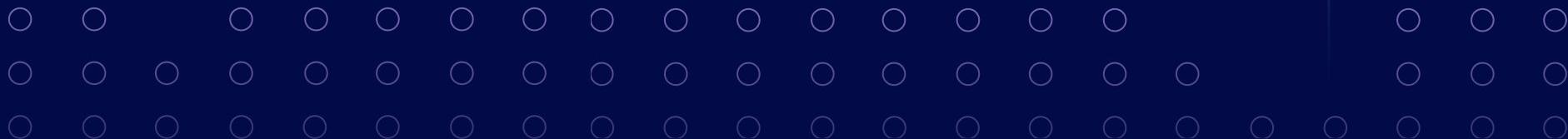


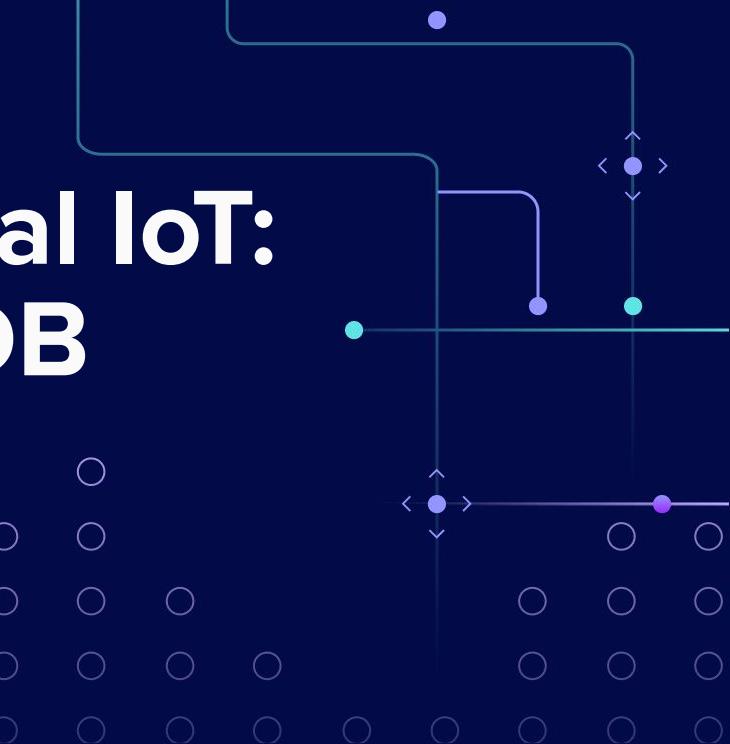


Physical AI for Industrial IoT: Edge Impulse + InfluxDB

October 21, 2025



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6.468081871635
8.484777408835.
8.484435921435.14
8.488697114 35.1669
8.485292383495.163143





Marc Pous
Developer Relations,
Edge Impulse



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Senior Developer Advocate,
InfluxDB

Agenda

1. Introduction
2. Physical AI for Industrial IoT
3. Edge Impulse Platform
4. InfluxDB 3 for Physical AI
5. Demo
6. Q&A

Definitions

Edge AI

AI deployed locally on devices
(IoT, sensors, robots)
for real-time processing.

Physical AI

AI integrated into physical systems
(robots, machines)
to interact with the real world in real-time.

