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IOT305

# How ATS uses AWS IoT to increase safety and efficiency

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# Nobody just buys IoT technology…

They seek outcomes

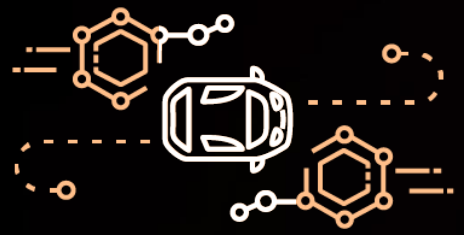
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# Everything is smart these days...



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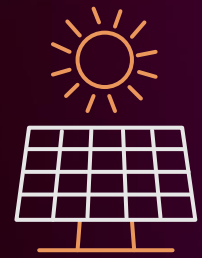
# What customers are doing with AWS IoT in transport and logistics



Improve the performance and productivity of processes



Track inventory levels and manage warehouse operations



Manage energy resources more efficiently



Capacity and resource optimization



Transform transportation with connected and autonomous vehicles

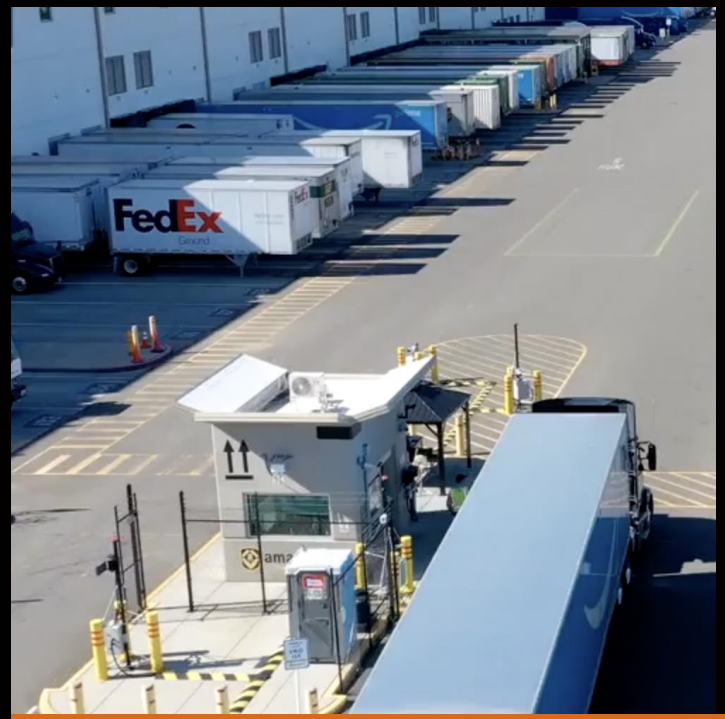


Enhance safety in the warehouse and on the move

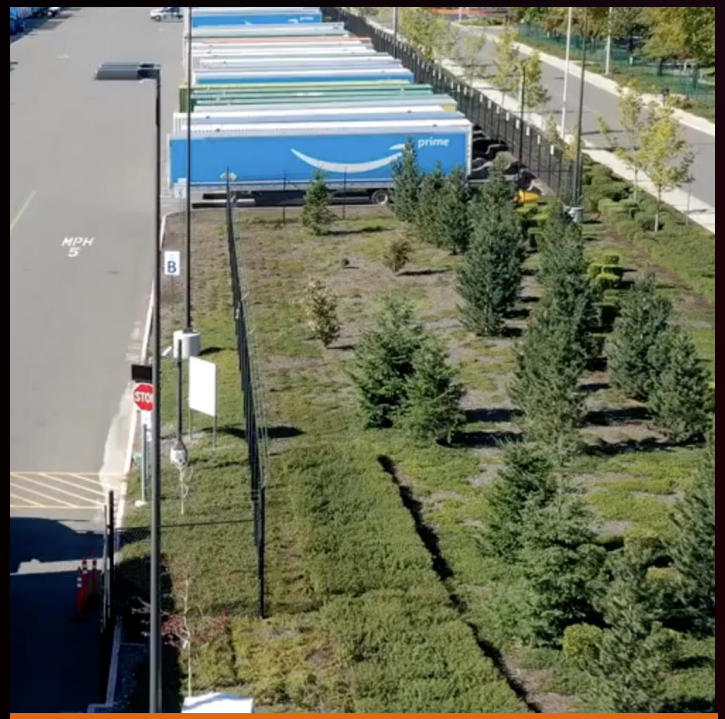
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# What is RelayGate?




