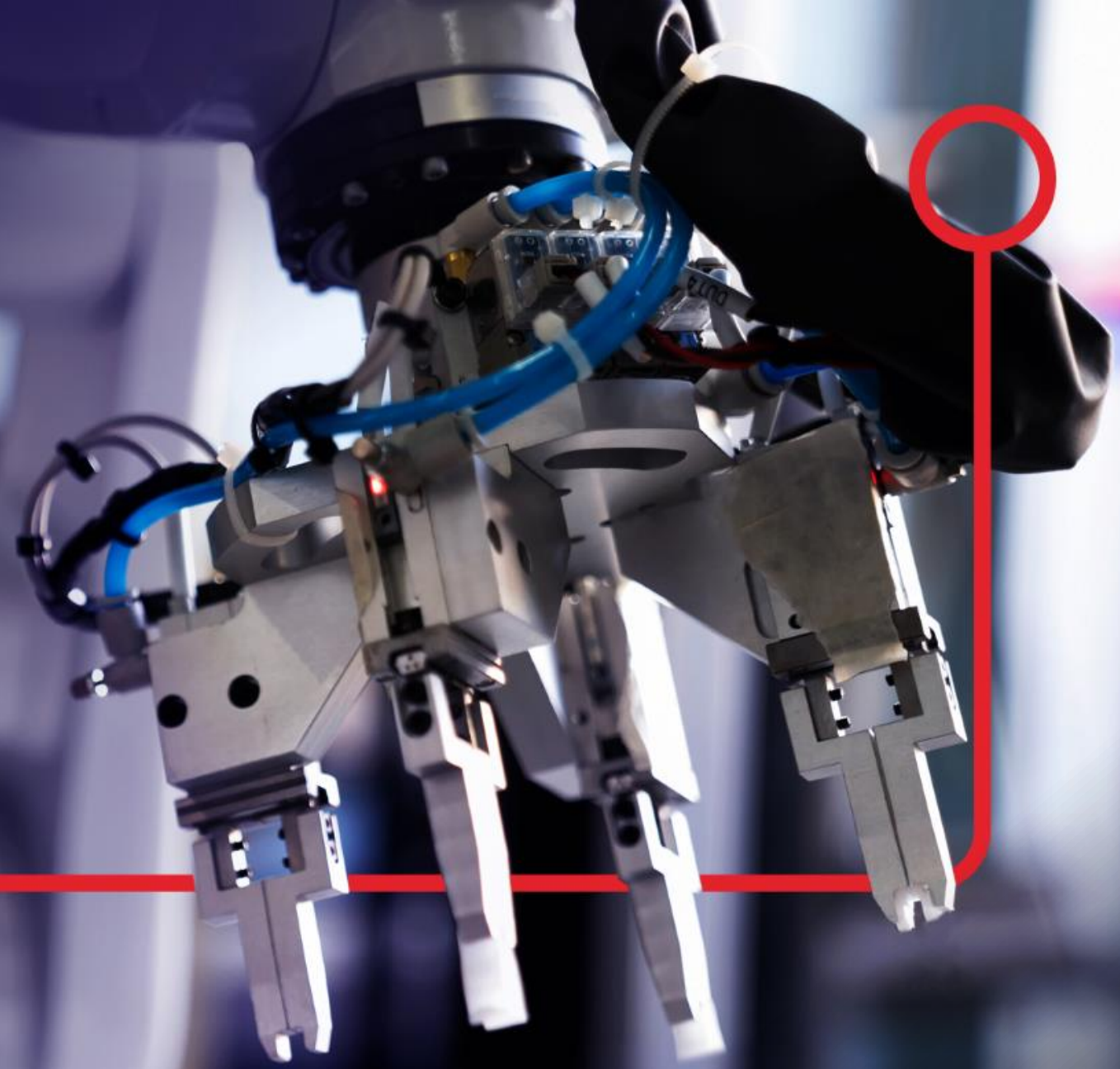# pelion

CLD-101: Consider the Options to connect my product to a cloud provider.

