AWS re:Invent

NOV. 29 – DEC. 3, 2021 | LAS VEGAS, NV

IOT218-L

AWS powers edge-to-cloud solutions

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Agenda

What is the edge and what are its challenges?

Simplifying your edge initiatives

Making your edge secure and reliable

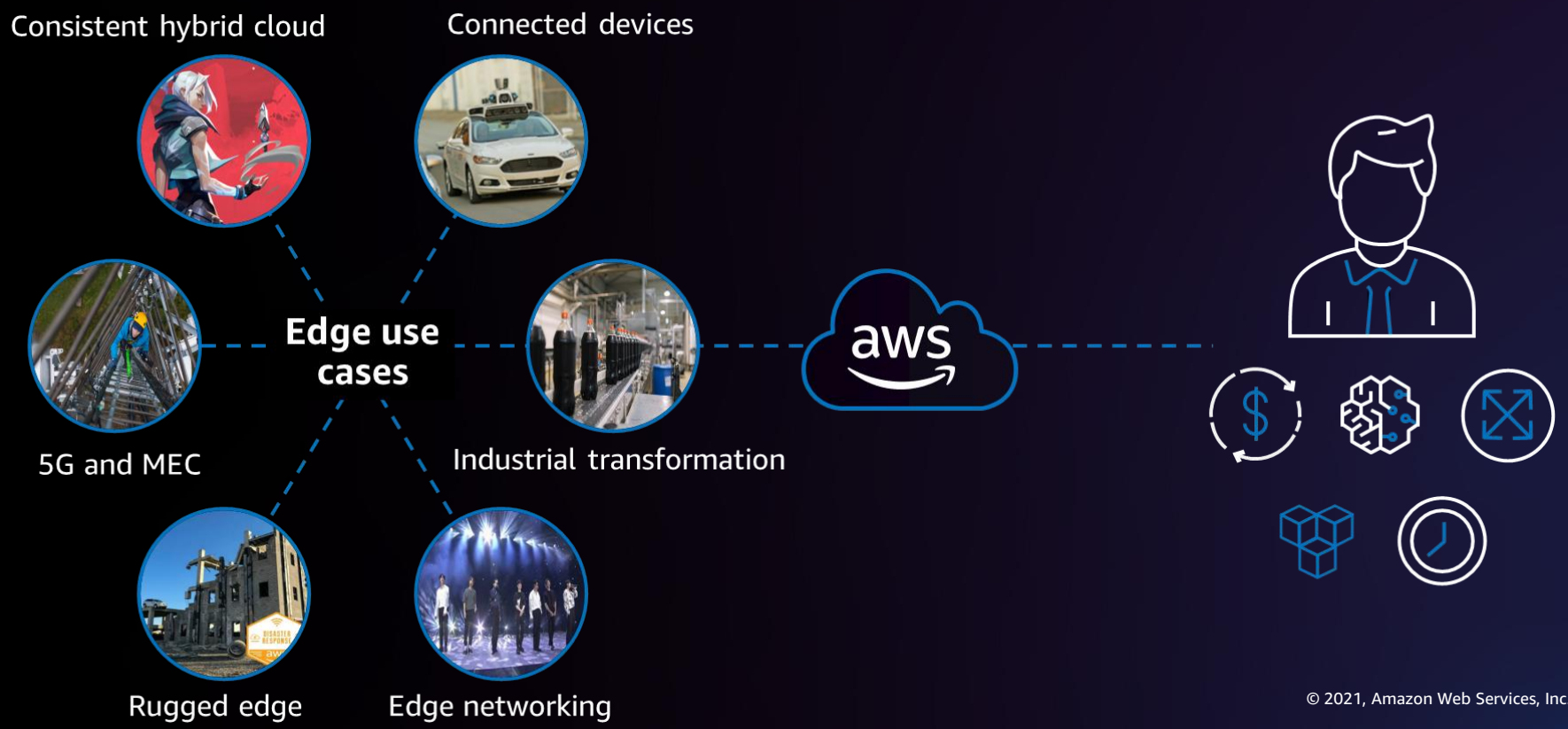
The Amazon experience

Customer examples

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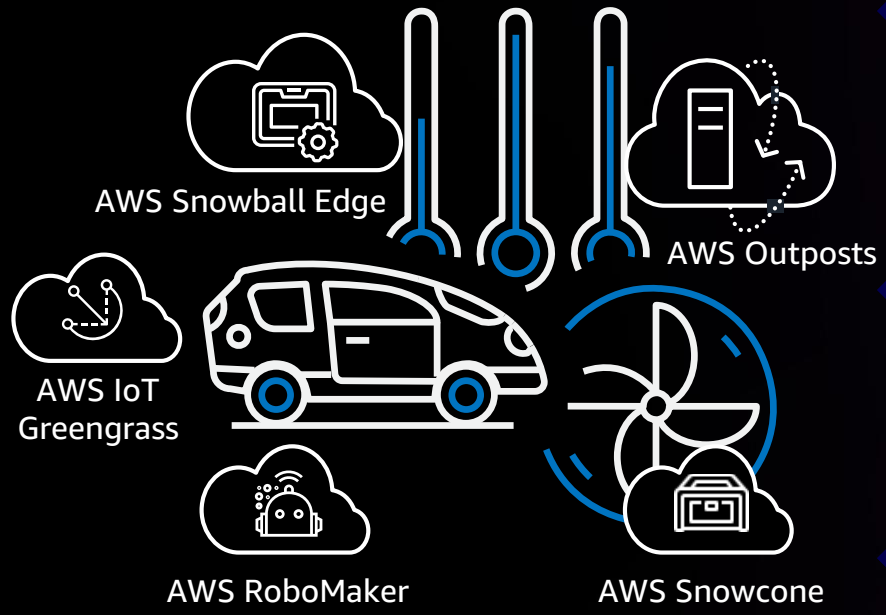
What is the edge and why is it important to integrate edge processing with cloud?