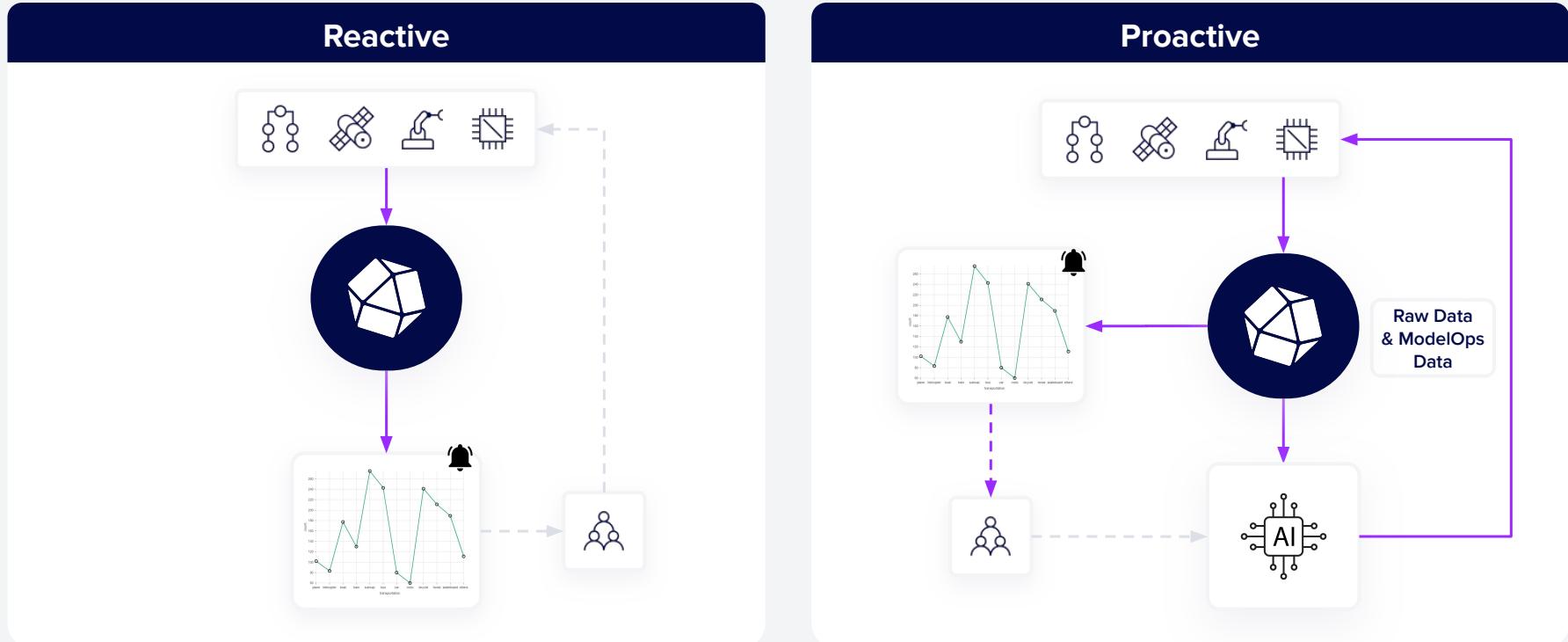
Embodied AI

AI integrated into physical systems
(robots, drones)
that learn through environment interaction.

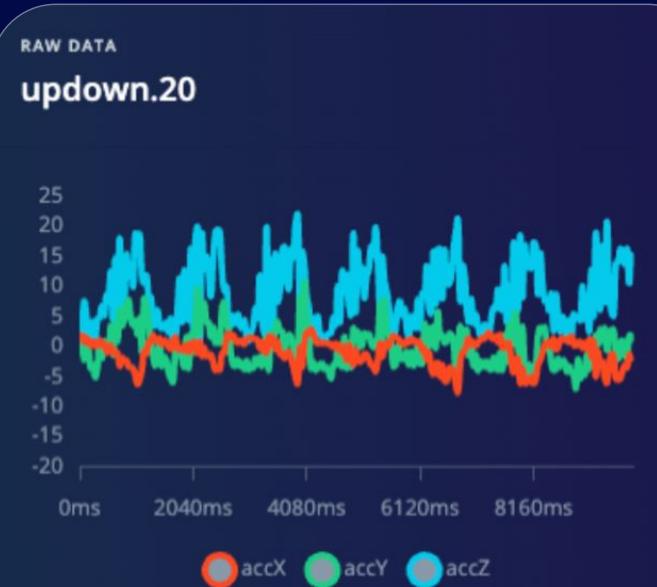
Time Series Data

A sequence of data points
index in time order / timestamp
(IoT, DevOps etc)

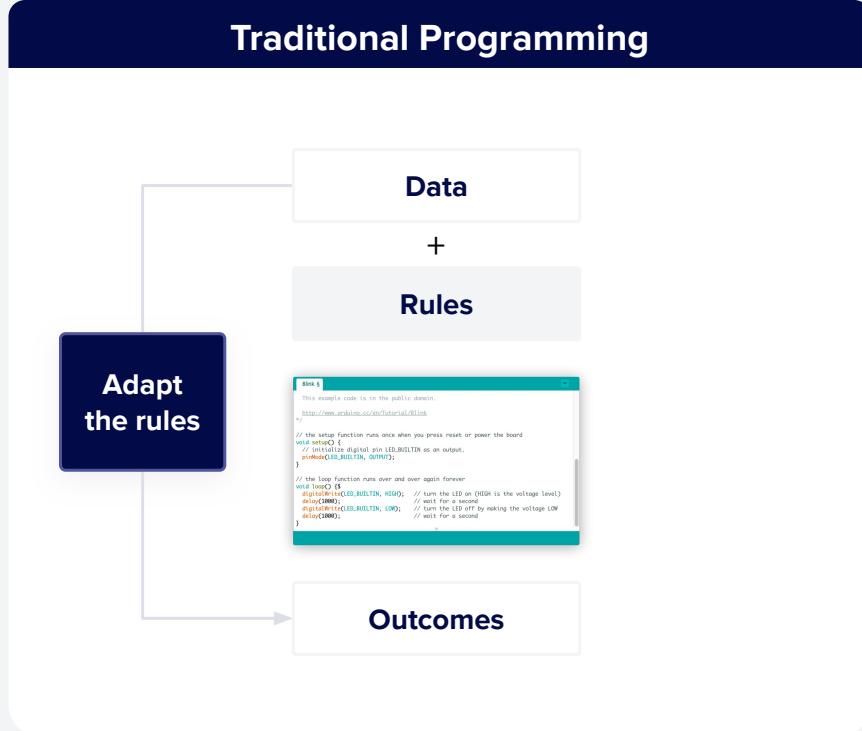
Physical AI: From Observation to Action



What does the real world look like?



A paradigm shift



A paradigm shift

Traditional Programming

Data

+

Rules

Adapt
the rules

```
Sketch: 1
This sample code is in the public domain.
http://www.arduino.cc/en/Tutorial/Blink
/*
 * the setup function runs once when you press reset or power the board
 * sets the digital pins to output, creates serial port, and initializes
 * the LED_BUILTIN as an output.
 */
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(LED_BUILTIN, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(LED_BUILTIN, HIGH); // turn the LED on (HIGH is the voltage level)
  delay(1000);                  // wait for a second

  digitalWrite(LED_BUILTIN, LOW); // turn the LED off by making the voltage LOW
  delay(1000);                  // wait for a second
}
```

Outcomes

Machine Learning

Data

+

Outcomes

Collect
more data

```
Sketch: 1
This sample code is in the public domain.
http://www.arduino.cc/en/Tutorial/Blink
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  delay(1000);                  // wait for a second
}
```