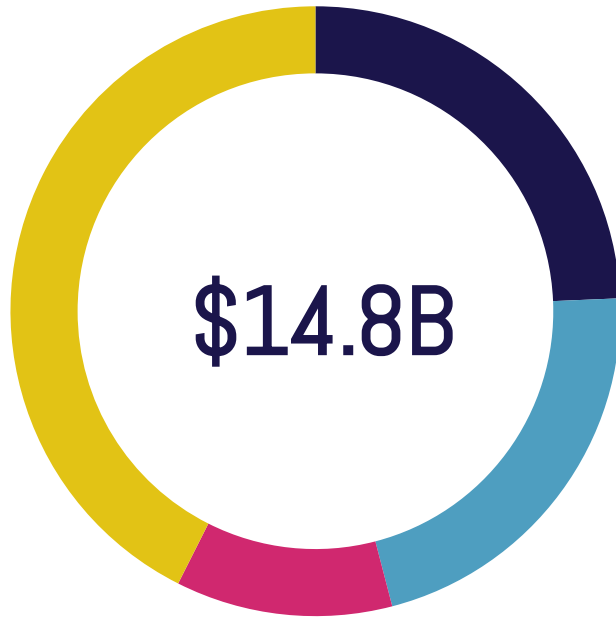**Together** we can do more

Shiv Ramamurthi

Agenda

- IoT Market & Background

- Challenges and Solutions

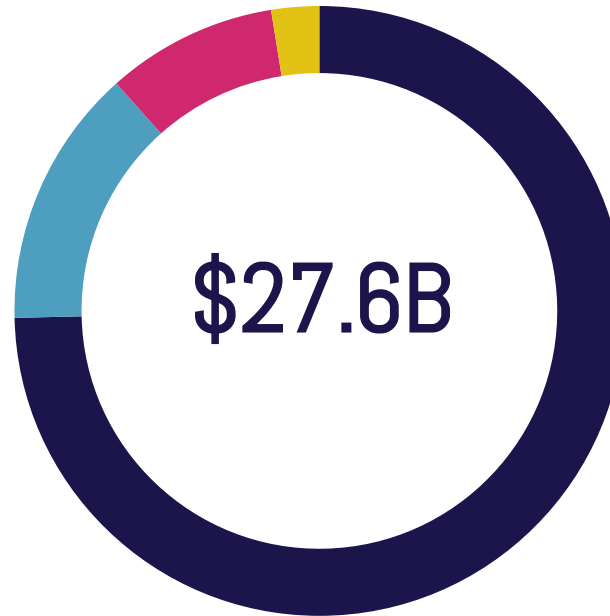- Pelion – Overview and Key Capabilities

- Representative Use cases

The IoT market potential is significant
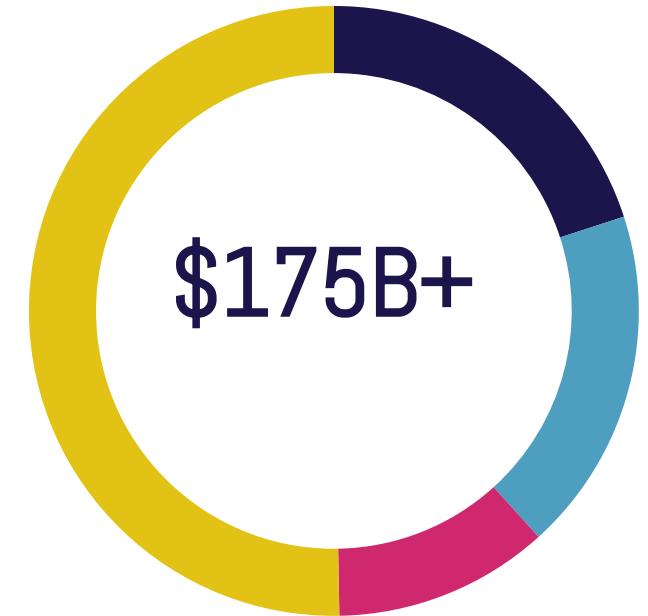
Cellular IoT Connections

$14.8B

- Electronics
- Auto, Transportation
- Building & Security
- All Other

Device Management Services

$27.6B

- Industrial, Auto, Telematics
- Smart City, Infrastructure
- Smart Home
- All Other

Edge Computing

$175B+

- Transportation, Logistics
- Cross-Vertical
- Retail
- All Other

3

*Berg Insight. The Global M2M/IoT Communications Market [July 2020]. 2024 values.