"Providing smart infrastructure and software that moves data processing and analysis as close as necessary to the end point."



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Running workloads at the edge is challenging



Law of **PHYSICS**

Law of **ECONOMICS**

Law of **THE LAND**



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From the edge to the cloud

Microcontrollers to advanced IoT devices



Networked environments



Communication hubs



Rugged edge



On premises



Metro centers



PoPs & Regions (AWS Cloud)

275+
POPs

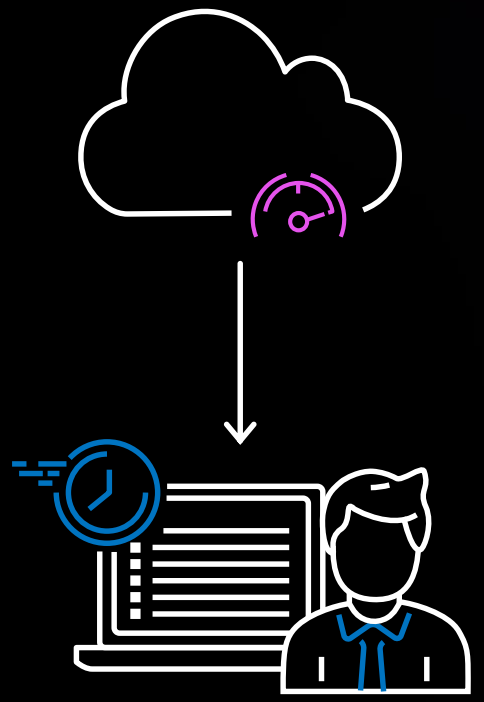
245
Countries and territories served

265+
Edge locations

13+
Regional edge caches

Centralized control with decentralized execution

Reduced latency



Broad set of cloud services and edge capabilities



Lower cost of development



Seamless and integrated – develop, connect, deploy, manage, and secure it all with the same tools, same APIs, and the same control plane

aws

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Across a range of services

Easy to connect



Connect billions of IoT devices securely

Process trillions of messages

Extend AWS services over 5G networks

Operate with and without network connectivity

Easy to deploy



Easy to collect, organize, and analyze

Easy to provision

Remotely manage, optimize, and secure device fleets

Extend AWS to the edge

Easy to manage



Provision cloud services quickly

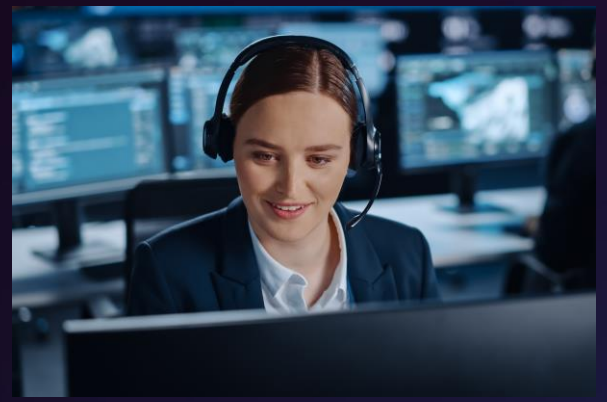
Manage health and operational insights

Monitor and react

Optimize resource utilization

Record and evaluate

Reliably secure



Secure connected devices

End-to-end encryption

Defense in depth

Private network connectivity

Authentication

Monitoring

Cryptographic key management

Available for ML workloads

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Making your edge secure and reliable

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Security is our priority: ATO level 6+ since 2014

The edge presents limitless surface area for security threats



You need defense in depth

Security extends from cloud to edge

AWS is vigilant about your privacy

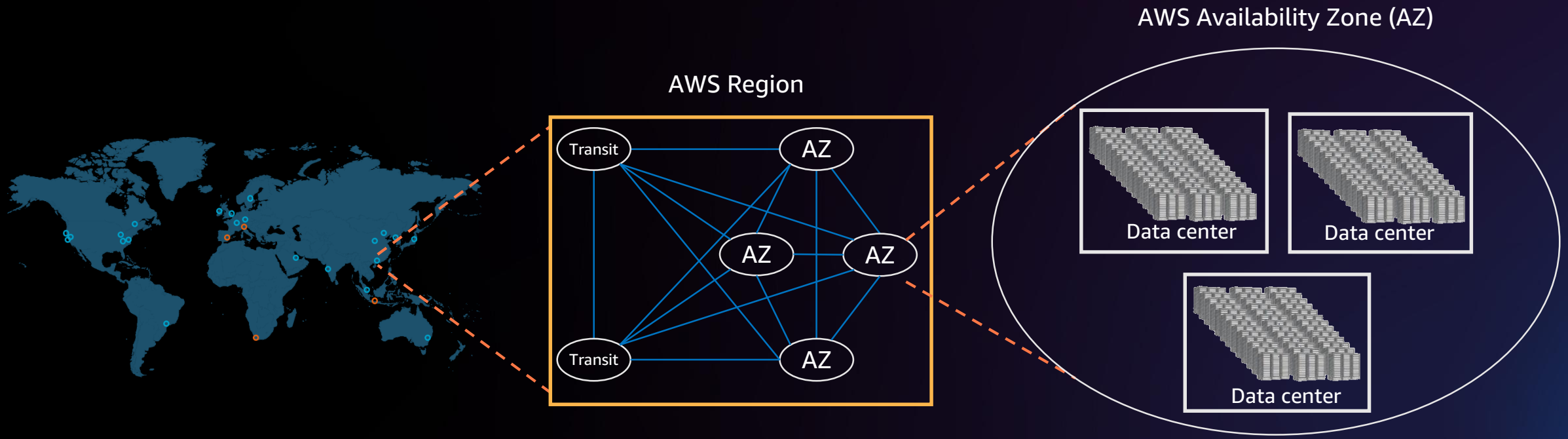
Tested with the strictest third-party frameworks

You control where your data is stored

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AWS Regions and Availability Zones

AWS Regions are comprised of multiple AZs for high availability, high scalability, and high fault tolerance. Applications and data are replicated in real time and consistent in the different Azs.



