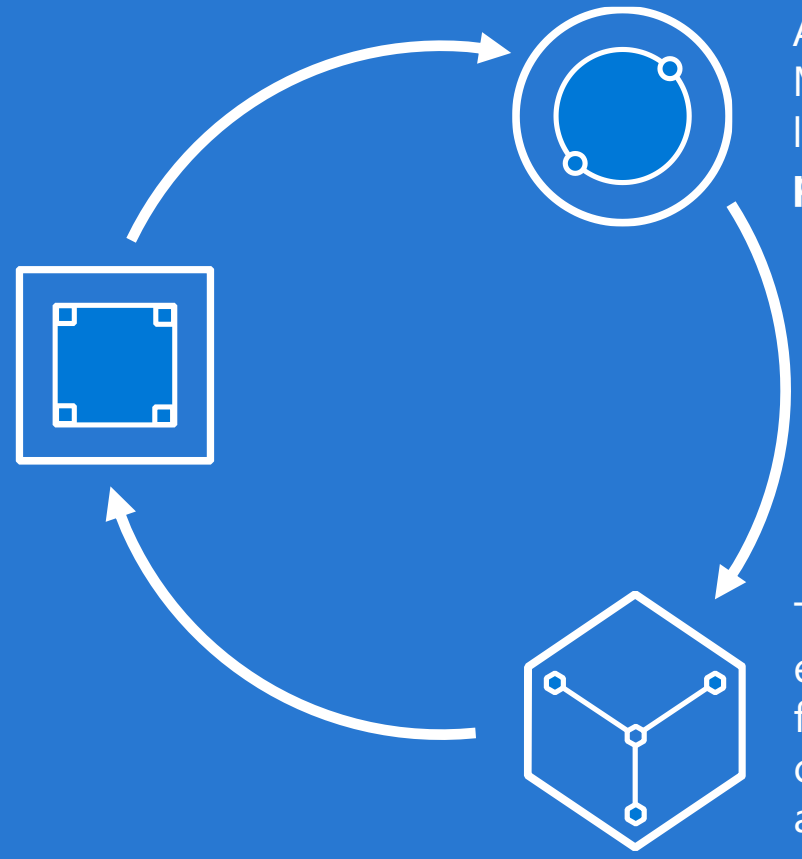


Stay ahead of attackers with a unified SecOps experience



Azure Sphere is an end-to-end solution for securing MCU powered devices

A new **Azure Sphere class of MCUs,** from silicon partners, with built-in Microsoft security technology provide connectivity and a dependable **hardware root of trust**.



A new **Azure Sphere OS** secured by Microsoft for the devices 10-year lifetime to create **a trustworthy platform** for new IoT experiences

The **Azure Sphere Security Service** guards every Azure Sphere device; it **brokers trust** for device-to-device and device-to-cloud communication, **detects emerging threats**, and **renews device security**.

Azure RTOS

A comprehensive suite of multithreading facilities, middleware, and Windows tools for developing embedded IoT applications.

Reliable, real-time performance

for resource-constrained devices

- Remarkably small footprint
- Ultra fast
- Guaranteed performance times
- Unique, advanced features that reduce run-time overhead

A comprehensive, easy-to-use solution

for fast get-to-market

- 6.2 billion device deployments of Azure RTOS
- Simple to use
- Supports the most popular architecture and embedded development tools

Access to the power of Azure IoT

with multiple paths to connect IoT devices to the benefits of Azure

- Out-of-the-box connectivity to Azure IoT
- Helps protect devices from attack
- Combines with Azure Sphere for real-time, highly-secured devices