Rules

Accelerating industrial productivity use cases

Inspect production lines, predict failures and forecast maintenance cycles

Images

Vibration

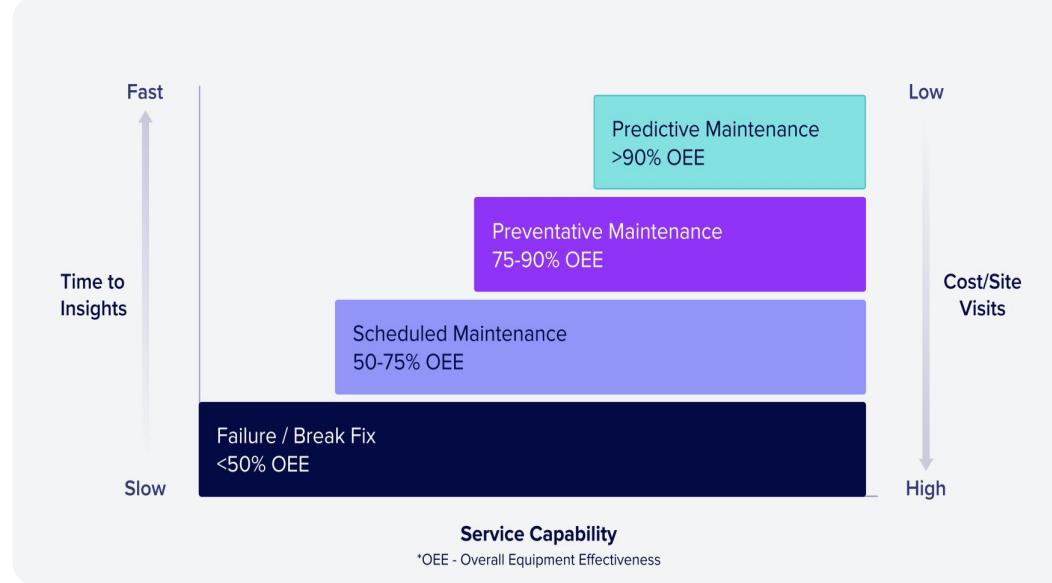
Sound

Temperature

Current



Use Case: Predictive Maintenance

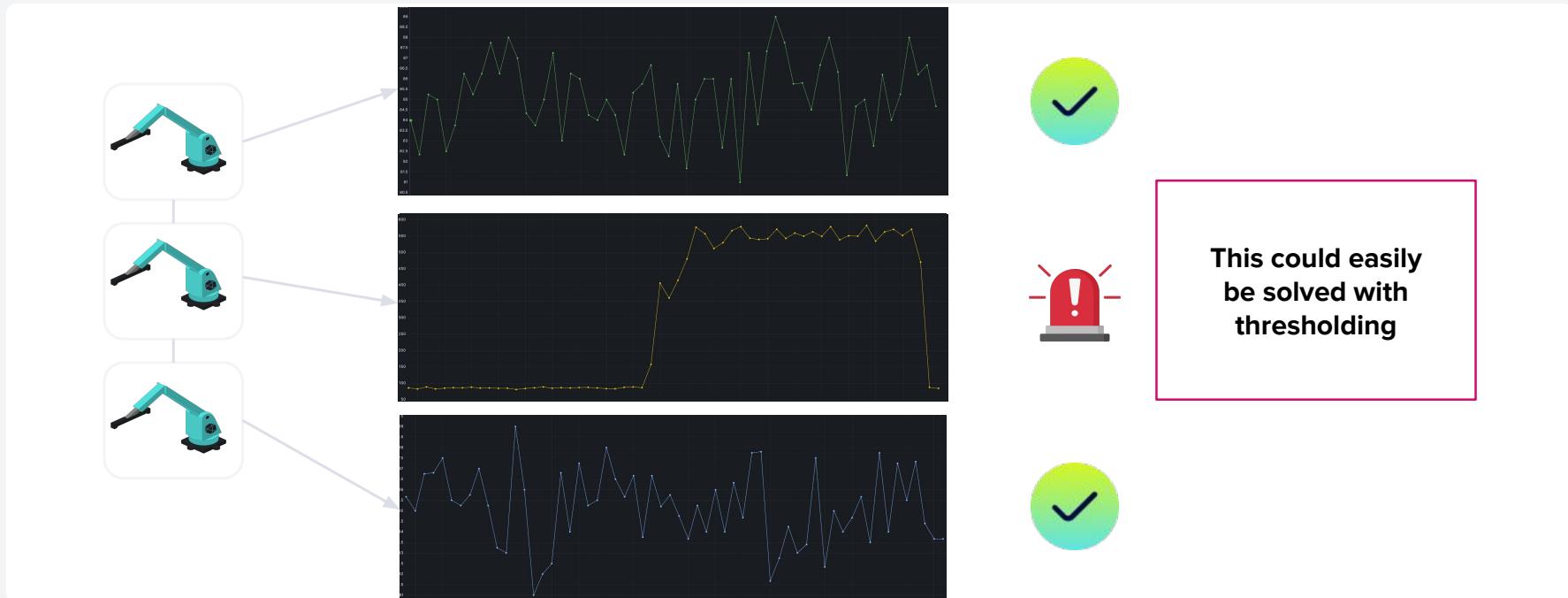


Machine Learning for Time Series Data:

- Forecasting
- Anomaly Detection

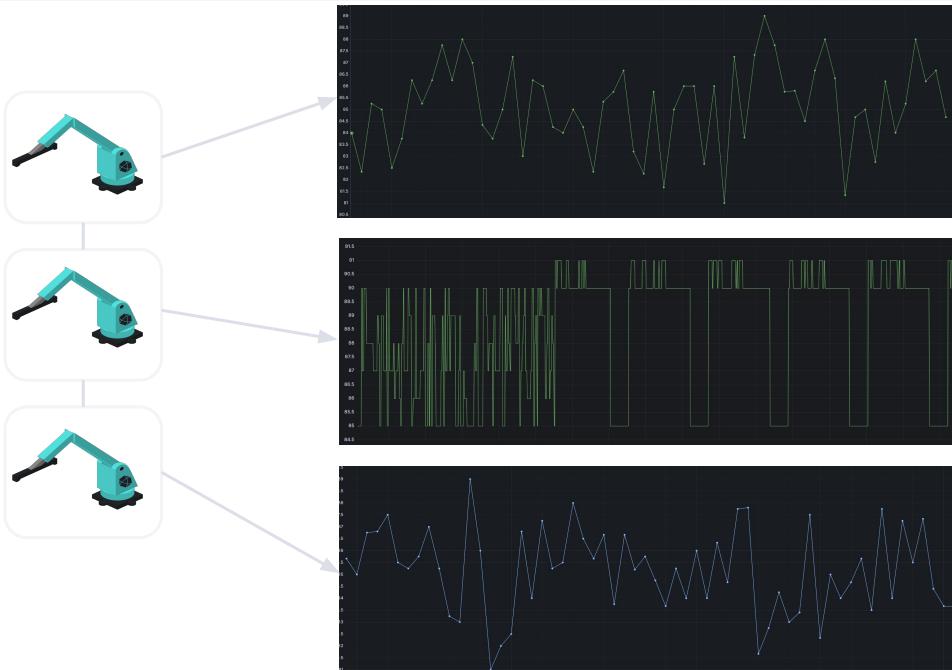
Predictive Maintenance

Naive Approach



Predictive Maintenance

ML based Approach



What do we do when
our result becomes
unpredictable by
conventional means?

Challenges Implementing Physical AI

99% of sensor & device data is discarded*

Accelerate next gen IoT products and solutions turning data from any edge device into actionable insights

Current ML tools are not designed for edge

Enable developers enterprise-wide to rapidly build ML solutions natively for edge devices, amplifying your ML experts

87% of AI/ML projects fail due to infrastructure complexity

MLOps infrastructure from data collection to edge deployment, for enterprise data science and ML teams, with leading integrations

Difficulties in building smart product experiences

Build innovative experiences with ML with ease, leading to growth and competitive differentiation

What does the real world look like?

Edge AI development platform helping your teams to collect **data**, develop **any model** and deploy to **any target**.