Hardware and software integration to perform gate operations



Fully automates eligible gate operations



Real-time vehicle detection and identification with ML at the edge

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# Safety first!




**Trucks are LARGE!**

Walking around the trucks to read license plates and other identification can be unsafe

With COVID-19, interactions between gate associates and drivers had to be reduced

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# How it started

## Technology

Automatic License Plate Recognition (ALPR)




(NV – 123ABC)

Local video streams



## Operations






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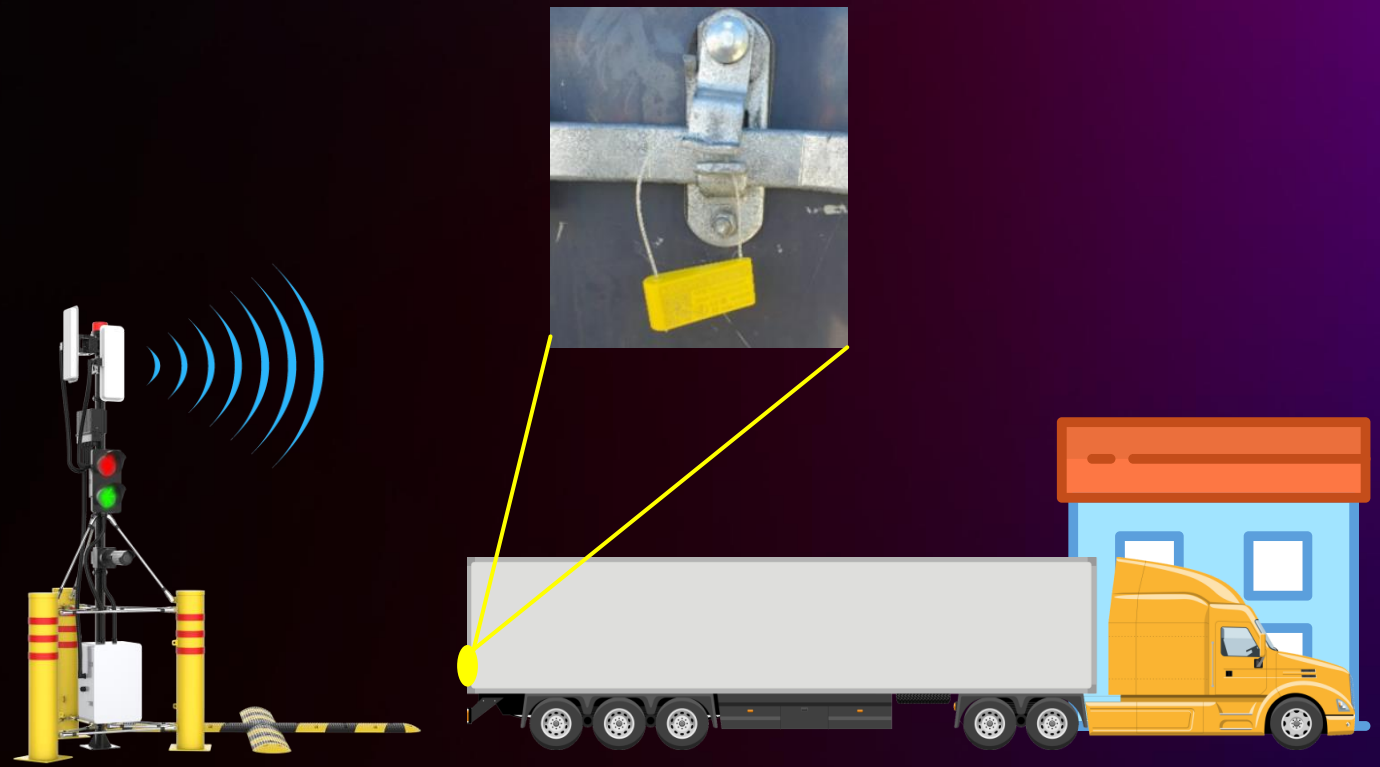
# New feature requests…