DRIVING THE FUTURE OF MOBILITY

Smart Mobility Services

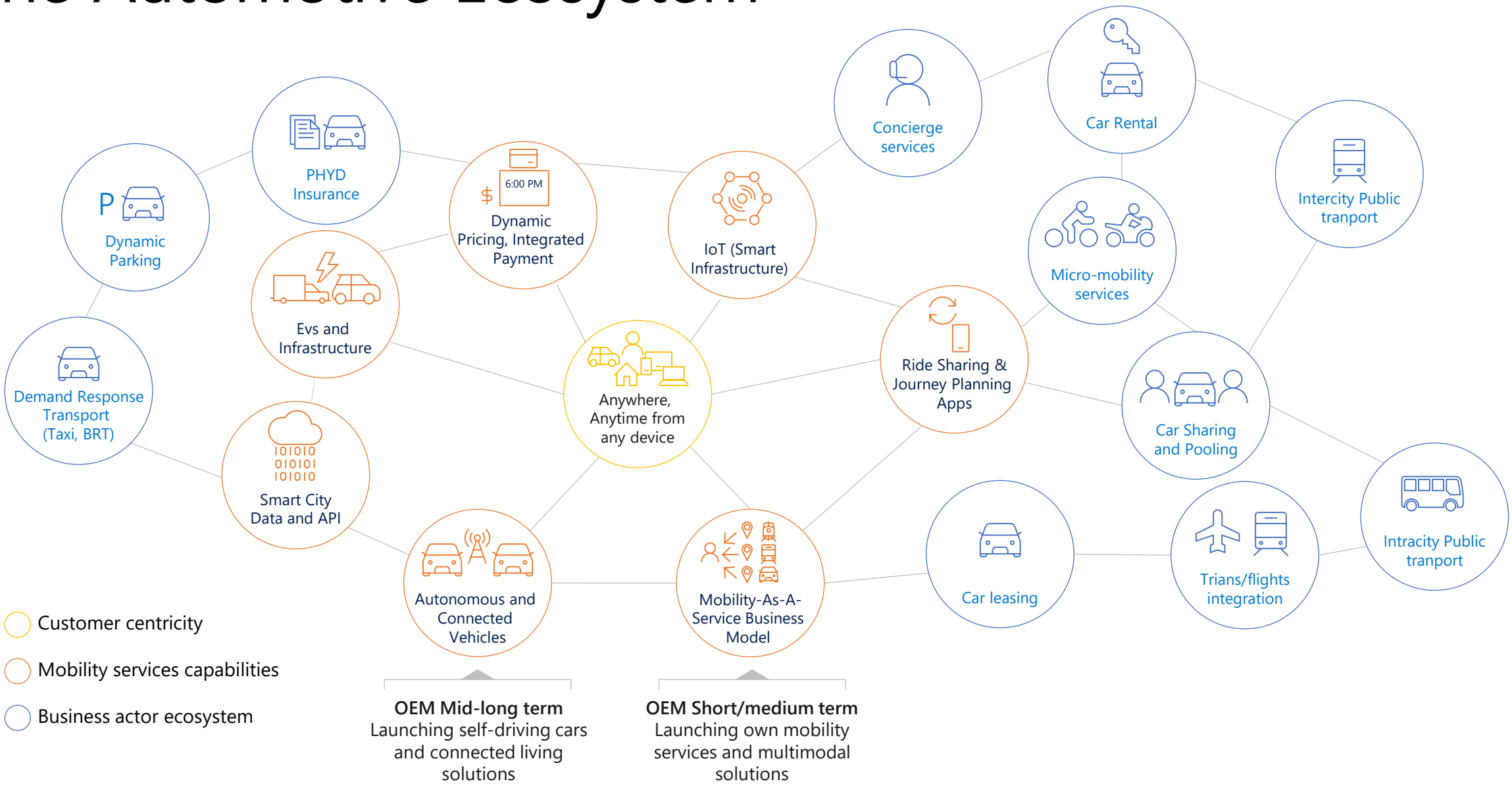
Connected Marketing, Sales and Service

Intelligent Supply Chain

Autonomous Vehicle Development

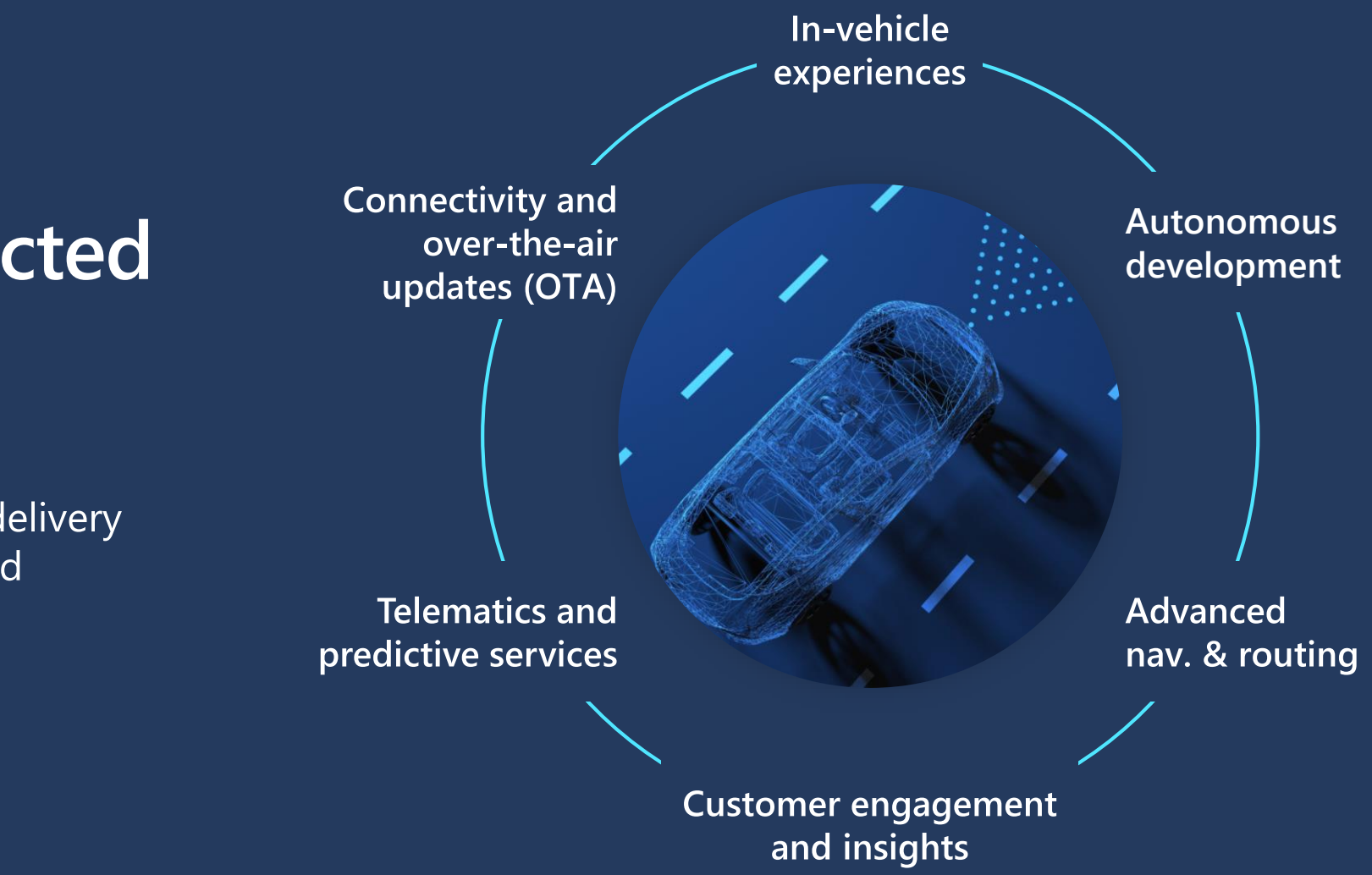
Connected Vehicles

The Automotive Ecosystem



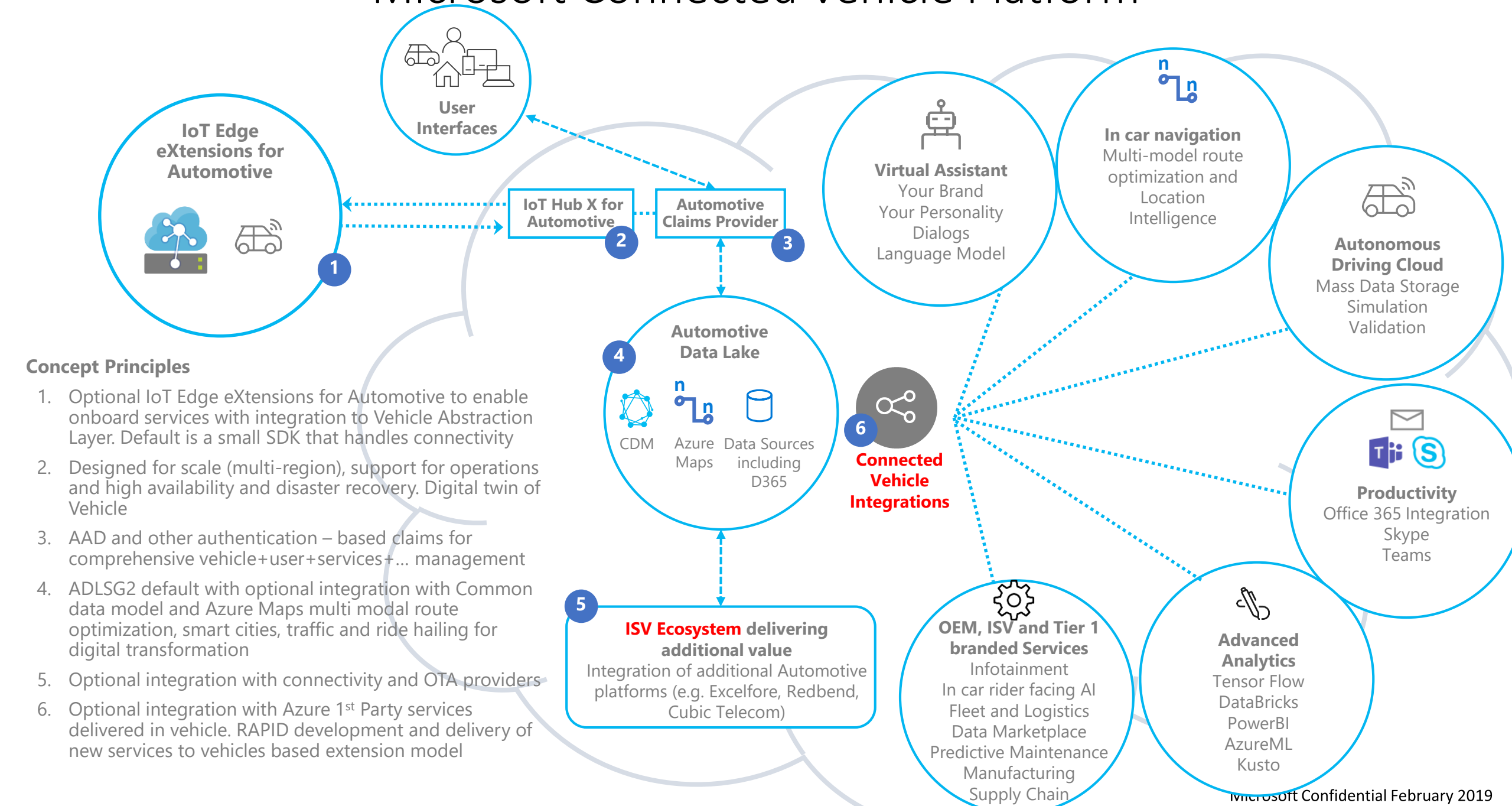
Microsoft Connected Vehicle Platform

An automotive & industrial grade platform designed to accelerate delivery of connected vehicle solutions and mobility experiences