Build real-world
datasets at scale



Develop custom ML
solutions fast



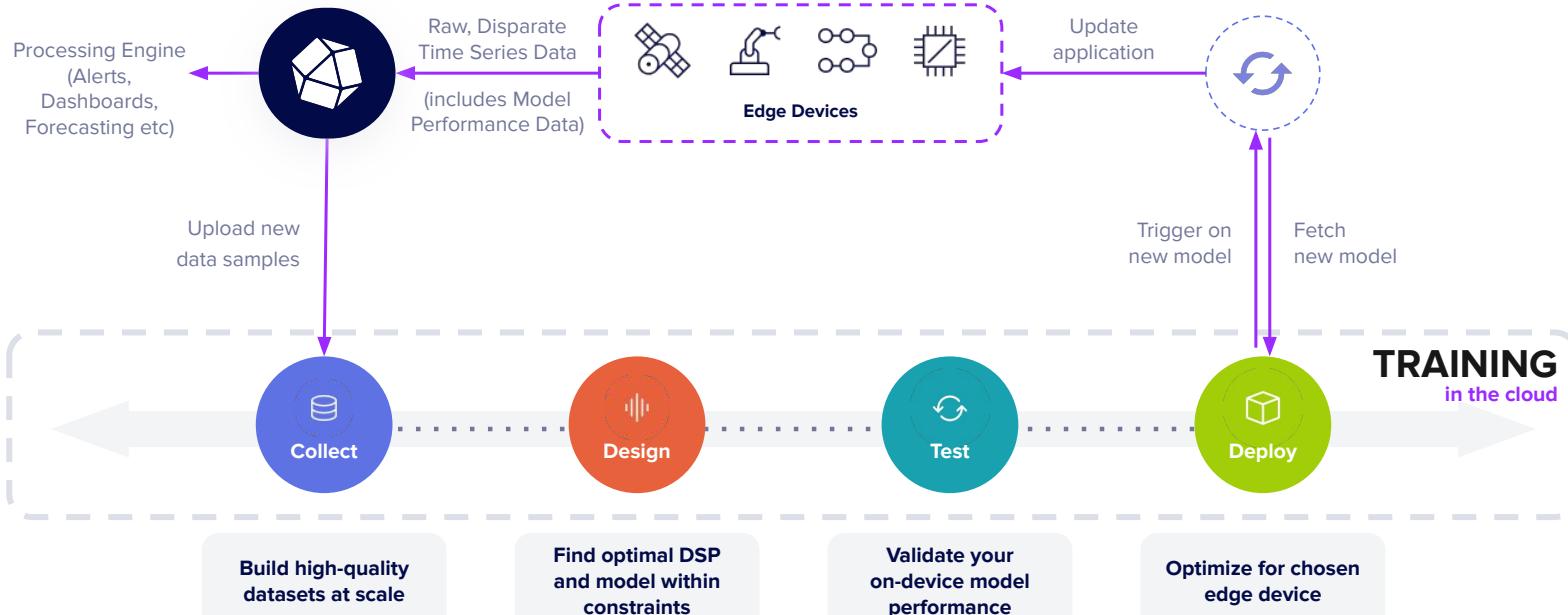
Deploy intelligent edge
products



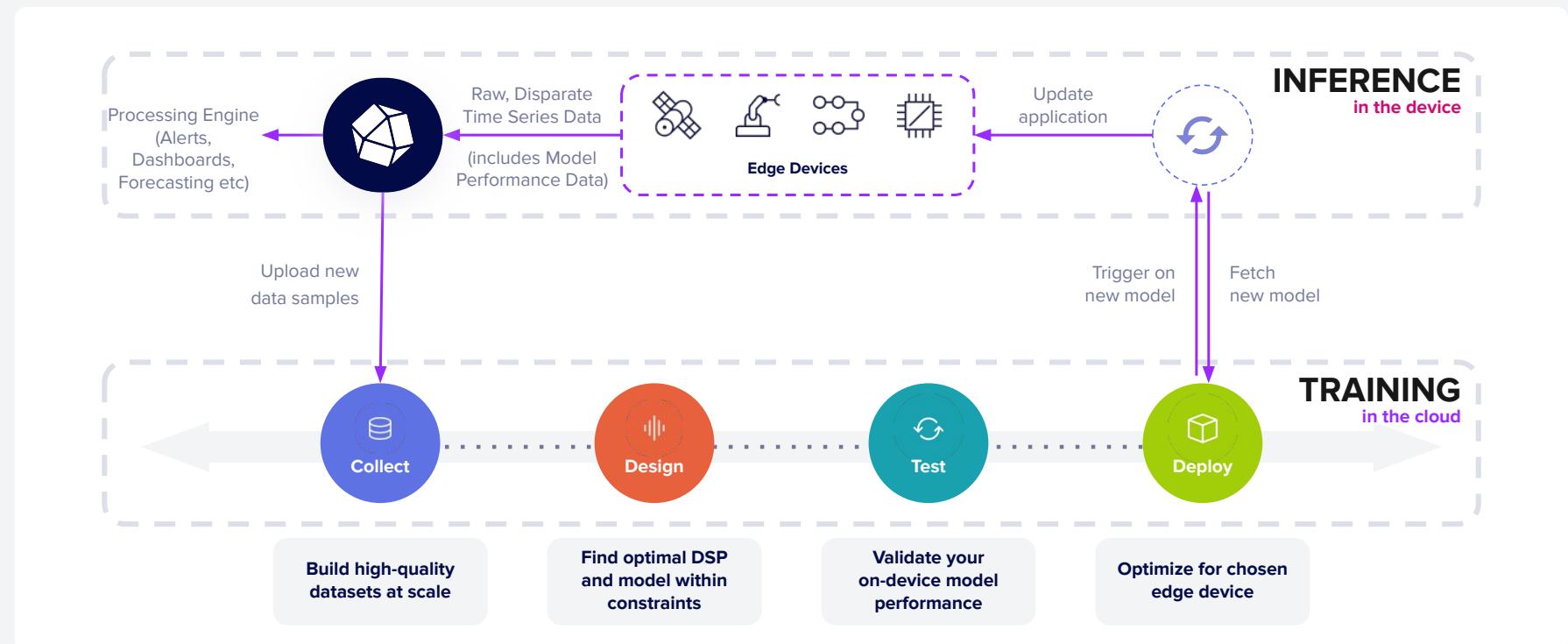
Active learning with Edge Impulse & InfluxDB



Active learning with Edge Impulse & InfluxDB



Active learning with Edge Impulse & InfluxDB

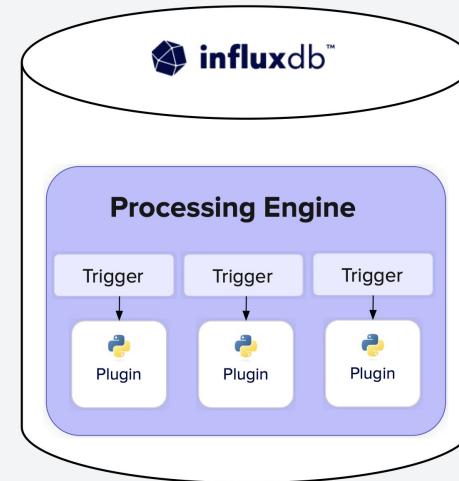