A Region is a physical location in the world where we have multiple **Availability Zones**

AZs have 10–60 km separation, Regions have up to 1,000 km separation

Availability Zones consist of one or more discrete data centers, each with redundant power, networking, and connectivity, housed in separate facilities

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The Amazon edge experience

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amazon invests in edge computing

200+

fulfillment centers



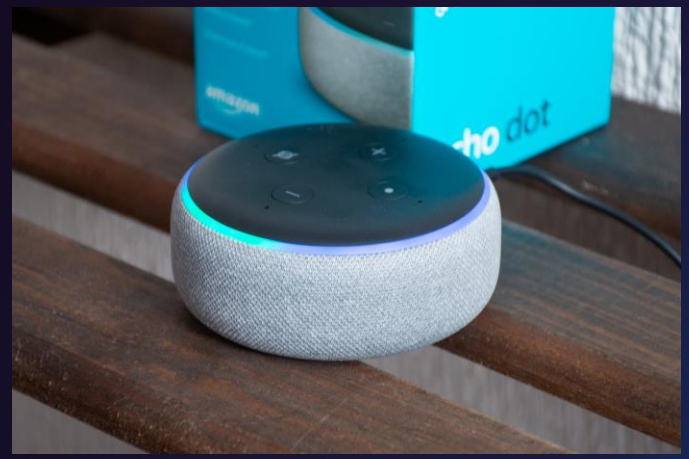
350K+

robotic drive units



100’s M

Alexa devices sold



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Fuel industrial transformation

Gavin Kenneally (he/him)
Co-founder and
Chief Product Officer
Ghost Robotics

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Customer Story: Ghost Robotics

GHOSTROBOTICS
ROBOTS THAT FEEL THE WORLD®

Perimeter security

Communications, 4/5G, Manet

Secure computing, AI & analytics



Chemical, Biological, Radiation, Nuclear (CBRN) detection

Digital twin, LIDAR, IR/thermal sensors

Manipulator arm, cameras, UAV and other payloads

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Collect robot scans to map a stadium for construction projects

Use AWS to 1) **ingest and process large amounts of data** 2) **reliably and remotely deploy updates**

Process data **into insights in 1 day**

Flexibility to provision robot for different use cases without updating hardware

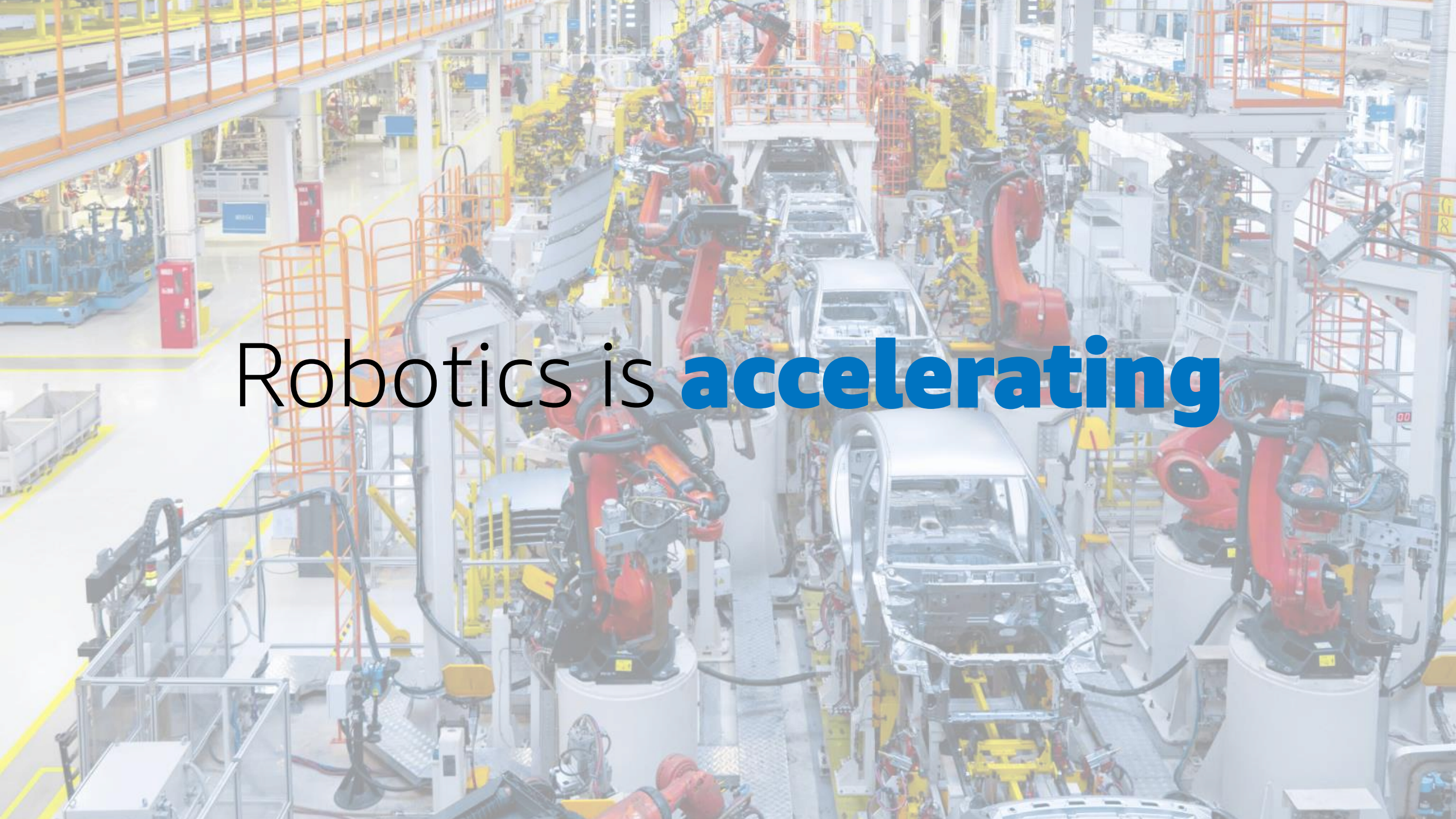
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Fuel industrial transformation

