AWS re:Invent

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

ENR-303

Operational optimization with IoT: From sensor to cloud

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Amazon Web Services

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Solutions Architect
Amazon Web Services

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A note about chalk talks

Collaborative

Interactive

Generative

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Meet your neighbors

What's your name and where do you call home?

What's your role and what brought you to re:Invent?

What's an interesting problem you're trying to solve that involves data and/or IoT?

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Operational optimization with IoT

Come visit us at the
AWS Energy Lounge

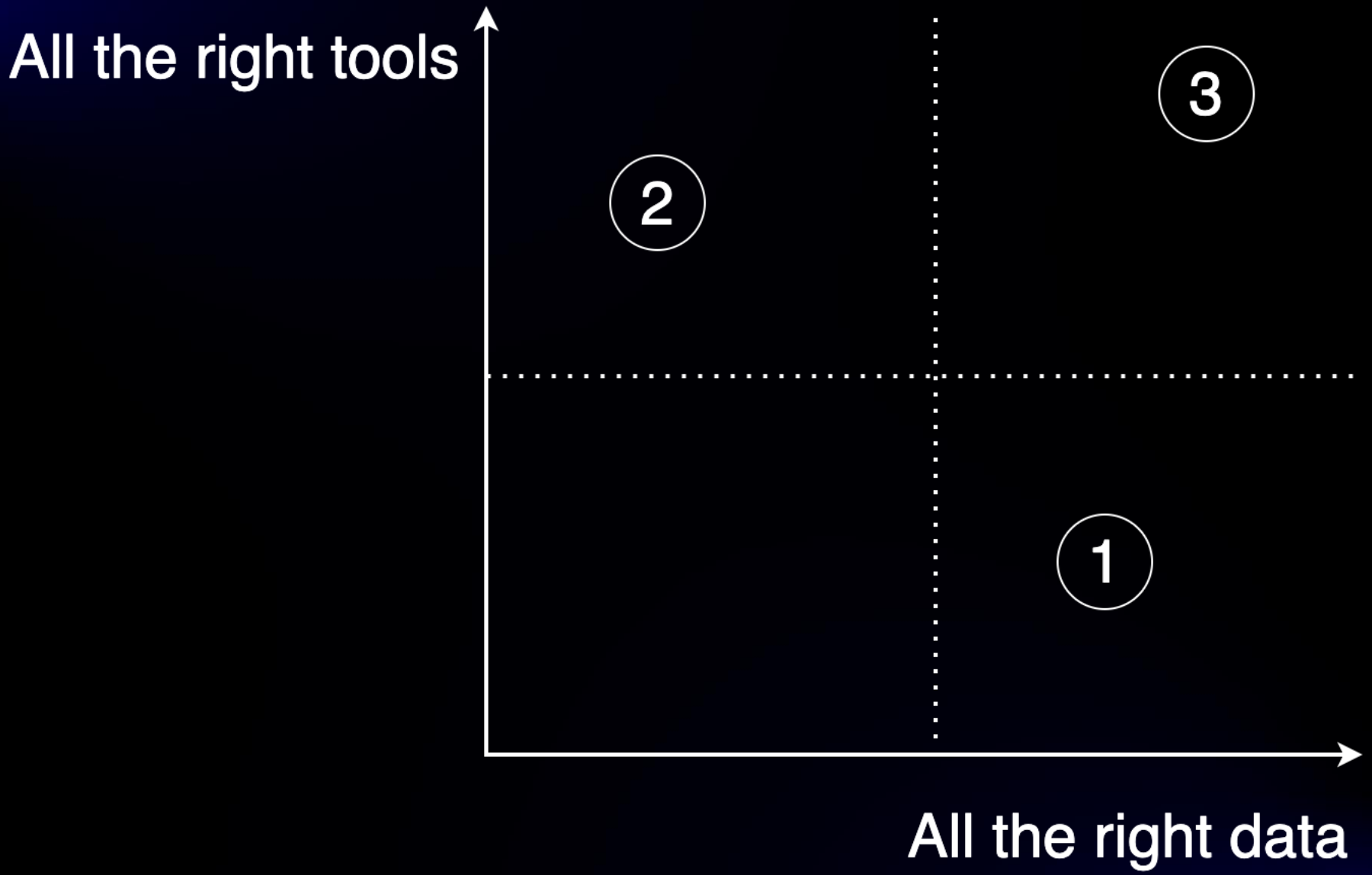
ENR 303
Operational optimization with IoT: From sensor to cloud

ENR 302
Operational optimization with IoT: Storage and analytics

ENR 301
AI-enhanced production optimization solutions in energy

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Agenda

1. Problem – Unplanned downtime
2. Solution – AWS IoT Greengrass
3. Demo
4. IoT data ingestion patterns
5. Q&A
6. Takeaways and next steps

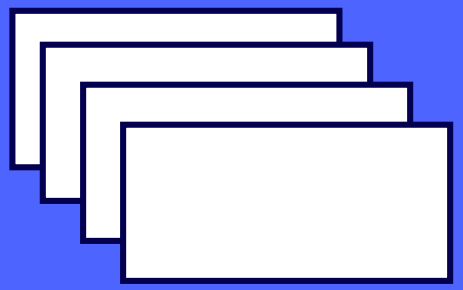
Goals

- ✓ Learn how to get your data from the edge to the cloud with AWS IoT Greengrass
- ✓ Explore design and architectural tradeoffs in IoT data ingestion patterns
- ✓ Identify next steps to get your IoT data into the cloud

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Define the problem

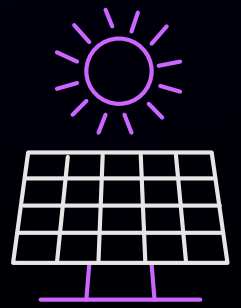
Question cards



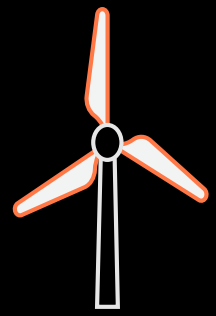
What is an interesting problem you're trying to solve that involves data and/or IoT?