[The Microsoft Connected Vehicle Platform: An Introduction]

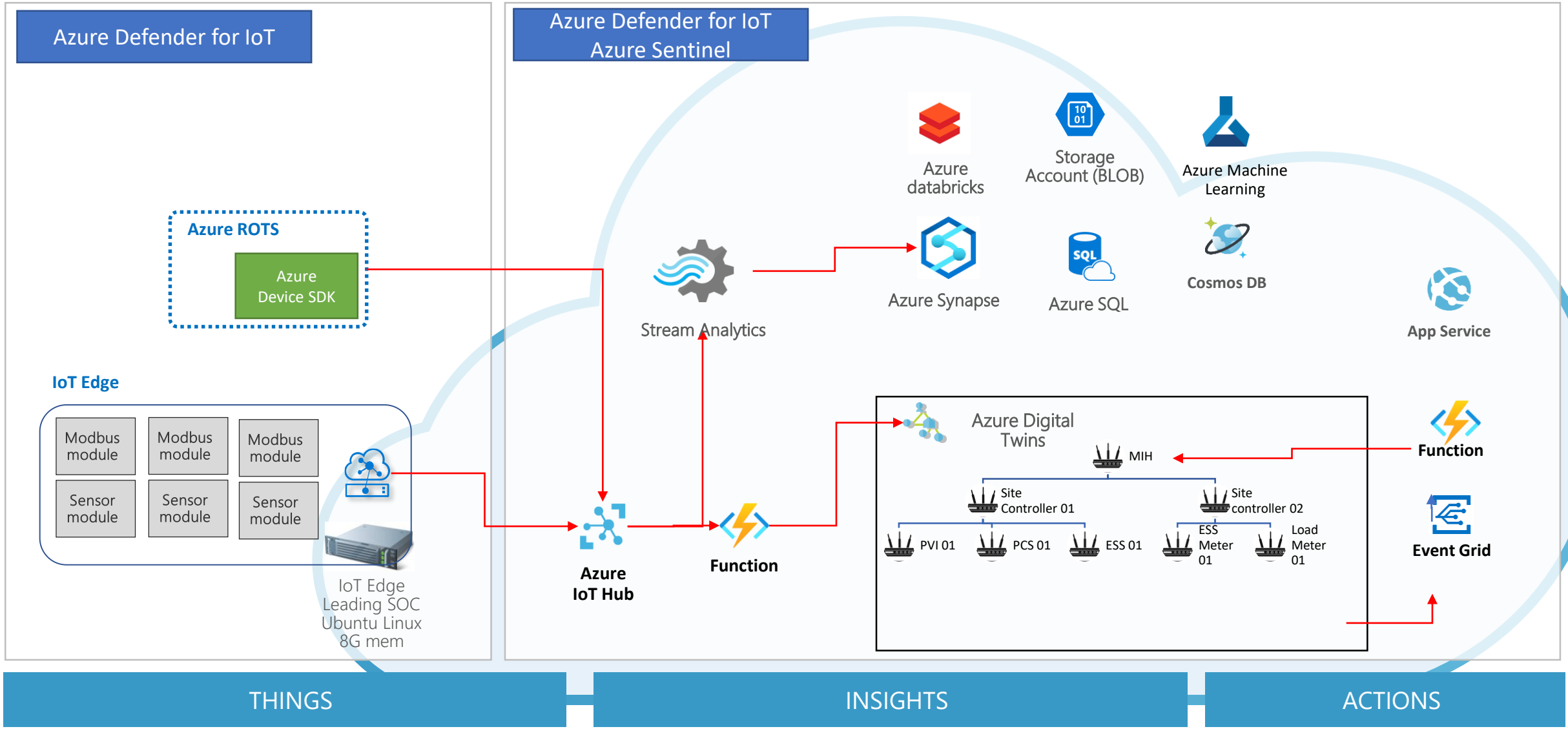
Microsoft Connected Vehicle Platform



Concept Principles

1. Optional IoT Edge eXtensions for Automotive to enable onboard services with integration to Vehicle Abstraction Layer. Default is a small SDK that handles connectivity
2. Designed for scale (multi-region), support for operations and high availability and disaster recovery. Digital twin of Vehicle
3. AAD and other authentication – based claims for comprehensive vehicle+user+services+… management
4. ADLSG2 default with optional integration with Common data model and Azure Maps multi modal route optimization, smart cities, traffic and ride hailing for digital transformation
5. Optional integration with connectivity and OTA providers
6. Optional integration with Azure 1st Party services delivered in vehicle. RAPID development and delivery of new services to vehicles based extension model

