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How the AWS Edge is Powering Industry 4.0

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Amazon Web Services, Telecom

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2020 ONF Spotlight - 5G Connected Edge Cloud for Industry 4.0 Transformation

Outline

- Edge Developer Expectations
- AWS Vision of Edge
- Edge Infrastructure
- AWS Enabled Private Networks
- Services for the Connected Edge

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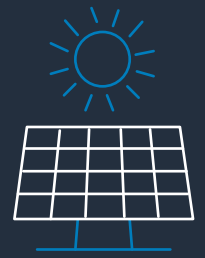
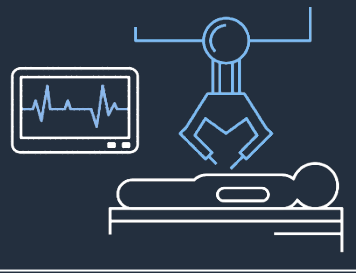
Opportunity: Build the connected world of tomorrow, today

Improve the performance and productivity of industrial processes

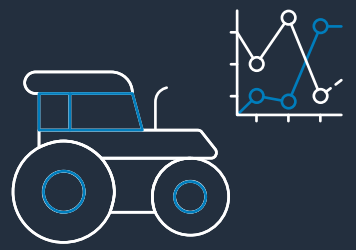


Manage energy resources more efficiently



Remotely monitor patient health & wellness applications

Transform transportation with connected and autonomous vehicles



Grow healthier crops with greater efficiencies

Track inventory levels and manage warehouse operations

Deliver streaming content, gaming and VR experiences

Build smarter products and user experiences in homes, buildings and cities

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What do Edge Cloud Developers Want?

Same reliable, secure, and high performance infrastructure

Same operational consistency

Same services and APIs

Same tools for automation, deployments, and security controls

Same pace of innovation as in the cloud

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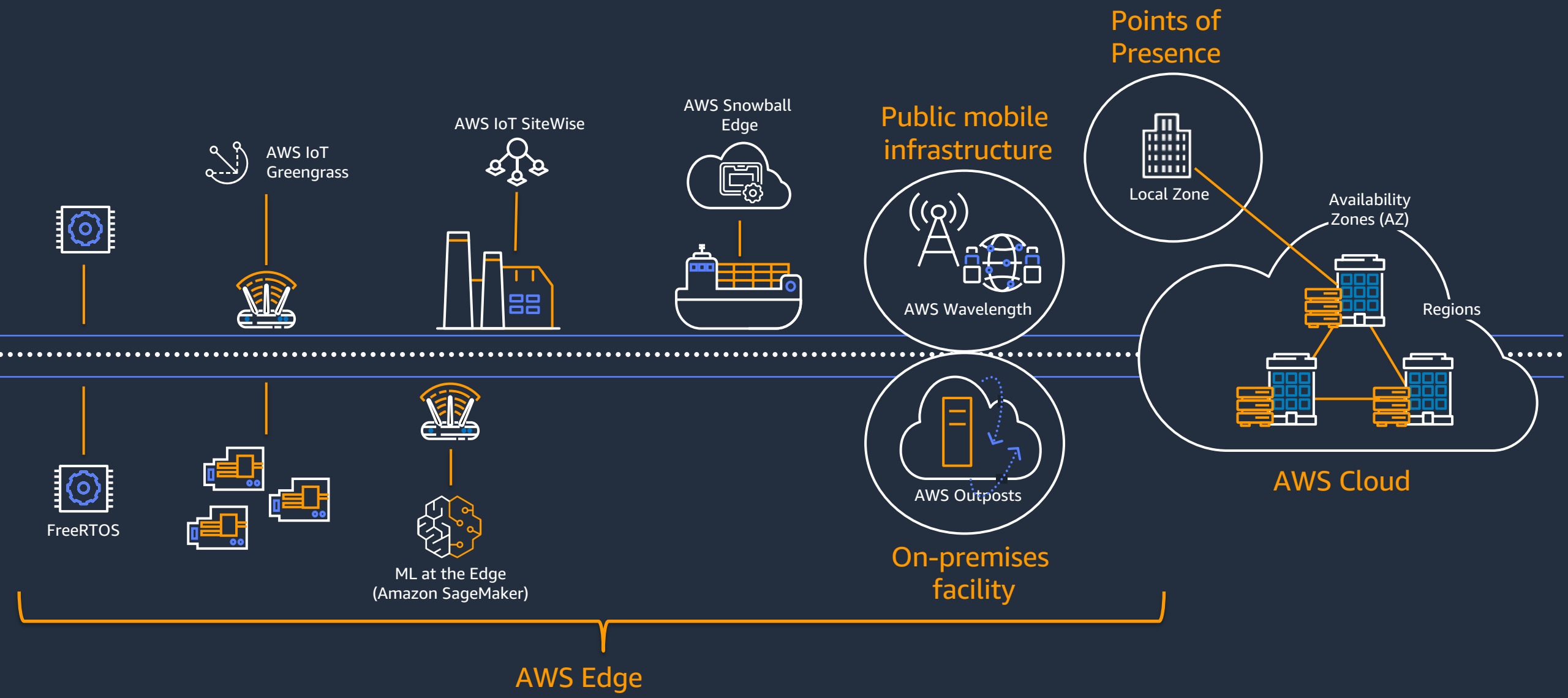