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The problem



Up to $3,000/MW/year unplanned maintenance



$8.5 billion in unplanned downtime maintenance

Wood Mackenzie (2019)

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Solving the problem

Near real-time asset data is a key lever to reduce unplanned downtime

Unplanned downtime of energy assets is expensive and disruptive

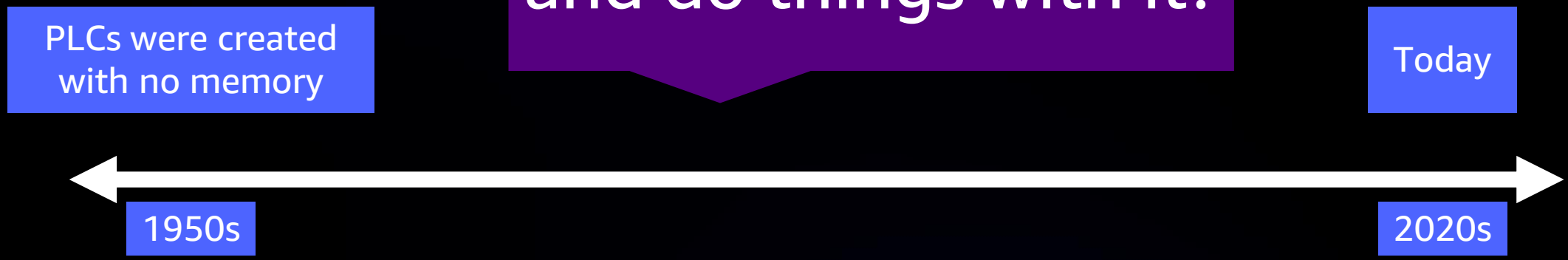
Remote site data is often stranded at the edge



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Industrial IoT – A brief history

How do I get my data and do things with it?



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The technical challenge

Remote sites

Legacy systems

Disparate protocols

All-or-nothing ingestion

Which of these resonates with you most?

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Solving the problem

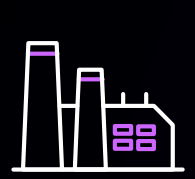
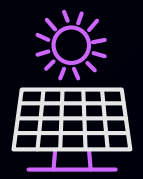
Near real-time asset data is a key lever to reduce unplanned downtime

Extends AWS Cloud capabilities

AWS IoT Greengrass

AWS IoT Core

Communicates and directs traffic



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AWS IoT Core

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Extends AWS Cloud capabilities