InfluxDB 3 | The Processing Engine

A fully modern embedded virtual **python environment directly inside the database** for efficiency and ease of use.

Access to Python's **ecosystem** of libraries and tools.

Ideal for **data processing, transformation, alerting, monitoring, anomaly detection, forecasting** and more.

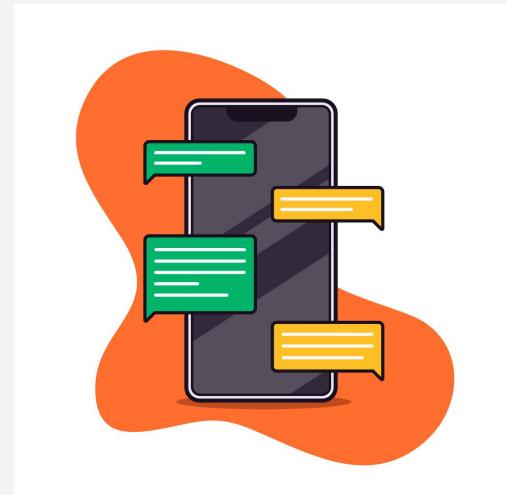
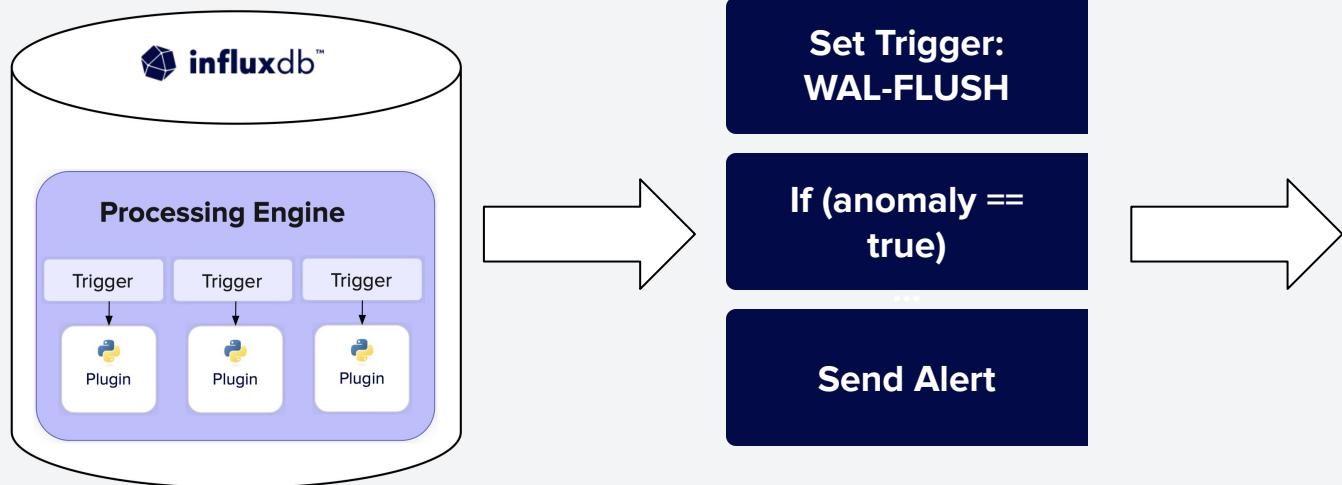