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Product Marketing Lead,
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Robotics is accelerating


Scale creates complexity

Simulation is critical to scale robotics development



AWS RoboMaker

SIMULATION AT SCALE

Automate and scale testing in 3D virtual worlds

Train ML models with synthetic data

Design robot workflows before production

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AWS re:Invent

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NEW

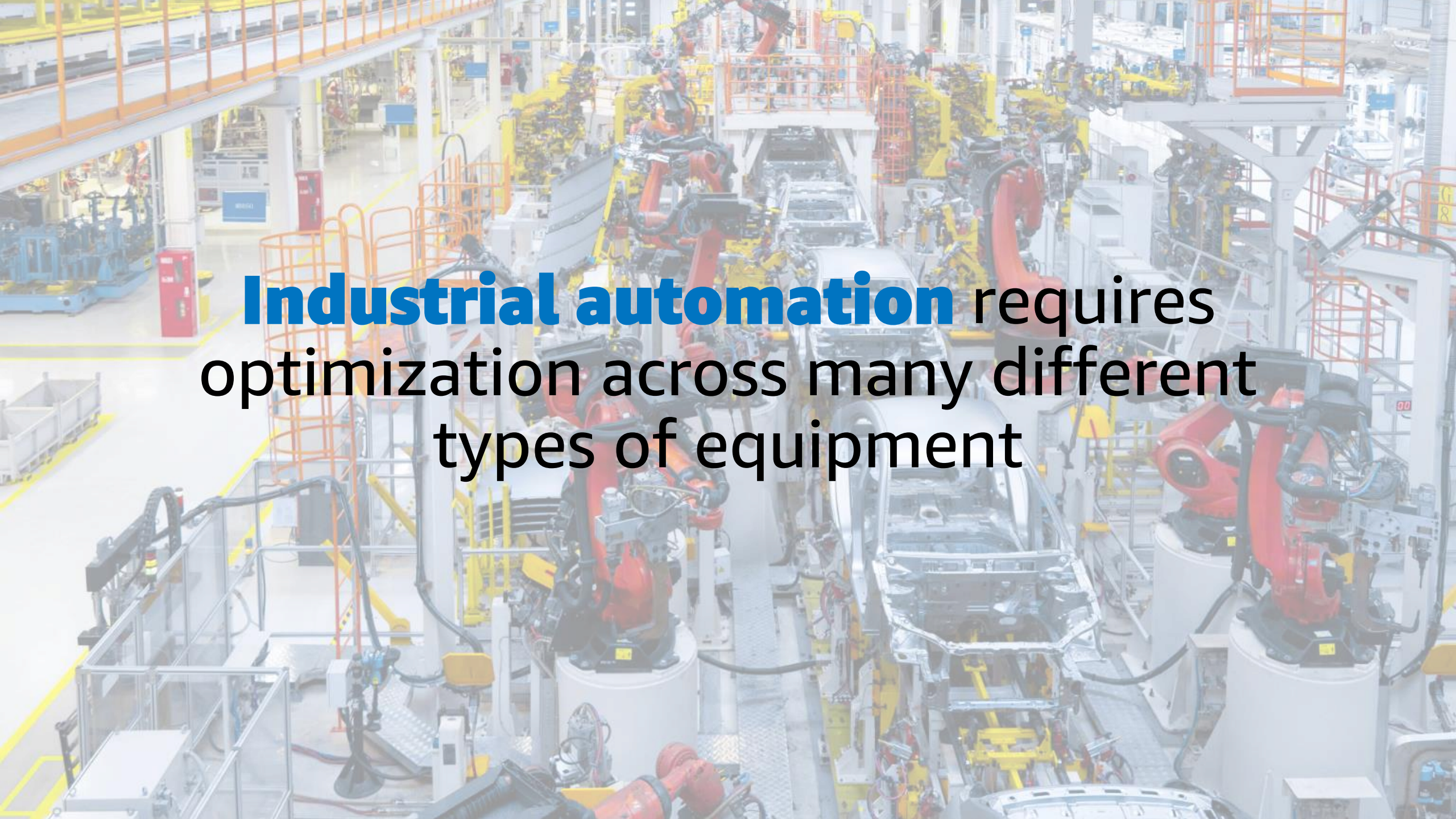
AWS IoT **RoboRunner**

AVAILABLE IN PREVIEW

Build applications to manage robots seamlessly together

Optimize operations through a single system view

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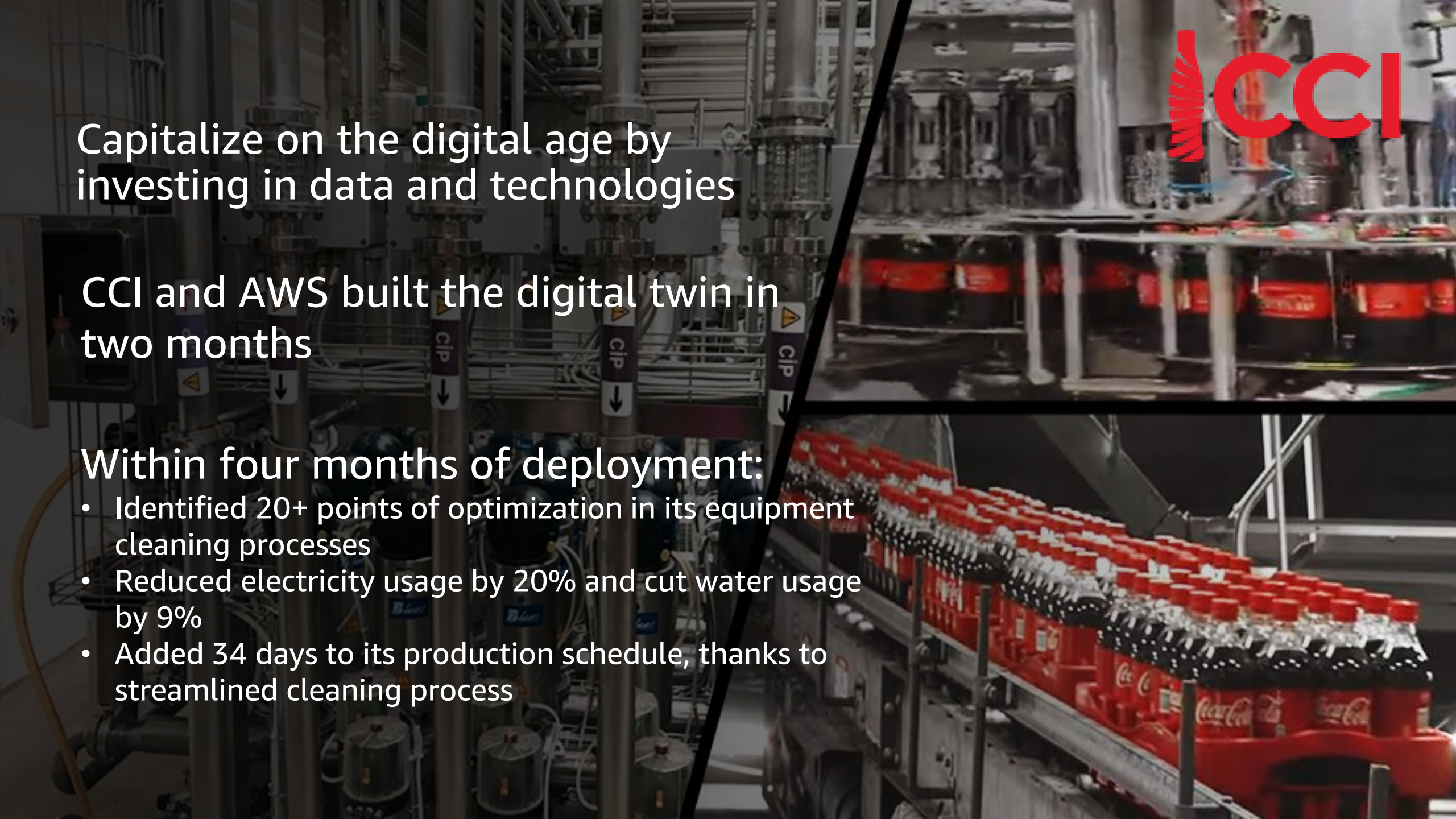
Industrial automation requires optimization across many different types of equipment

Capitalize on the digital age by investing in data and technologies

CCI and AWS built the digital twin in two months

Within four months of deployment:

- Identified 20+ points of optimization in its equipment cleaning processes
- Reduced electricity usage by 20% and cut water usage by 9%
- Added 34 days to its production schedule, thanks to streamlined cleaning process



NEW

AWS IoT **TwinMaker**

AVAILABLE IN PREVIEW

Easily access data no matter where it lives

Accurately model your built environment

Create immersive 3D views

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NEW

AWS IoT **TwinMaker**

AVAILABLE IN PREVIEW

Easily access data no matter where it lives

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SIEMENS

Siemens expands collaboration with AWS to facilitate cloud-based digital transformation for industry



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Develop better connected device experiences

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Update: IVY, BlackBerry QNX

BlackBerry | QNX



- Trusted leader in auto safety and security with QNX in 195M vehicles
- 10 out of the top 10 manufacturers
- Exceptional track record of delivery, integration, and support