AWS IoT Greengrass

Remote sites

- Local messages and triggers
- Data and state sync

Legacy systems

- One-to-many device-cloud connections

Disparate protocols

- Protocol translation at the edge

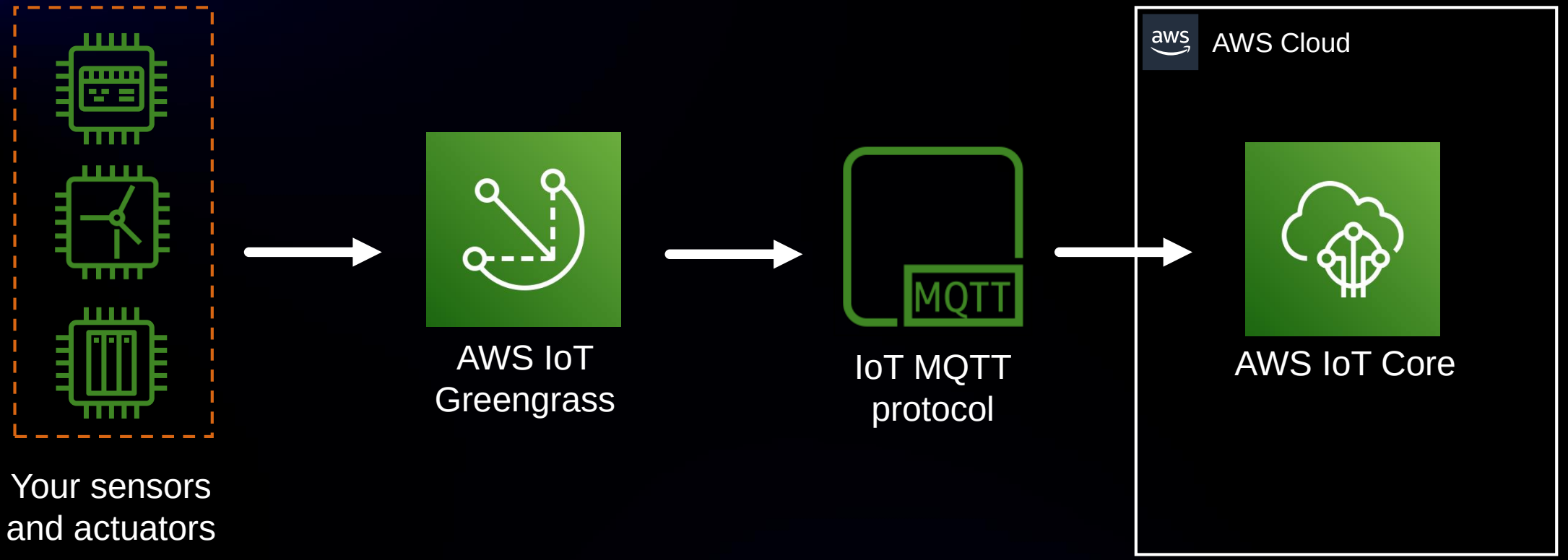
All-or-nothing ingestion

- Local data processing

- Fleet provisioning and over-the-air updates

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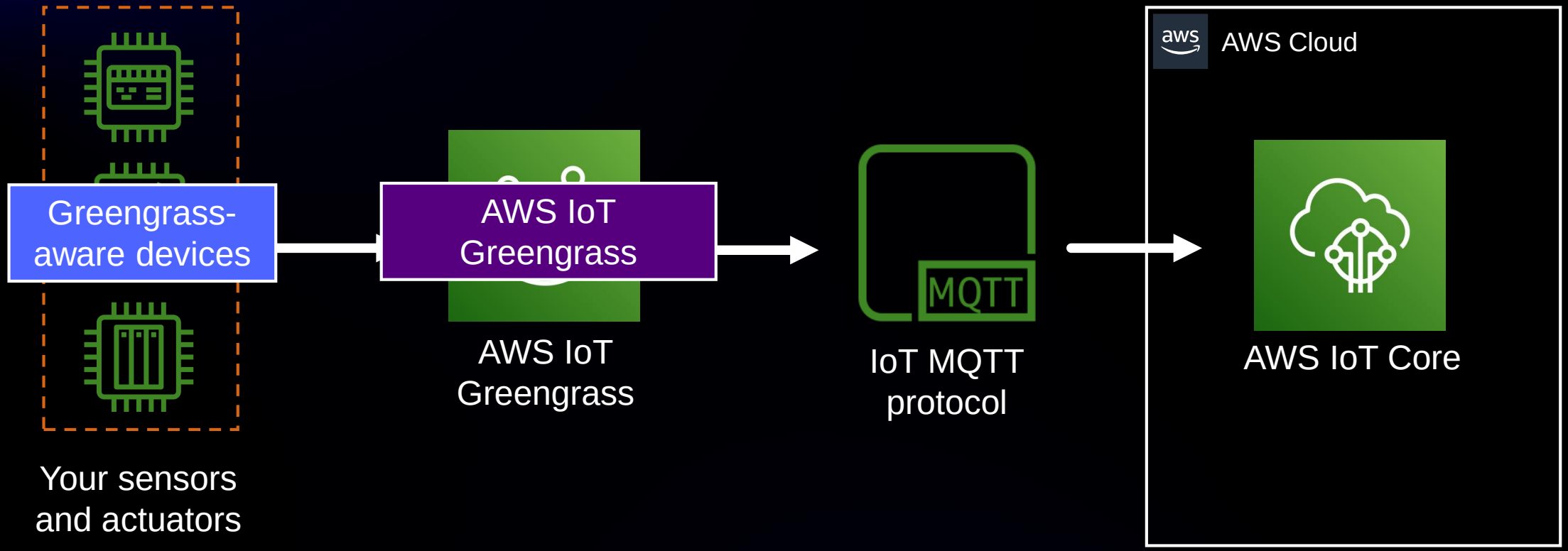
The solution



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The solution

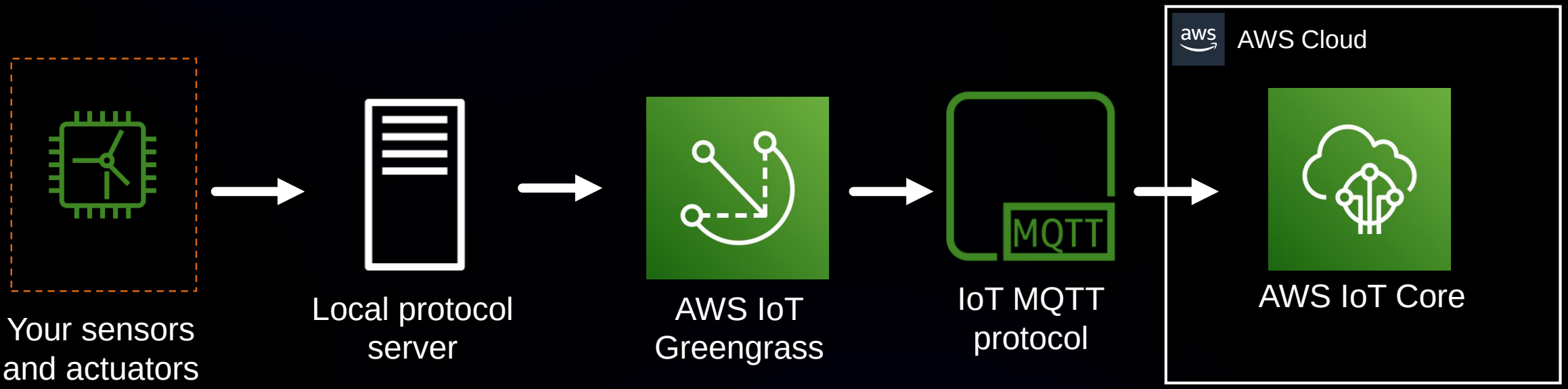


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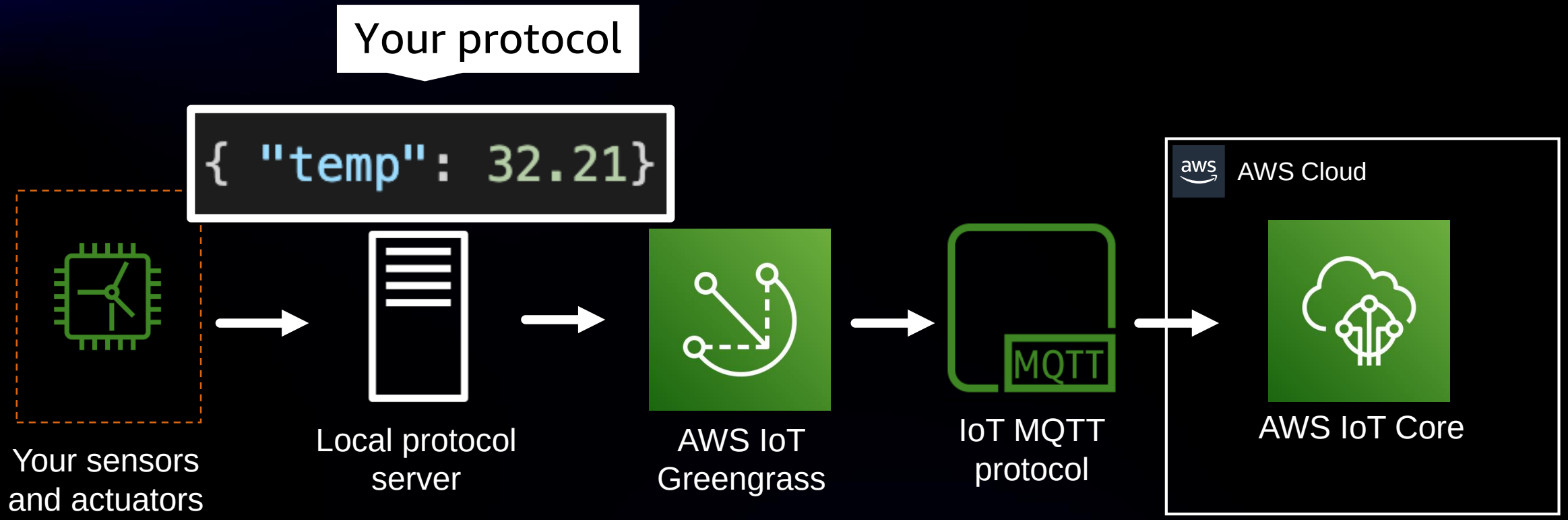
Your Protocol