WAL Flush

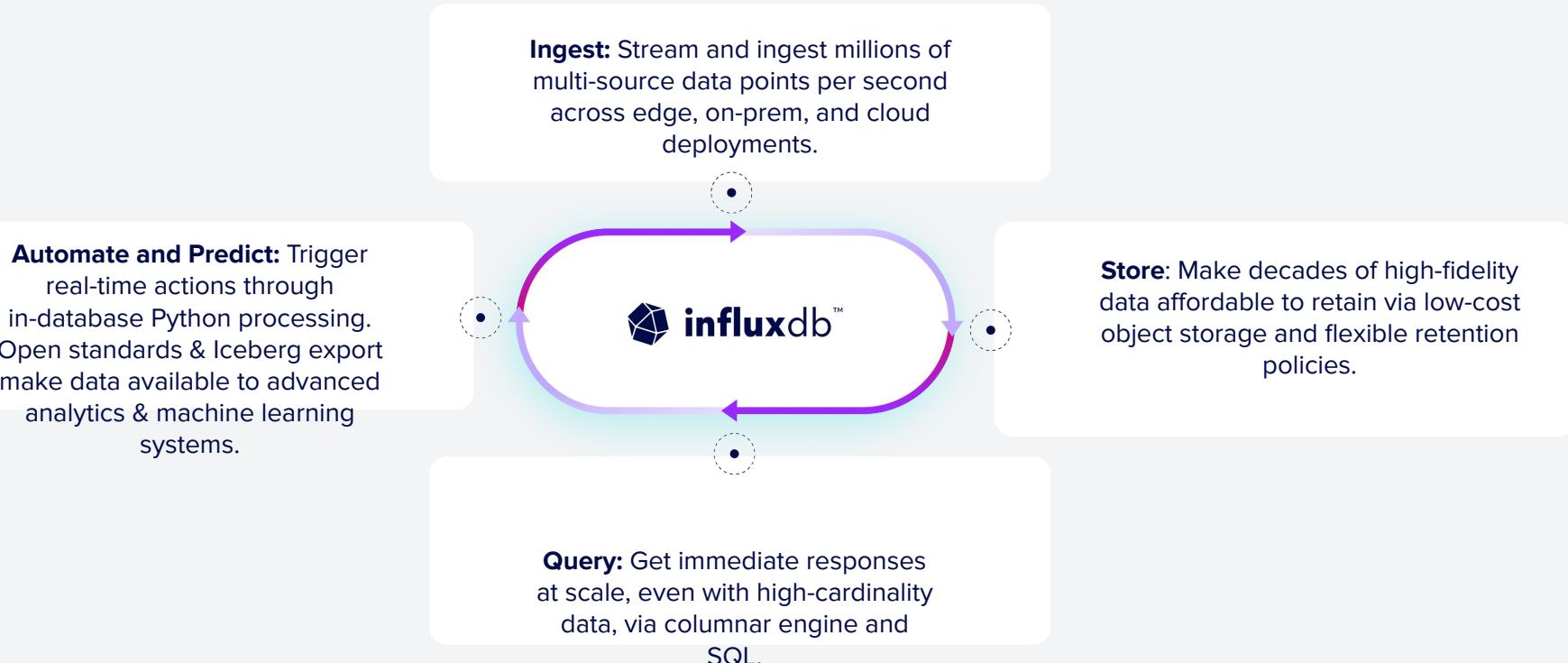
Scheduled Task

On Request

Alerting | InfluxDB 3 Processing Engine



How InfluxDB turns raw signals into intelligent action



Built on an enterprise-grade foundation

✓ High availability

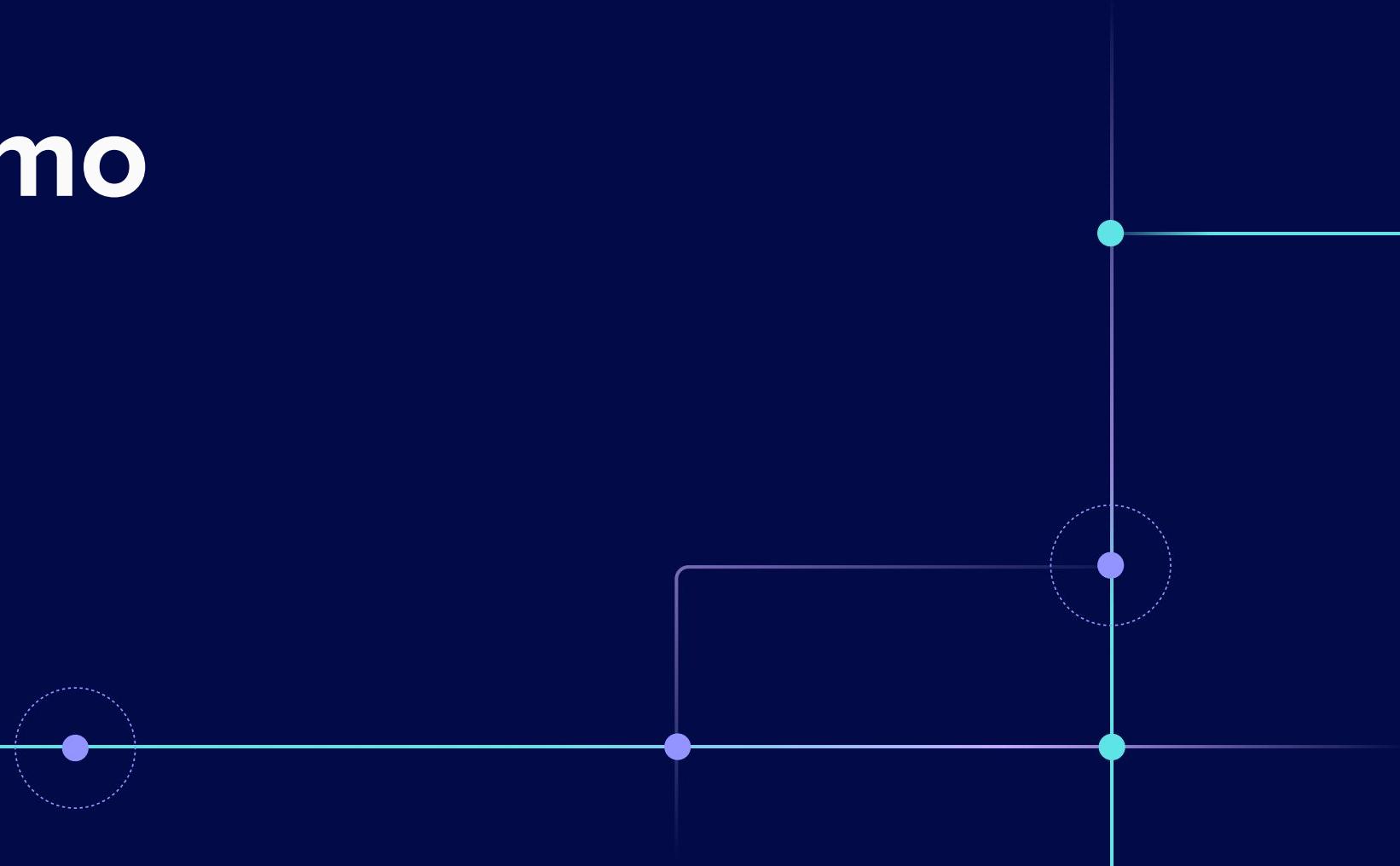
✓ Horizontal scaling

✓ Open interoperability

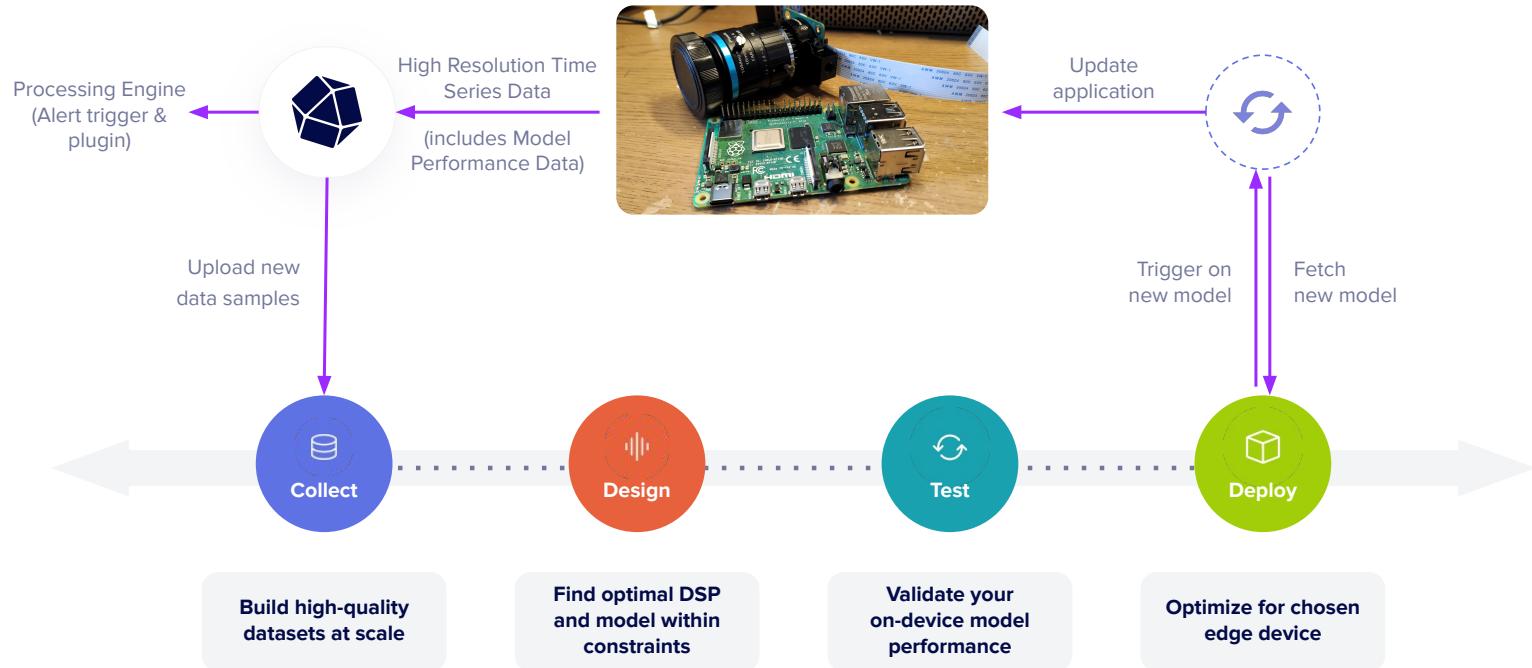
✓ Enterprise security

✓ Enterprise support

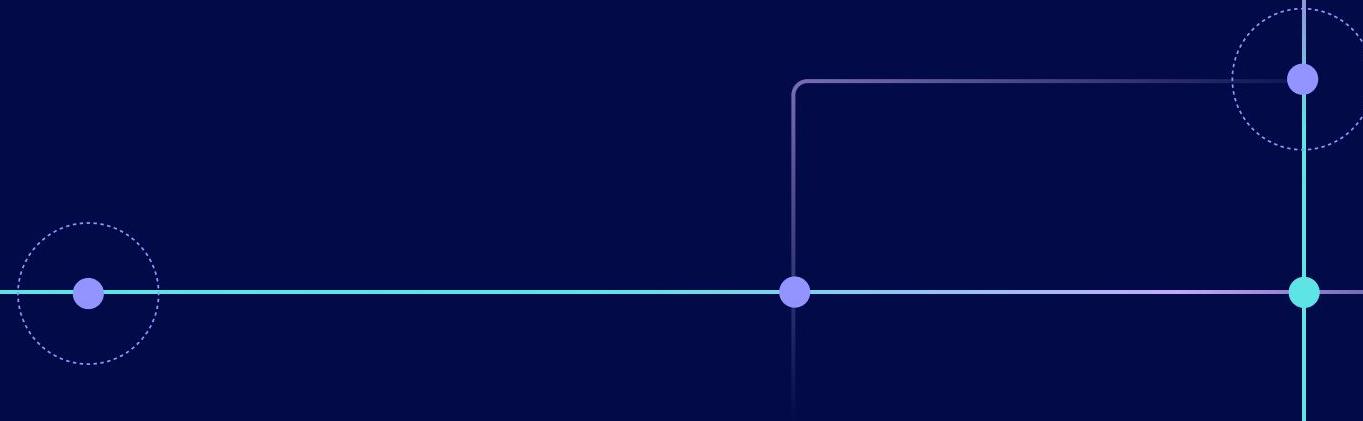
Demo



Demo App Architecture



One last thing



Using Arduino UNO Q + Edge Impulse + InfluxDB