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AWS Enabled Private 4G/5G/CBRS Edge Networks

Private mobile network solution based on AWS cloud, edge infrastructure and services in partnership with 4G/5G network vendors and carriers

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- AWS Edge Infrastructure
- AWS Services (Region and Edge)
- Orchestration and Management
- Integrated DevOps pipeline

aws Partner Network (APN)

- 4G/5G network components (core/radio)
- Spectrum or spectrum access systems
- Local IP network and connectivity to AWS
- Subscription management

Manufacturing Plants

Sports Venues

University

… and more

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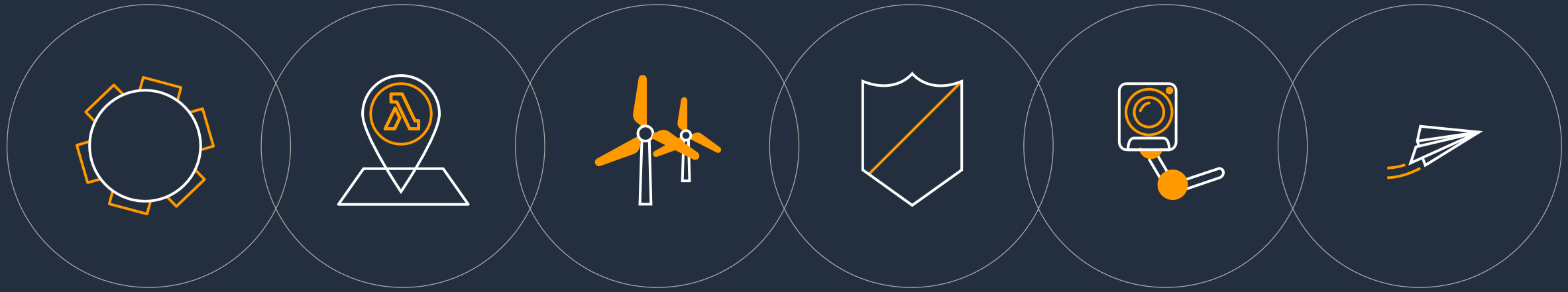
AWS IoT Greengrass



Local Messages and Triggers

Enable device communication without a cloud connection

Local Actions

Simplify device programming with AWS Lambda

Data and State Sync

Operate devices offline & synchronize data when reconnected

Security

Mutual authentication & authorization, both locally and with the cloud

Local Resource Access

AWS Lambda functions can access & use local resources of a given device

Over the Air Updates

Easily update AWS IoT Greengrass Core

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The AWS ML Stack

AI SERVICES

HEALTH AI

- NEW Amazon HealthLake
- Amazon Transcribe Medical
- Amazon Comprehend Medical

INDUSTRIAL AI

- NEW AWS Panorama + Appliance
- NEW Amazon Monitron
- NEW Amazon Lookout for Equipment
- NEW Amazon Lookout for Vision

ANOMALY DETECTION

- NEW Amazon Lookout for Metrics

CODE AND DEVOPS

- NEW Amazon DevOps Guru
- Amazon CodeGuru

VISION

- Amazon Rekognition

SPEECH

- Amazon Polly
- Amazon Transcribe *+Medical*

TEXT

- Amazon Comprehend *+Medical*
- Amazon Translate
- Amazon Textract

SEARCH

- Amazon Kendra

CHATBOTS

- Amazon Lex

PERSONALIZATION

- Amazon Personalize

FORECASTING

- Amazon Forecast

FRAUD

- Amazon Fraud Detector

CONTACT CENTERS

- Contact Lens
- Voice ID *For Amazon Connect*

ML SERVICES

Amazon SageMaker

Label data

SAGEMAKER STUDIO IDE

NEW Aggregate & prepare data | NEW Store & share features | Auto ML | Spark/R | NEW Detect bias | Visualize in notebooks | Pick algorithm | Train models | Tune parameters | NEW Debug & profile | Deploy in production | Manage & monitor | NEW CI/CD

Human review

NEW: SageMaker JumpStart

NEW: Model management for edge devices

FRAMEWORKS & INFRASTRUCTURE

TensorFlow | mxnet | PyTorch | GLUON | Keras | scikit learn | HOROVOD | DeepGraphLibrary

Deep Learning AMIs & Containers | GPUs & CPUs | Elastic Inference | Trainium | Inferentia | FPGA

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SAGEMAKER STUDIO IDE

Sagemaker Edge Manager

Label data	Aggregate & prepare data	Store & share features	Auto ML	Spark/R	Detect bias	Visualize in notebooks	Pick algorithm	Train models	Tune parameters	Debug & profile	Deploy in production	Manage & monitor	CI/CD	Human review
Ground Truth	Data Wrangler	Feature store	Autopilot	Processing	Clarify	Studio Notebooks	Built-in or Bring-your-own	Experiments Spot Training Distributed Training	Automatic Model Tuning	Debugger	Model Hosting Multi-model Endpoints	Model Monitor	Pipelines	Augmented AI

AMAZON SAGEMAKER JUMPSTART

NEW: AMAZON SAGEMAKER EDGE MANAGER

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Making the 5G Connected Edge Successful

Edge Infrastructure Options

Services for Connected Edge Applications

Partner Ecosystem

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Thank you

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