Mobility Security Best Practice



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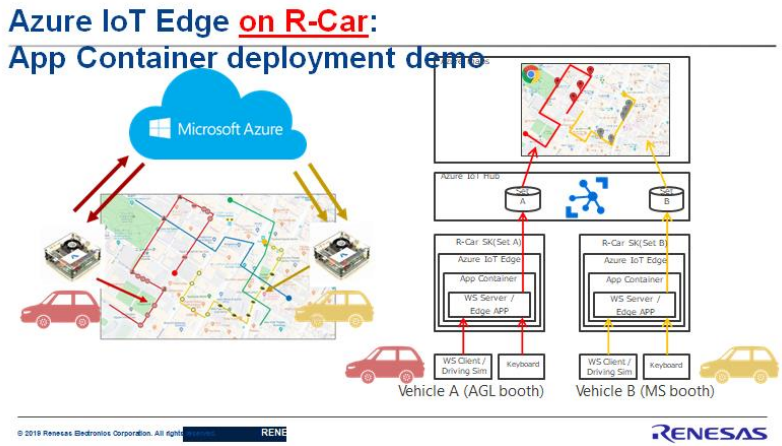
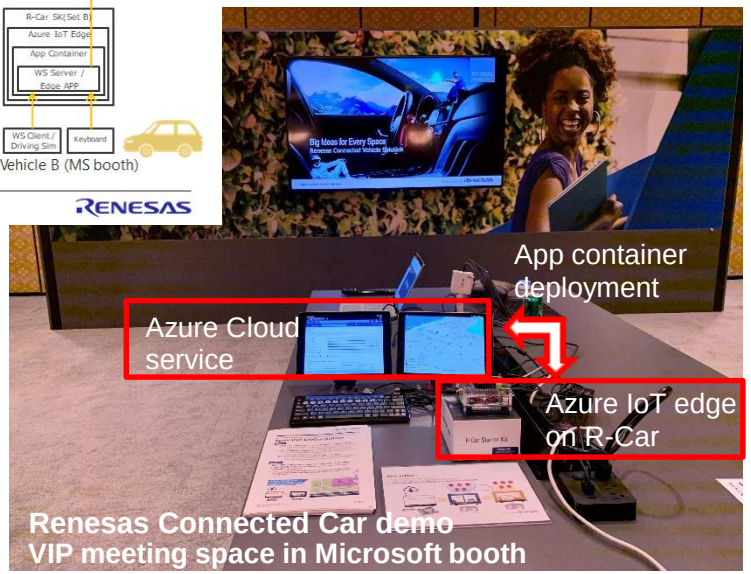
2021/1/12: Renesas Collaborates with Microsoft to Accelerate Connected Vehicle Development

R-Car SoC is

1. Certified for Azure IoT Edge
2. Development ready for MCVP

IoT Edge on R-Car SoC: Simulator and Shared Car Scenario





#CarSoC #SecuredEdge #MCVP

RENESAS
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PRODUCTS APPLICATIONS DESIGN & SUPPORT BUY & SAMPLE ABOUT

About Renesas > Press Room > News > Renesas Collaborates with Microsoft to Accelerate Connected Vehicle Development

Renesas Collaborates with Microsoft to Accelerate Connected Vehicle Development

R-Car Starter Kit uses Microsoft Connected Vehicle Platform and Azure IoT to Improve Development Efficiency for Cloud-Based Mobility Devices

January 12, 2021

Renesas collaborates with Microsoft to Accelerate Connected Vehicle Development

TOKYO, Japan —Renesas Electronics Corporation (TSE:6723), a premier supplier of advanced semiconductor solutions, today announced its collaboration with Microsoft to accelerate the development of connected vehicles. Renesas' R-Car Starter Kit, based on Renesas' R-Car automotive system-on-chip (SoC), is now available as a development environment for the Microsoft Connected Vehicle Platform (MCVP). MCVP combines a partner ecosystem with a horizontal platform of Azure cloud, AI and edge services on top of which mobility companies can build customer-facing solutions. Renesas has also been certified for Azure IoT Hub and Azure IoT Edge.

MCVP helps mobility companies accelerate the delivery of digital services across vehicle provisioning, two-way network connectivity, and continuous over-the-air updates of containerized functionality. Within the Renesas development environment, customers can utilize MCVP components and Renesas Board Support Package (BSP) in addition to multimedia package for R-Car. In addition, the R-Car Starter Kit is certified as an Azure IoT Edge device.