Radio Frequency Identification (RFID) seals on trailer doors ensure integrity of loads

RFID seals transmit their ID and their intactness

Integrated RFID seal readers on the gate



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# Remote gate management



A pool of remote gate associates

Real-time audio/video communications with drivers

Additional cameras and remote video streams from gate

Instructions to drivers on a screen

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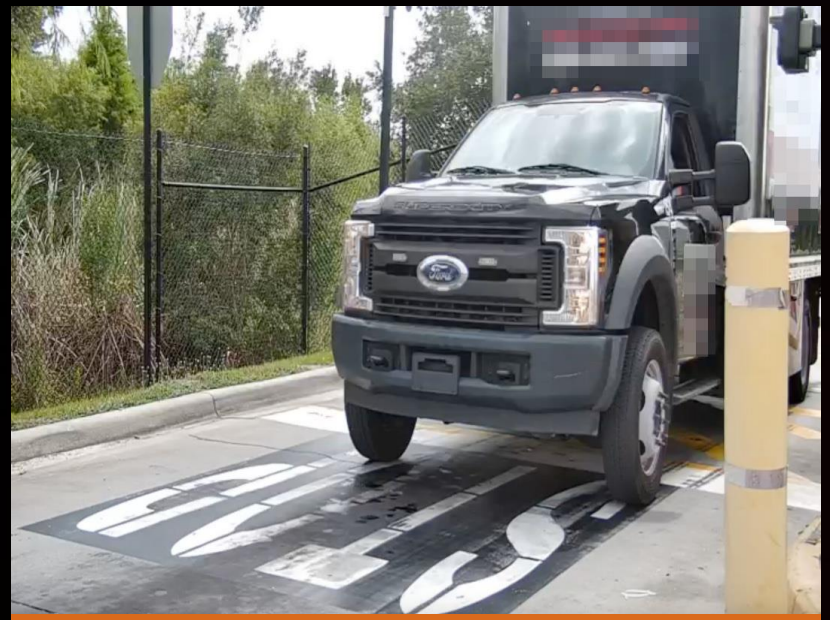
# Full automation



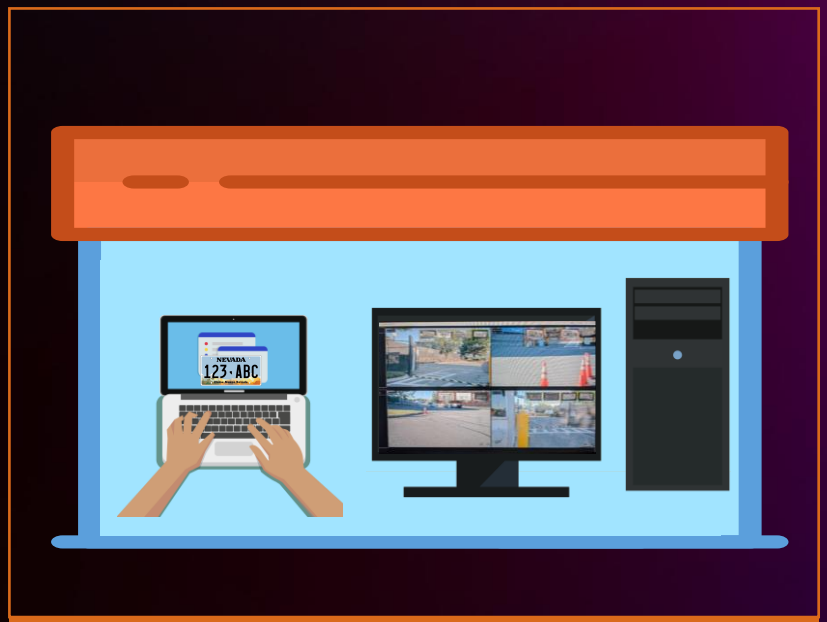

**Fully automated operations when all the information needed is available**

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# New constraints bring new challenges



Sometimes it is not possible to see or read a license plate




Vehicle motion-detection notifications to engage a remote gate associate

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# Scale and complexity – Why a custom solution?