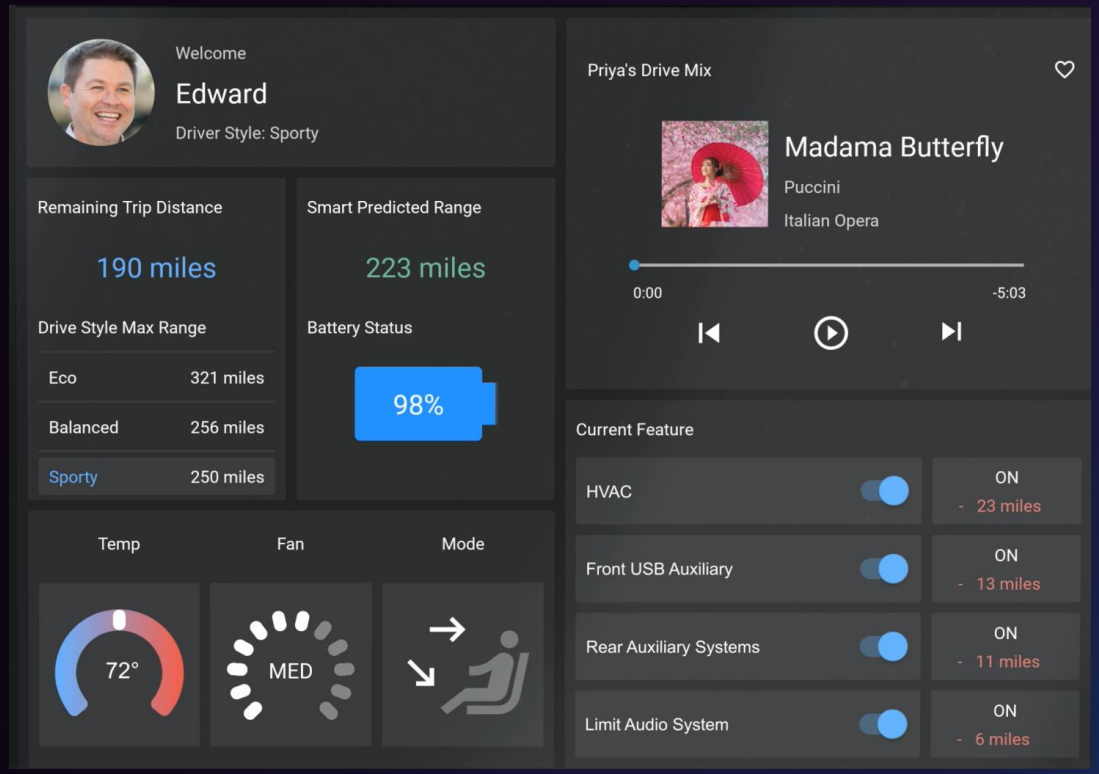
- Leading global cloud provider with a culture of innovation
- Unmatched machine learning expertise and IoT capabilities
- Proven builder of successful developer ecosystems

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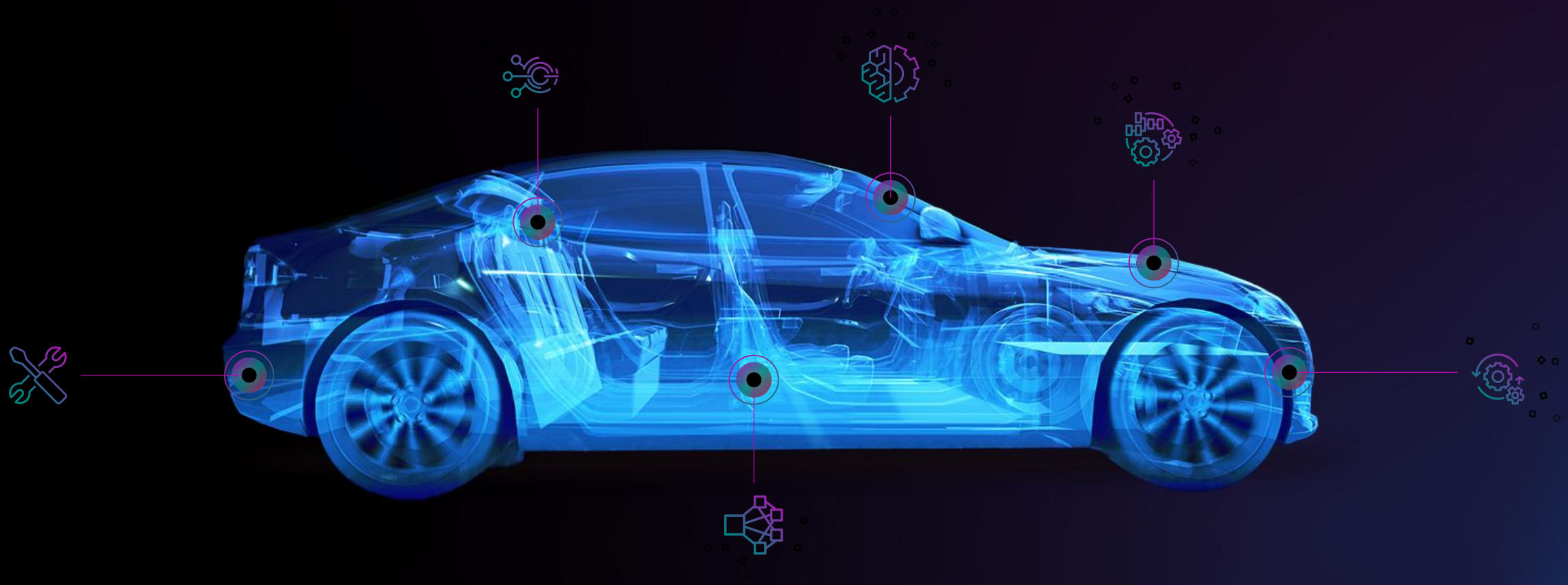
Update: IVY, BlackBerry QNX

- In-vehicle, intelligent edge software to support next-generation automotive applications
- New vehicle insights and in-vehicle experiences
- Automakers retain total ownership and control of their vehicle data
- IVY can be used with AWS IoT Edge and Cloud services to collect data and enhance machine learning