The Renesas development environment allows customers to develop software in the cloud or on a PC, and then install it on an R-Car SoC to perform verification before implementing it in applications for vehicles or embedded mobility devices. Identifying potential implementation issues early in the development of connected vehicles makes the design process more efficient. The collaboration with Microsoft will enable Renesas to advance the development of connected vehicles, stimulate the creation of Mobility as a Service (MaaS) businesses, and contribute to the establishment of on-demand businesses quickly.

"The burden of software development has become a major issue for connected systems and services developers," **said Naoki Yoshida, Vice President of Automotive Digital Products Marketing Division at Renesas.** "Using our Azure IoT-certified R-Car Starter Kit as the development environment for MCVP will allow customers to focus resources on software development that will deliver their own value-add services. I am delighted that our joint collaboration will combine Renesas' extensive track record in the automotive field with Microsoft's expertise in connectivity, and help customers accelerate the system development process."

"Our collaboration with Renesas will help our mutual customers speed up their system development and enable them to deliver innovative mobility experiences more quickly," **said Tara Prakriya, General Manager Azure Mobility at Microsoft.**

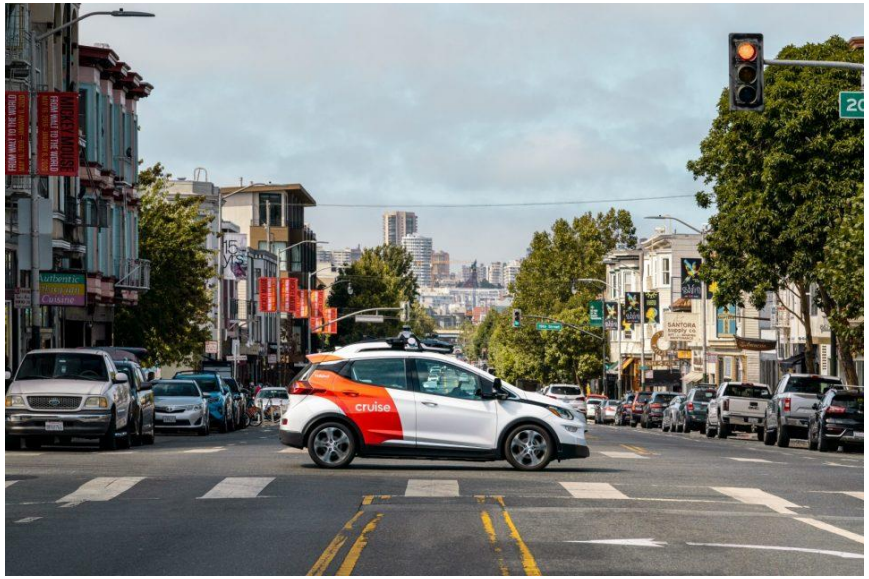
About Renesas Electronics Corporation

Renesas Electronics Corporation (TSE: 6723) delivers trusted embedded design innovation with complete semiconductor solutions that enable billions of connected, intelligent devices to enhance the way people work and live. A global leader in microcontrollers, analog, power, and SoC products, Renesas provides comprehensive solutions for a broad range of automotive, industrial, infrastructure, and IoT applications that help shape a limitless future. Learn more at renesas.com. Follow us on LinkedIn, Facebook, Twitter, and YouTube.

2021/1/19: Cruise and GM team up with Microsoft to commercialize self-driving vehicles

"Our mission to bring safer, better, and more affordable transportation to everyone isn't just a tech race – it's also a trust race," said Cruise CEO Dan Ammann. "Microsoft, as the gold standard in the trustworthy democratization of technology, will be a force multiplier for us as we commercialize our fleet of self-driving, all-electric, shared vehicles."