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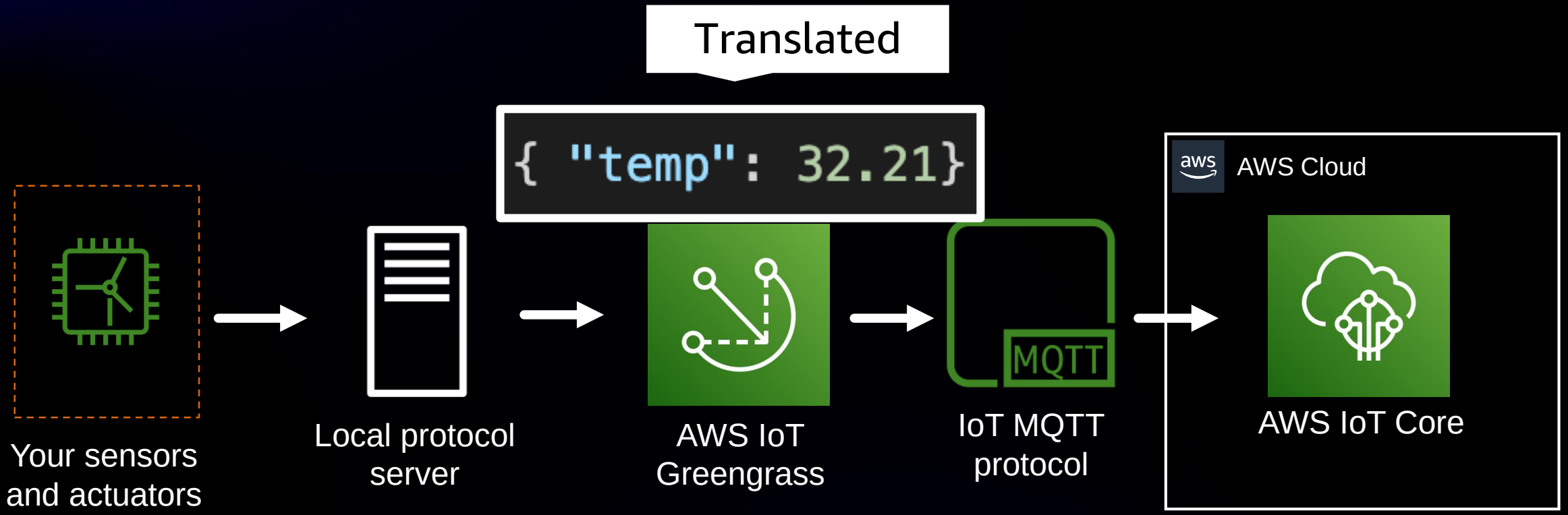
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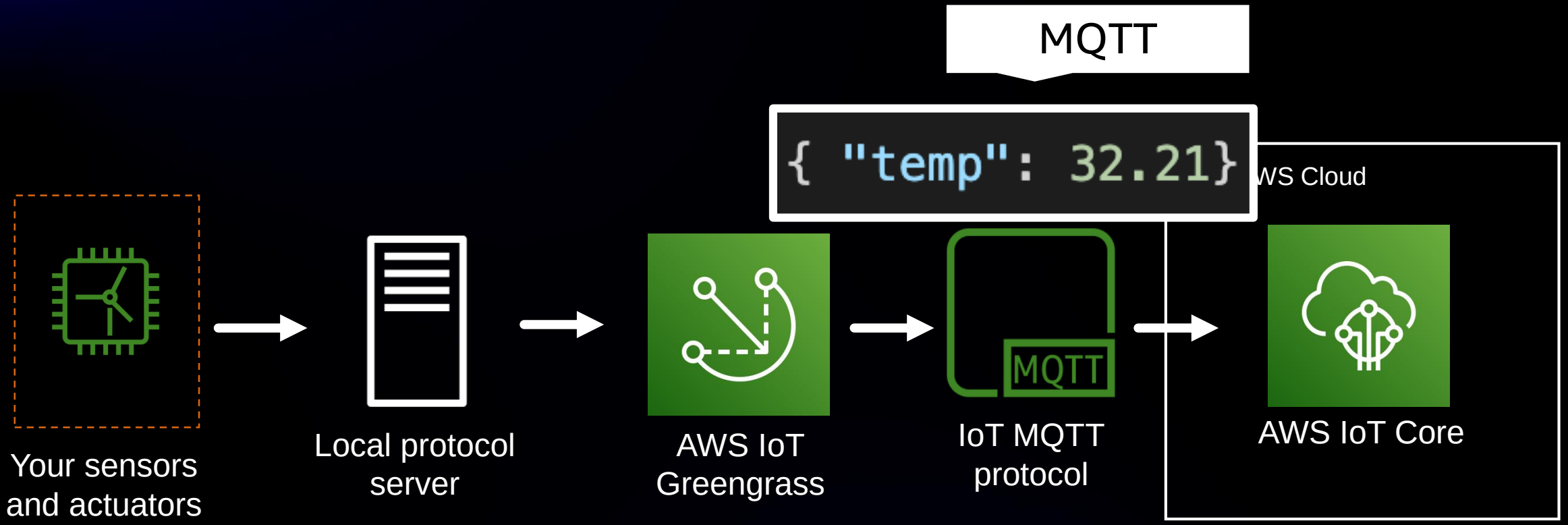