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The connected car



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NEW

AWS IoT **FleetWise**

AVAILABLE IN PREVIEW

Easily access standardized, fleet-wide vehicle data

Reduce costs with intelligent data filtering

Detect and mitigate problems quickly

Seamless, secure over-the-air update

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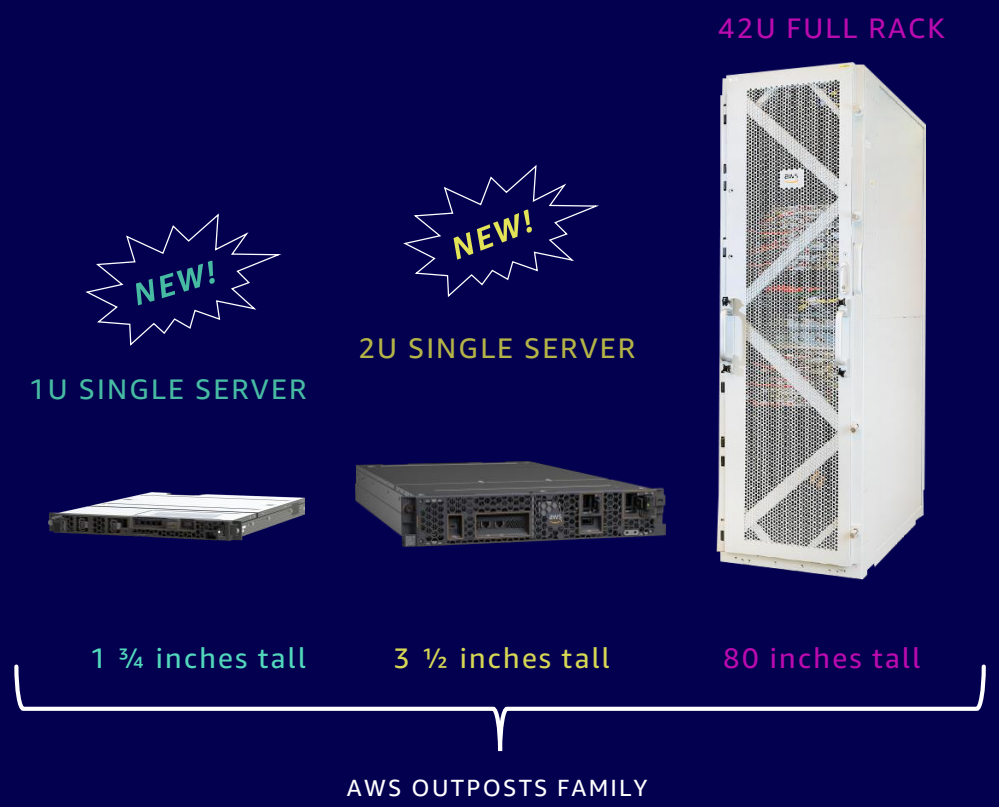
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Build a consistent hybrid cloud

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Introducing AWS Outposts 1U and 2U

RUN AWS OUTPOSTS IN LOCATIONS WITH LIMITED SPACE OR CAPACITY REQUIREMENTS



New 1U and 2U form factors

Run AWS services locally

Offers low latency for local processing

Simple installation

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Improve edge networking

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Gaming

- 200 million+ (8.3 million concurrent) Fortnite players
- Provides in-game, real-time live events such as concerts
- Runs across 12 AWS data centers in 24 Availability Zones
- Processes 125 million events per minute



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Improve your 5G and multi-access edge computing (MEC)

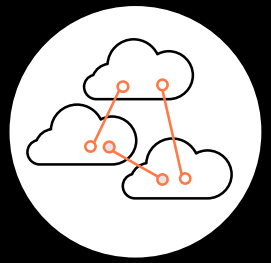
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Cloud-native 5G networking

dish

America's first cloud-native 5G network from core to edge

We're reimagining connectivity through new platforms, new business models, and new ways of thinking to meet the convergence of wireless, data analytics, AI, and the cloud to redefine the customer experience



Scalable through automation and AI to meet demand



Versatile spectrum and virtualization to save cost



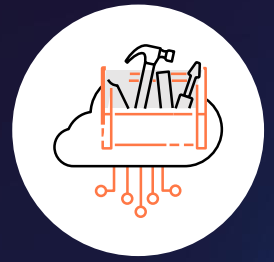
Network slicing to support use cases



O-RAN innovation



Open source and open interface to speed deployment



Software-based and programmable

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5G networking to underserved communities



"This private network solution on Intel technology provides students and teachers with the high-speed connectivity needed for equitable education and remote learning, and compute at the edge for video analytics applications. I'm proud to say our contribution is closing the digital divide in this area."

Caroline Chan
Intel Vice President and General Manager of the 5G Infrastructure Division, Network Platforms Group

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5G networking in rugged, mobile environments











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NEW

AWS **Private 5G**

AVAILABLE IN PREVIEW

Connect thousands of devices and machines

Get your network running in days

Secure your network with access controls

Scale your network capacity on demand

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Run disconnected and ruggedized edge computing

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Disaster relief

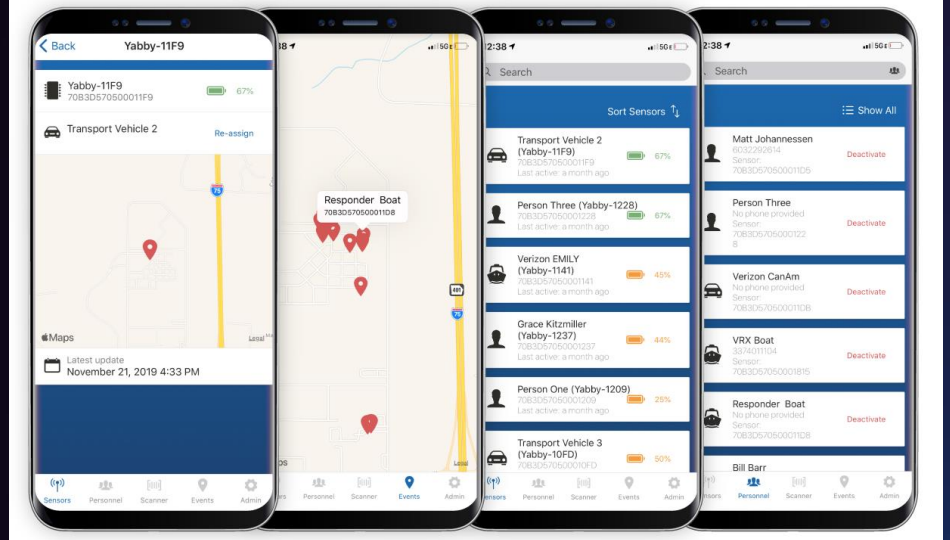
NOVETTA
Part of Accenture Federal Services