Continue Learning & Sharing



Try InfluxDB 3: <https://www.influxdata.com/downloads>



GitHub (Lab): <https://github.com/InfluxCommunity/Processing-Engine-Training>



Community Forum: <https://community.influxdata.com>



InfluxDB University: <https://university.influxdata.com>



Try Edge Impulse: <https://edgeimpulse.com>

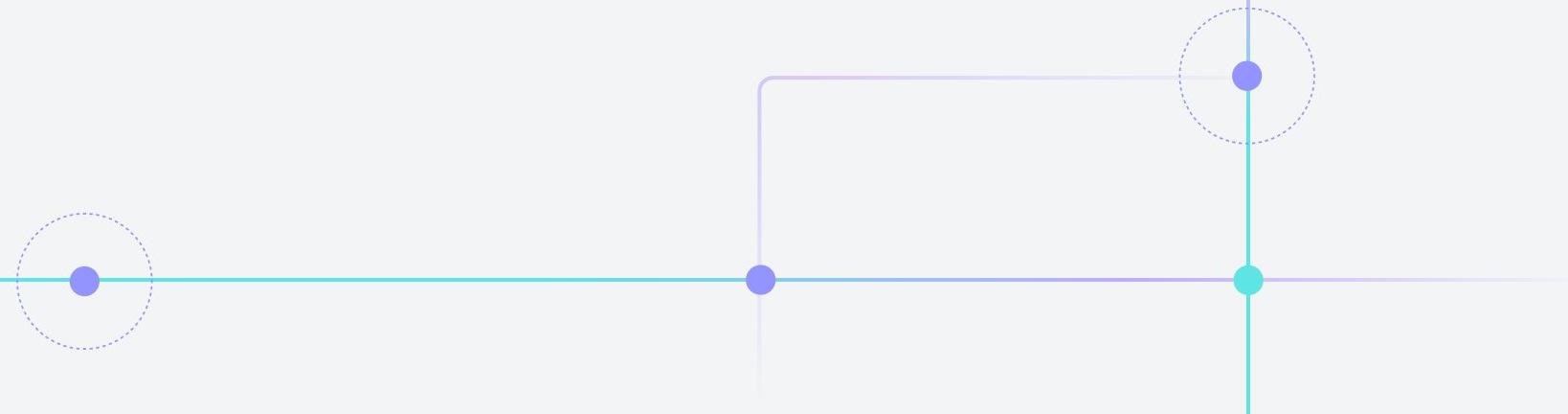


Edge Impulse Forum: <https://forum.edgeimpulse.com>



Edge Impulse Discord: <https://discord.gg/edgeimpulse>

Questions?





Thank you

www.influxdata.com