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Collect

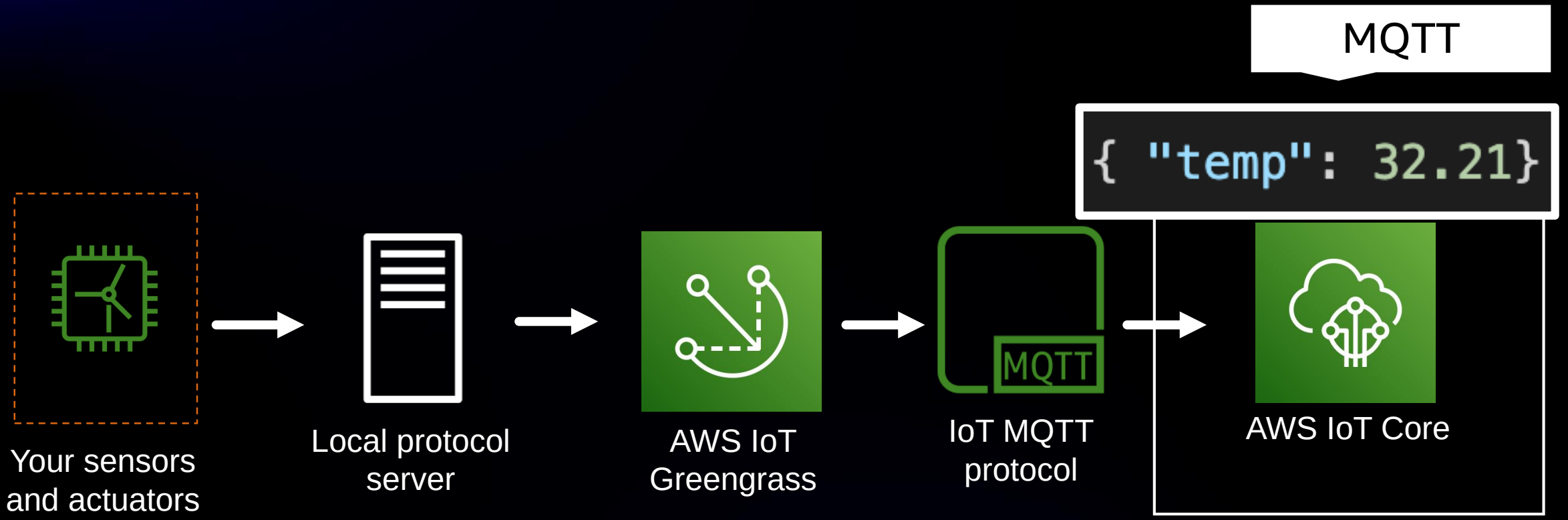
Transport

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Connect Collect Transport

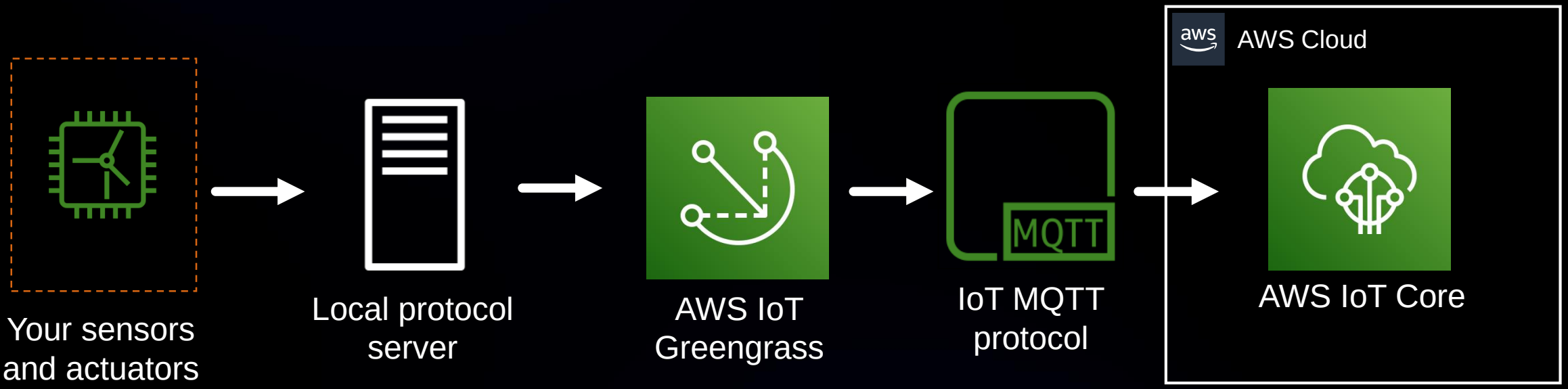
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Connect Collect Transport