"AWS is leading in the development of practical, mission-ready edge computing technology that we use to build solutions to help our public sector clients save lives. AWS Snowcone gives us a rugged, secure, and portable edge computing platform that we can use in disaster zones and austere edge locations."

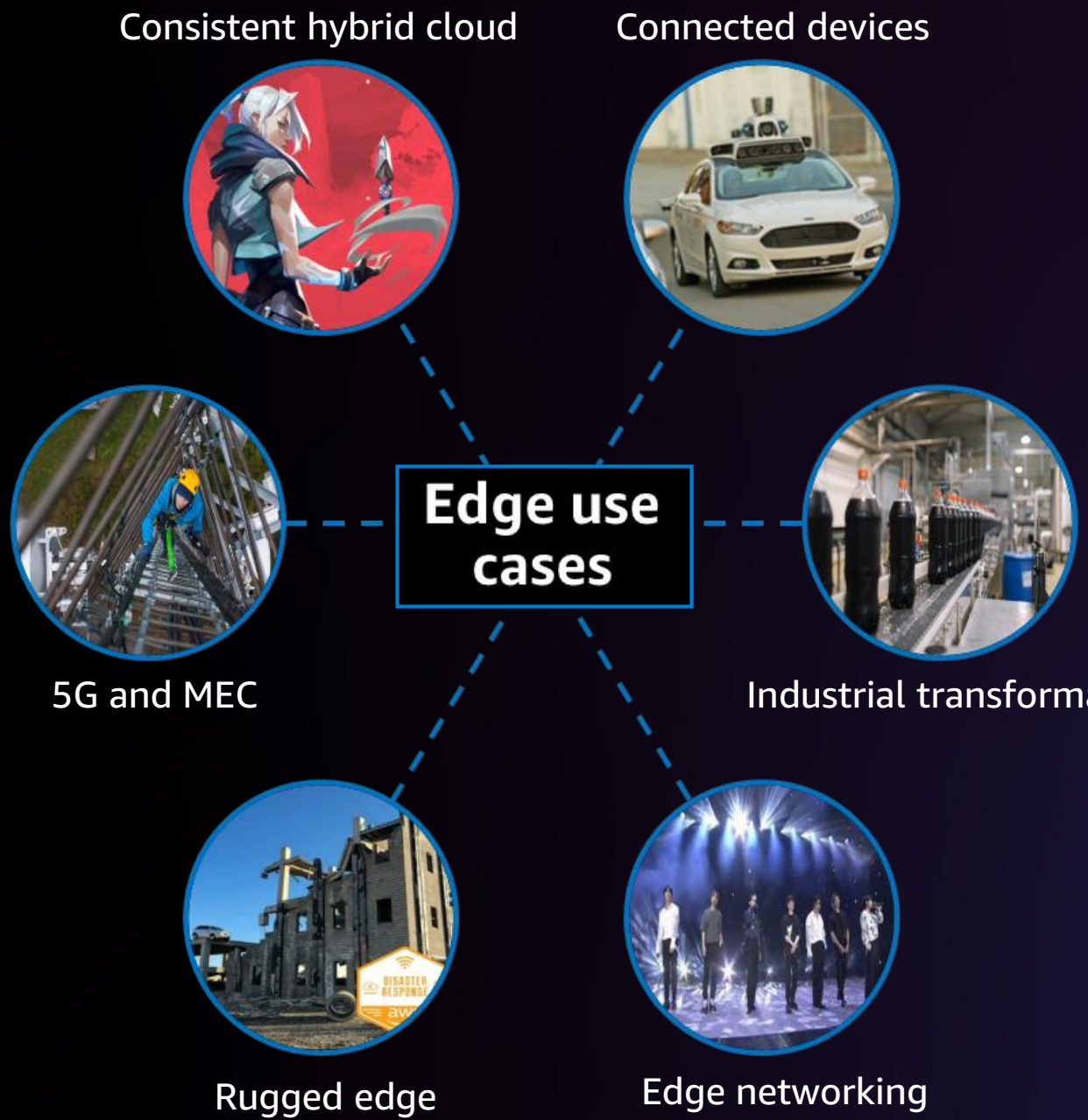
- Rob Sheen
SVP Client Operations at Novetta





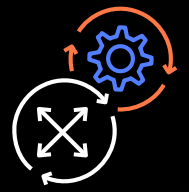


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Partnering with AWS



End-to-end security, seamless development, and management



Products and services that extend from edge to cloud



Tens of thousands of partners across the globe



In the cloud business for over 14 years



AWS runs one of the largest Fortune 500 companies on earth, ourselves

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In conclusion

- With AWS, you don’t have to be an edge expert to deliver real business value and save money
- AWS has been doing this longer and at much larger scale than anyone else, and we can help you do it too
- With AWS, the edge is not simply a data bridge, but actually an intelligent edge that can make decisions
- We have the security, scale, reliability, redundancy, and services to take your edge operations from idea to reality

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Thank you!

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