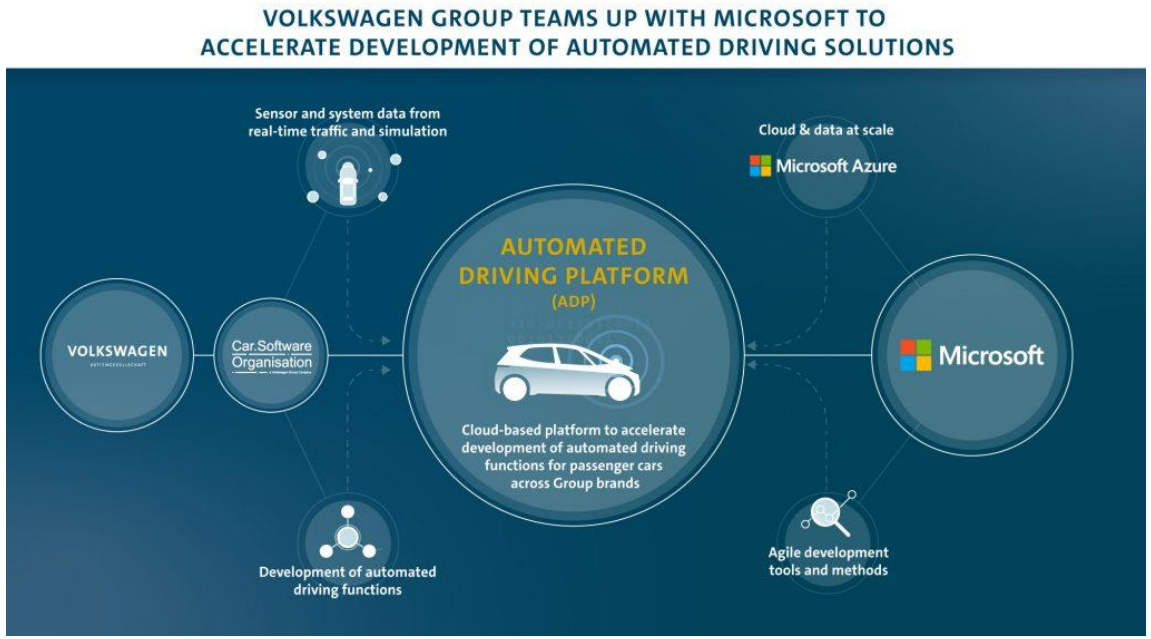
To unlock the potential of cloud computing for self-driving vehicles, Cruise will leverage Azure, Microsoft's cloud and edge computing platform, to commercialize its unique autonomous vehicle solutions at scale. Microsoft, as Cruise's preferred cloud provider, will also tap into Cruise's deep industry expertise to enhance its customer-driven product innovation and serve transportation companies across the globe through continued investment in Azure.



- Microsoft will join General Motors, Honda and institutional investors in a combined **new equity investment** of more than $2 billion in Cruise, bringing the post-money valuation of Cruise to $30 billion.
- "Advances in digital technology are redefining every aspect of our work and life, including how we move people and goods," said Satya Nadella, CEO, Microsoft. "As Cruise and GM's preferred cloud, we will apply the power of Azure to help them scale and make autonomous transportation mainstream."
- "Microsoft is a great addition to the team as we drive toward a future world of zero crashes, zero emissions and zero congestion," said GM Chairman and CEO Mary Barra. ***"Microsoft will help us accelerate the commercialization of Cruise's all-electric, self-driving vehicles and help GM realize even more benefits from cloud computing as we launch 30 new electric vehicles globally by 2025 and create new businesses and services to drive growth."***

#Investment #ConnectedCar #ADAS

2021/2/10: Volkswagen Group teams up with Microsoft to accelerate the development of automated driving



- *Volkswagen Group's Car.Software Organisation and Microsoft will build an **Automated Driving Platform for the agile development** of automated driving functions*
- *With the cloud-based platform, Car.Software Organisation will simplify its development processes on Microsoft Azure to bring automated driving solutions to the Group's cars even faster*
- *With the Volkswagen Automotive Cloud, the automated driving functions can be tested, deployed and operated*

Build AD and ADAS solutions faster with one development platform

- ADAS and automated driving vehicles can help improve passenger safety while reducing congestion and making mobility even more comfortable. Building these solutions requires large-scale computational capabilities. Petabytes of data from road and weather conditions to obstacle detection and driver behavior need to be managed every day for the training, simulation and validation of AD functions. Machine learning algorithms that learn from billions of real and simulated miles driven are key to connected driving experiences.

Deploy and operate ADAS and AD solutions with Volkswagen Automotive Cloud

- VW.AC's engineering team, based in Seattle, has enabled data to be exchanged between the vehicles and the cloud through Azure edge services. The cloud connectivity is also enabling Volkswagen to deliver vehicle updates and new features independently of the vehicle hardware to continuously improve the customer experience.
- Organisation will integrate ADP and VW.AC as the company moves toward further integrating its software solutions, tools and methods to empower its engineering teams, customers and partners globally. With VW.AC, the AD and ADAS functions developed on top of ADP can be tested, deployed and operated across the Group's vehicle fleet.

#HPC #ConnectedCar #ADAS #IVI #Mobility

2021/2/18: Bosch teams up with Microsoft to develop software-defined vehicle platform for seamless integration between cars and cloud

- Stuttgart and Munich, Germany – Bosch teams up with Microsoft to develop a software platform to seamlessly connect cars to the cloud. The goal of this collaboration is to simplify and accelerate the development and deployment of vehicle software throughout a car's lifetime in accordance with automotive quality standards. The new platform, which will be based on Microsoft Azure and incorporate software modules from Bosch, will enable software to be developed and downloaded to the control units and vehicle computers.
- A further focus of the collaboration will be on the development of tools that increase efficiency in the software development process. This in turn will drive innovation and reduce development costs for vehicle software within and across organizations. For drivers, the platform will mean quicker access to new functions and digital services. The collaboration between Bosch and Microsoft combines the wealth of software, electronics, and systems expertise of the world's leading automotive supplier with Microsoft's know-how in software engineering and cloud computing. Both companies intend to make the new software platform available for first vehicle prototypes by the end of 2021.