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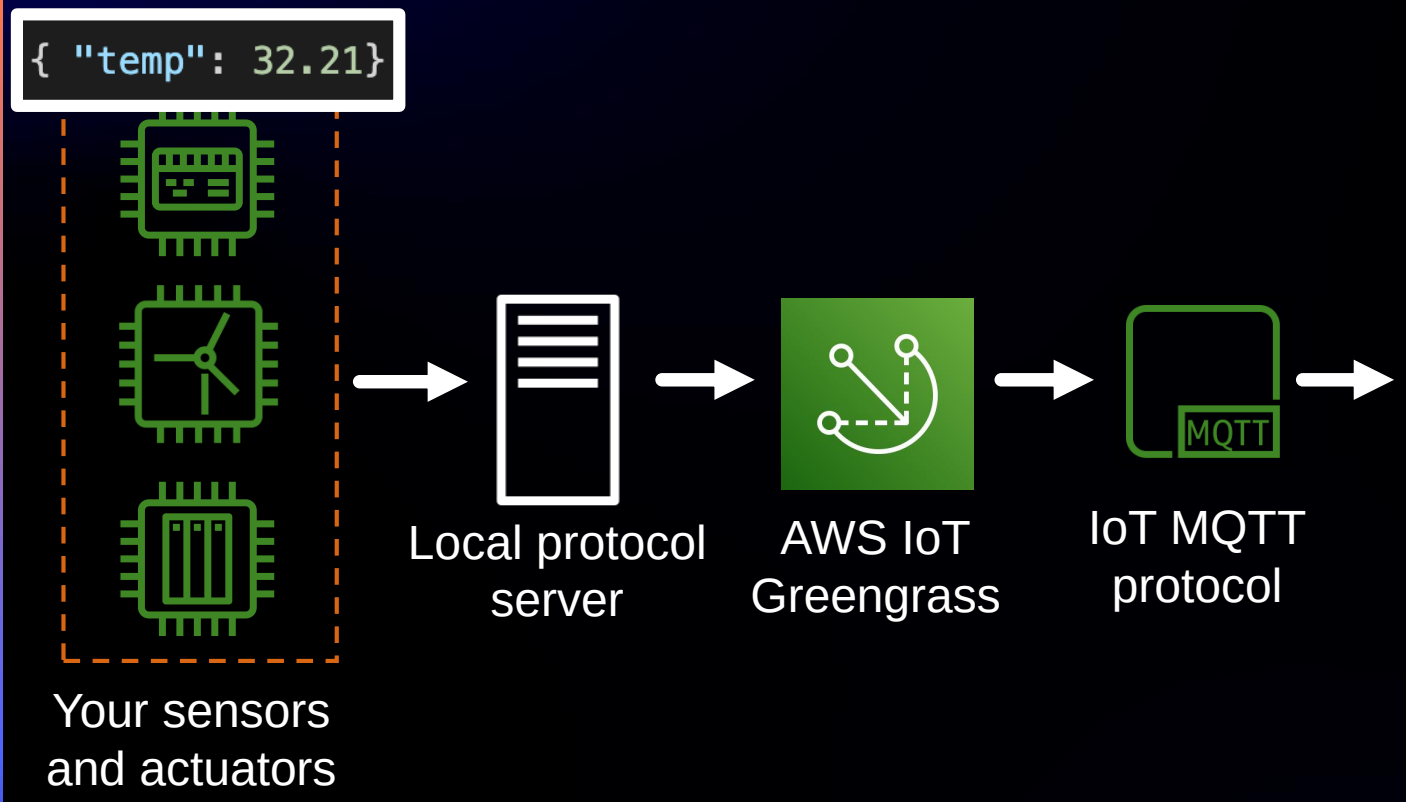
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The solution

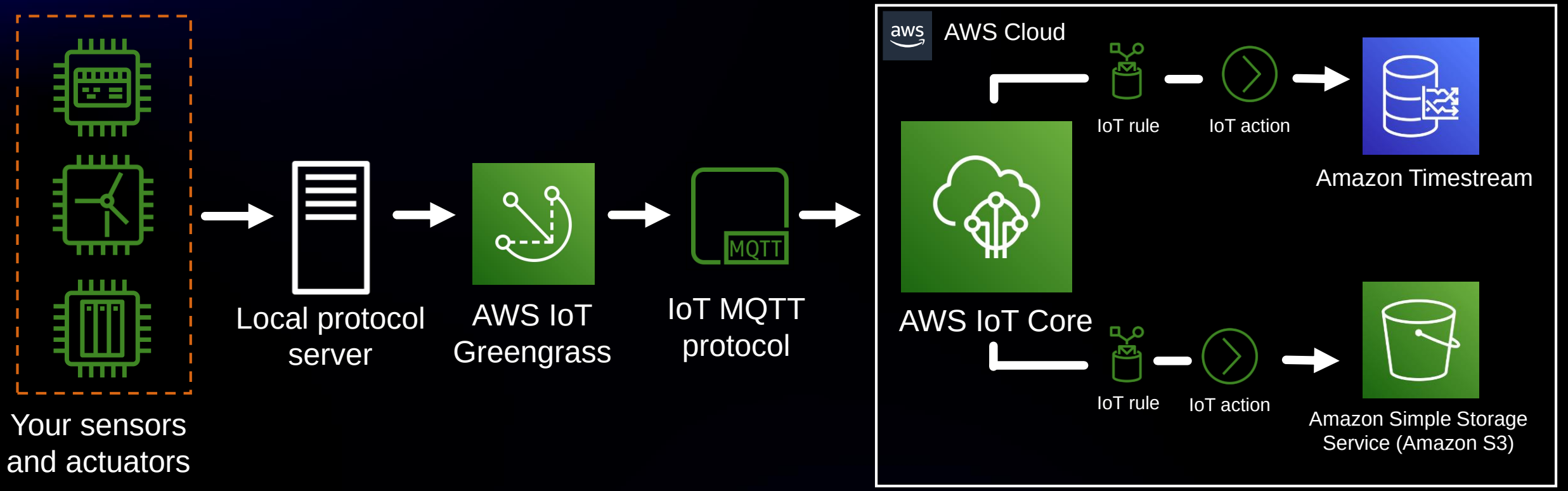


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The solution



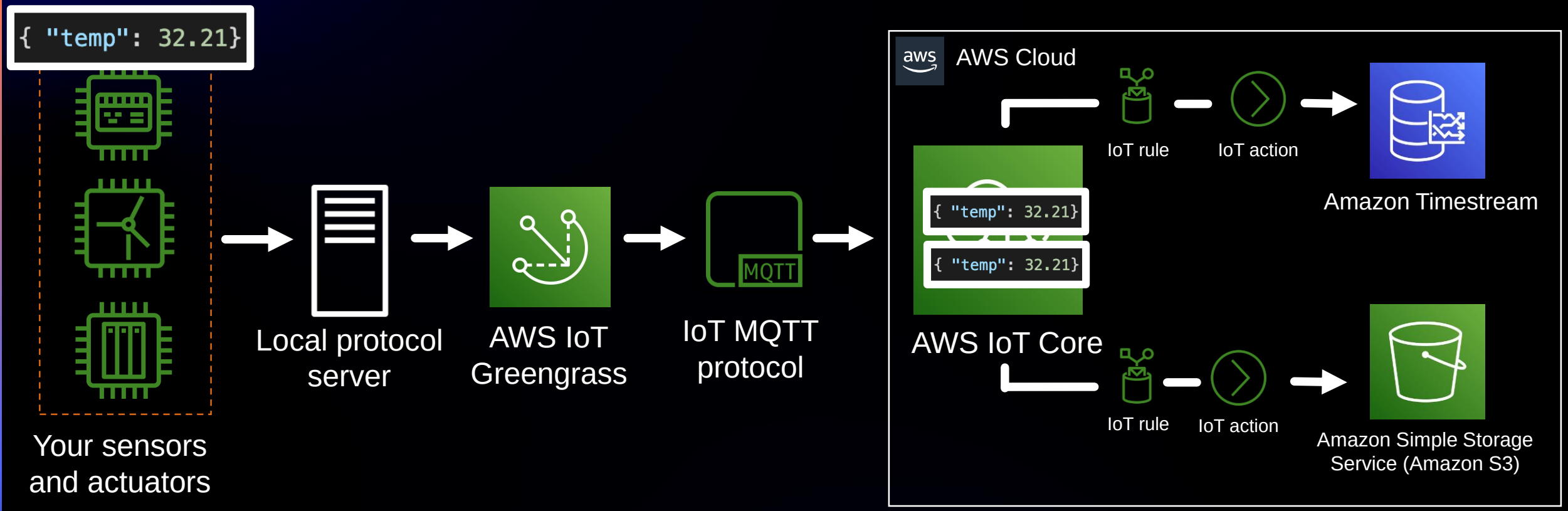
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Demo