**Amazon operates hundreds of facilities globally**

**Off-the-shelf products do not solve the problem at Amazon scale**

**Solution customized for Amazon's use case, yet flexible for extension**

**Inference at the edge for real-time detection**



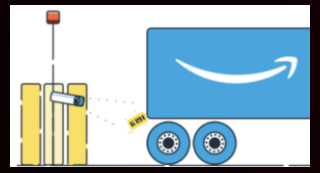

License plate recognition



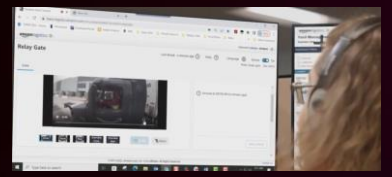
Local video streaming




Presence sensor



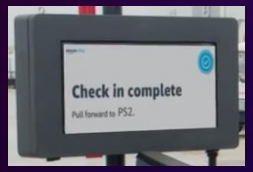
RFID seal scanner



Remote video streams and communications



Motion detection




Driver info screen

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# AWS IoT Greengrass

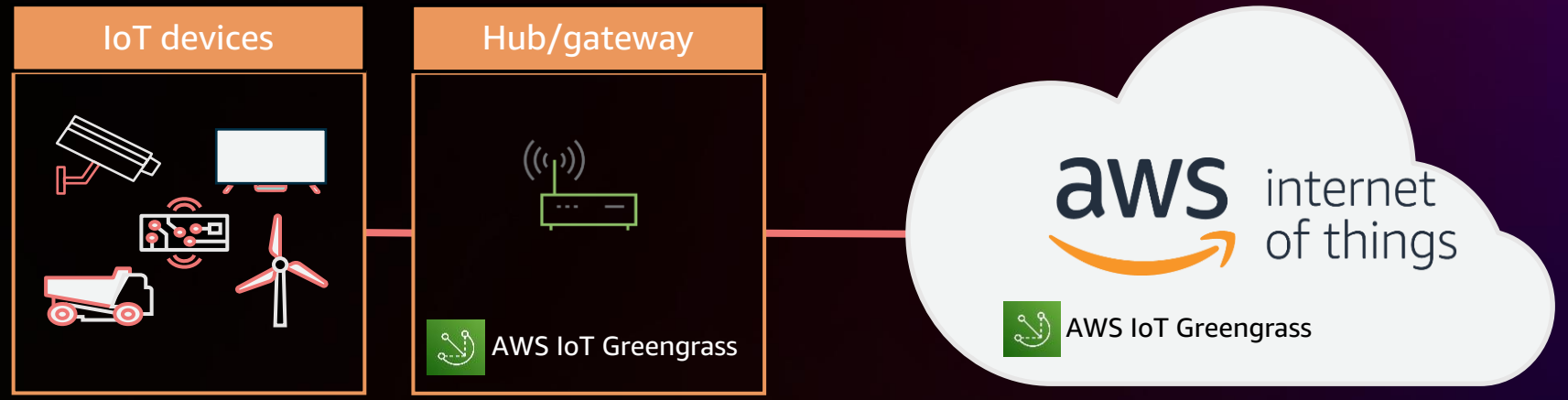