"Bosch already securely updates car software over the air today. With the comprehensive platform for software-defined cars, we want to further empower automakers to develop new functions and get them on the road faster."

Dr. Markus Heyn, member of the board of management of Robert Bosch GmbH

With software quickly becoming a key differentiator in the automotive industry, our ambition is to help businesses accelerate the delivery of unique mobility services across passenger cars and commercial fleets at scale."

Scott Guthrie, executive vice president, Cloud + AI, Microsoft

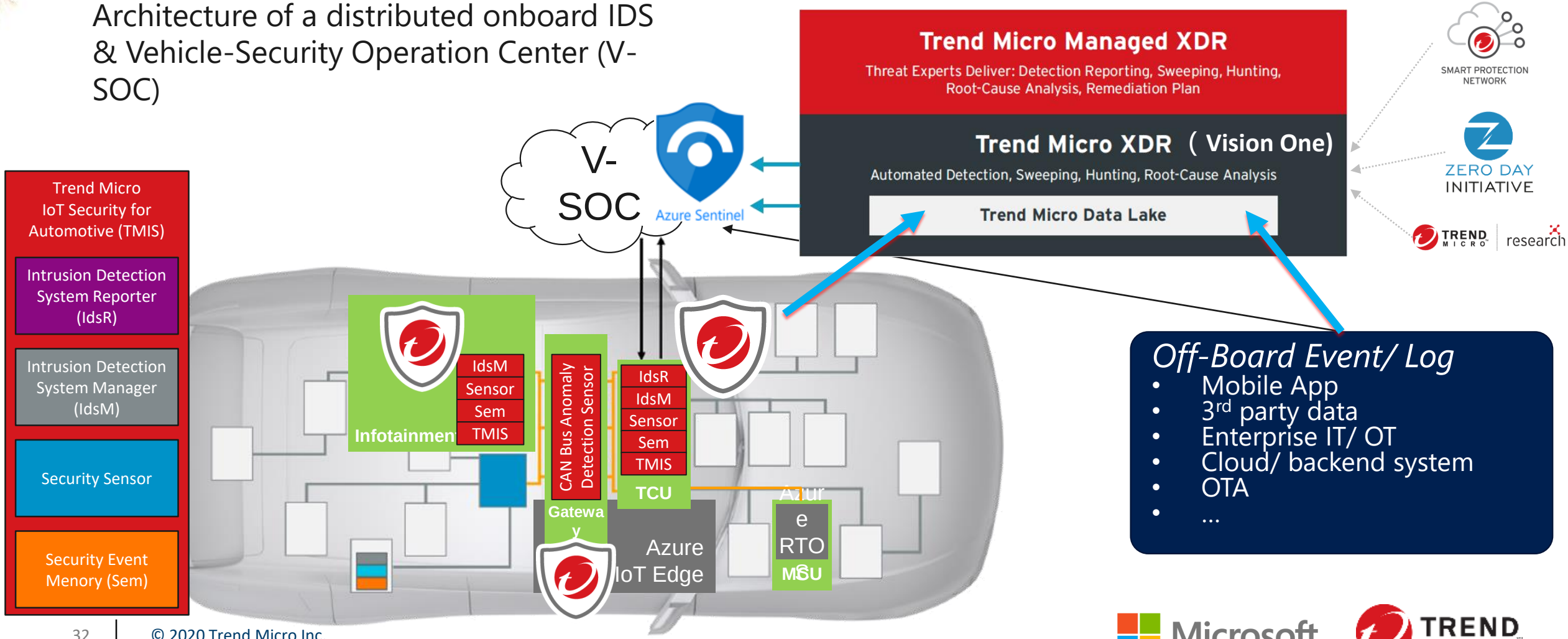
Bosch teams up with Microsoft to develop software-defined vehicle platform for seamless integration between cars and cloud - Bosch Media Service (bosch-presse.de)

#SoftDefinedCar #ConnectedCar #OTA

TMIS + Azure for V-SOC

AUTOSAR

Architecture of a distributed onboard IDS & Vehicle-Security Operation Center (V-SOC)



#V-SoC #SecuredEdge #SecurityAI

Microsoft TREND MICRO

SUMMARY

- Industrial Trends & Microsoft Security Services
  - Zero trust, IT/OT security, Security mature model, End to end security services
- Ready Cook Security Platforms & Tools for Speed
  - IT/OT/EV Security, Azure IoT Defender, Autonomous, AI Edge, MCVP
- EV / Security Ecosystem for Scale
  - HPC, ADAS, IVI, AI Analytics, Security as a Service, Secured SoC
- Automotive Transformation
  - Software defined car, White brand car, World-wide landings

THANK YOU