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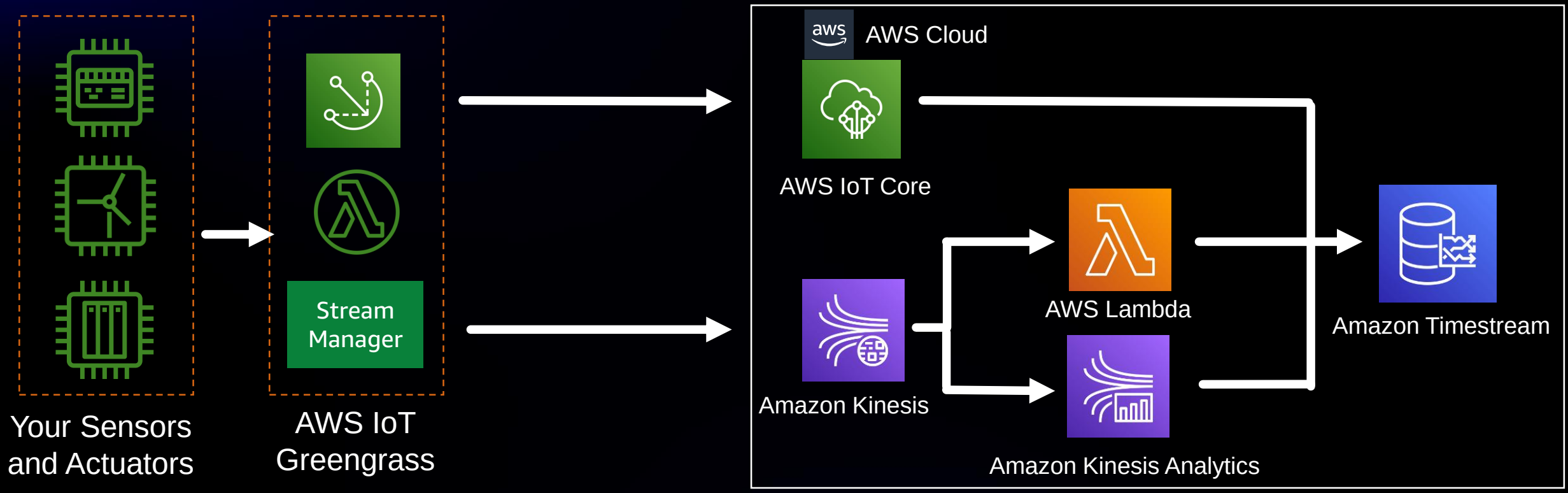
The solution



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Patterns for IoT time series data ingestion



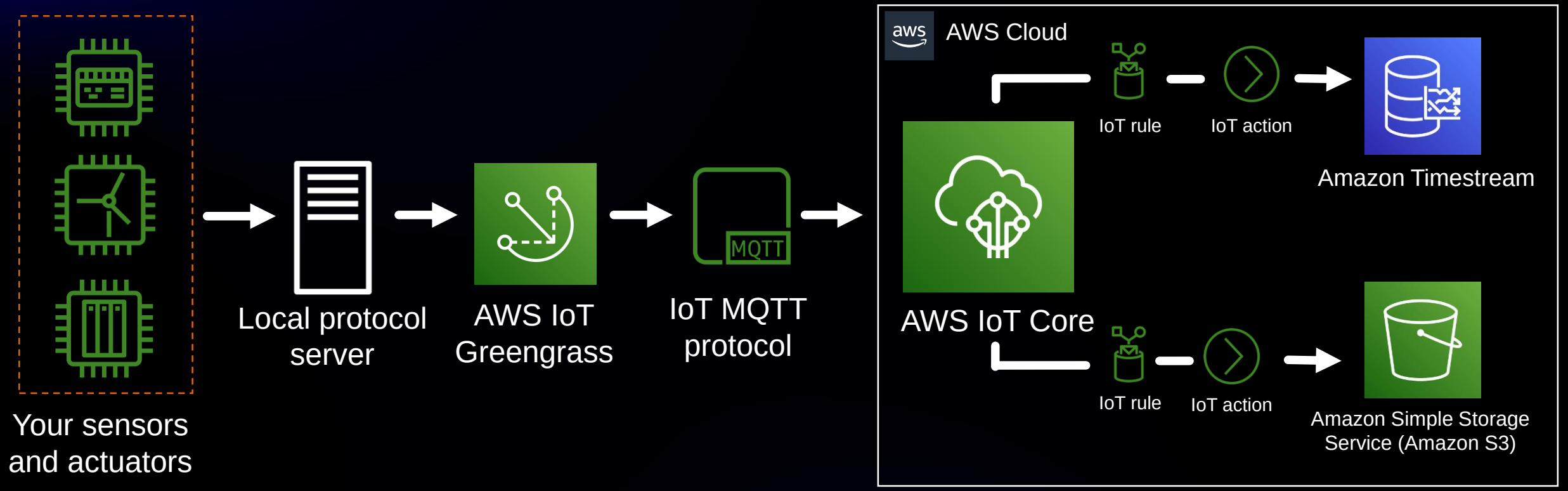
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Q&A – Discussion

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Where would you like to dive deeper?