## Device

Connect devices directly to AWS




## Hub

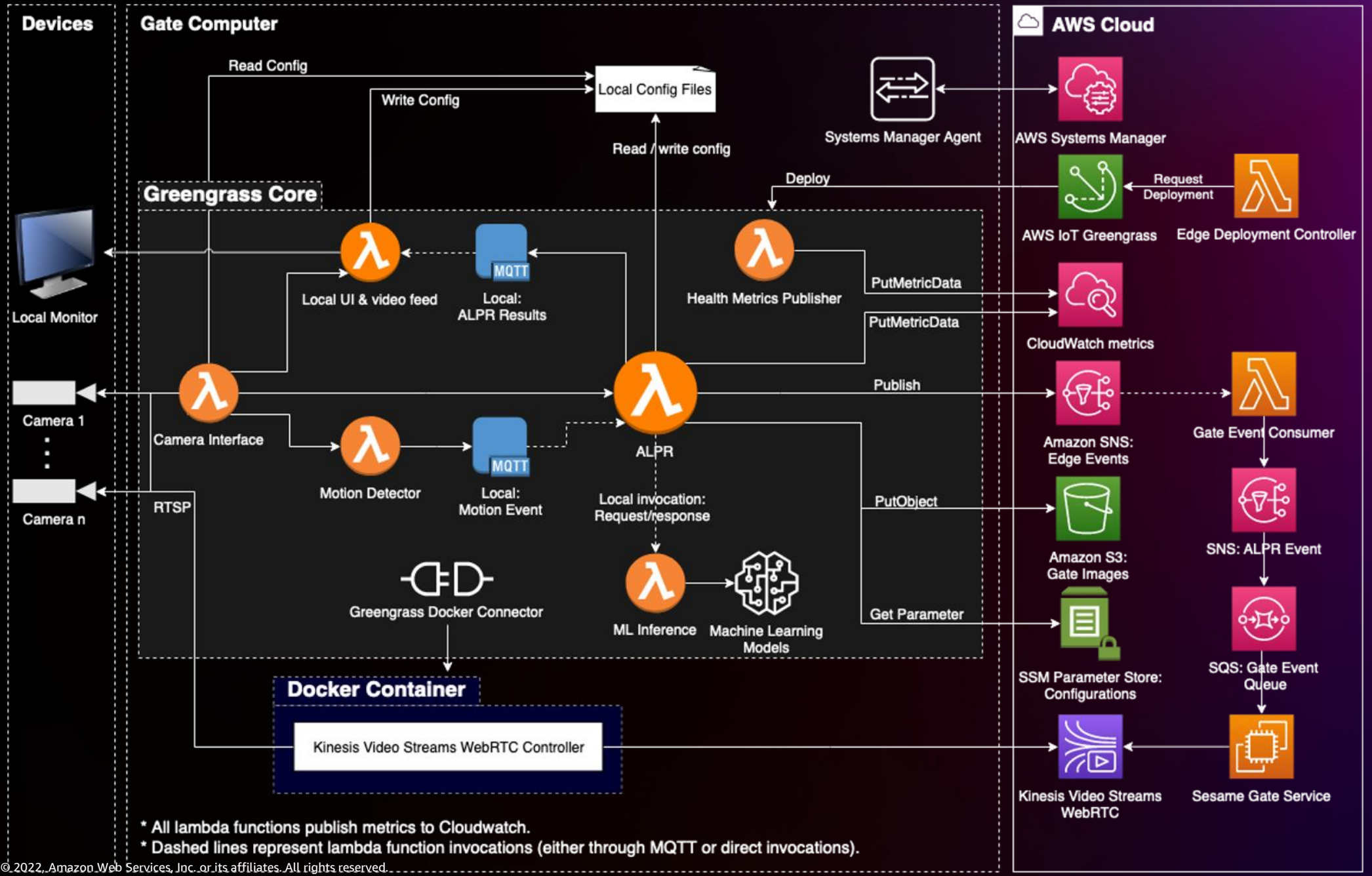
Connect devices to AWS through hub




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# Why AWS IoT Greengrass for RelayGate?

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# But let’s dive into the architecture more…

# …to the whiteboard!

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# Key takeaways for you



- Off the shelf or custom solution?
- Think about scale
- Requirements will evolve over time
- Think how your solution can evolve in the future

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# Thank you!

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