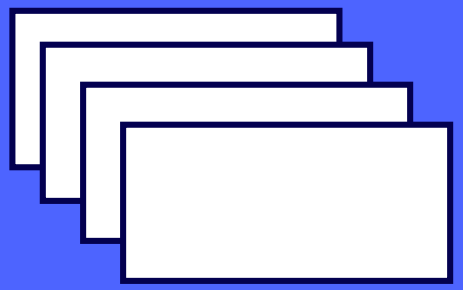


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Back to the problem...

Question cards



What's an interesting problem you're trying to solve that involves data and/or IoT?

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The technical challenge

Remote sites

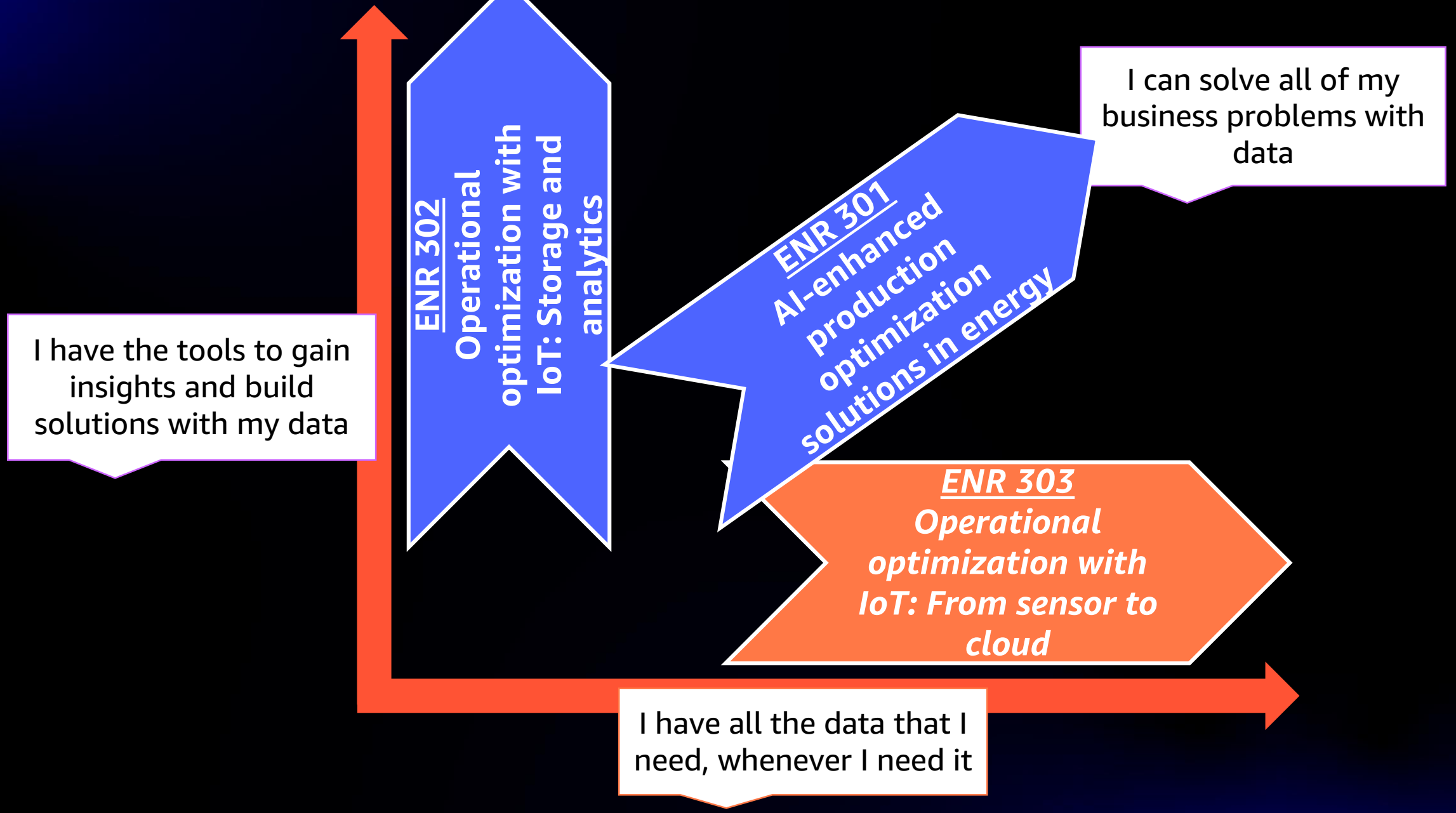
Legacy systems

Disparate protocols

All-or-nothing ingestion

Which of these resonates with you most?

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What’s next

What business problem are you trying to solve?

What data and IoT workload will you prioritize first?

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What's next

What is the most performant, secure, and cost optimized way to get your data from the edge to the AWS Cloud?

How will your equip your team with the mindset and skills to make the most of your IoT priorities?

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Citations

1. Wood Mackenzie (2019). Unplanned wind turbine repairs to cost industry $8 billion+ in 2019. (https://www.woodmac.com/press-releases/unplanned-wind-turbine-repairs-to-cost-industry-$8-billion-in-2019/)

2. Wood Mackenzie (2019). Unplanned solar plant repairs to cost industry $16 billion over next 6 years. (https://www.woodmac.com/press-releases/unplanned-solar-plant-repairs-to-cost-industry-$16-billion-over-next-6-years/)

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Get started

- Time Series Data Processing Reference Architecture: https://bit.ly/3qmetKt
- Industrial Machine Connectivity Solution Quick Start: https://go.aws/3wwC502
- Connected Home Reference Architecture: https://bit.ly/3wweYCC
- Smart Farm Reference Architecture: https://bit.ly/3knQxCz
- Real Time Streaming with Kinesis Workshop: https://bit.ly/3qnhg65
- Amazon Kinesis Video Streams Workshop: https://bit.ly/30cvITK
- AWS IoT Greengrass v2 Workshop: https://greengrassv2.workshop.aws/en/

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Thank you!

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