**ABI Research: Device Management Services for Edge-Centric IoT [April 2018]. 2025 values.

***McKinsey & Company: New demand, new markets: What edge computing means for hardware companies [October 2018]. 2025 values.

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In IoT, Data is Power

69% agree that understanding the value of data has helped them articulate the business for IoT

- Value equals the richness of IoT data & an organization's ability to leverage it

- The more data-drive the organization, the more valuable IoT becomes

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Requirements for getting secure data that generates value

Identity

Need to ensure that the data sources are securely deployed, connected, & maintained

Integrity

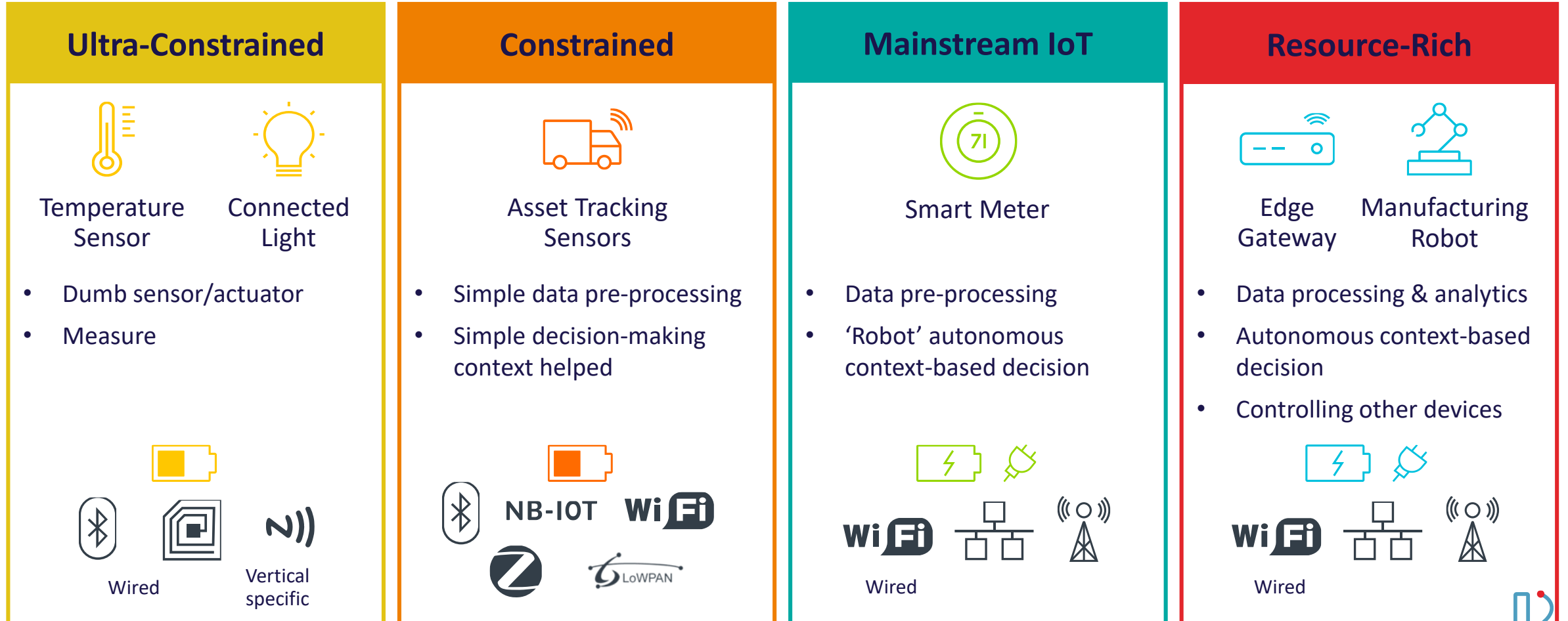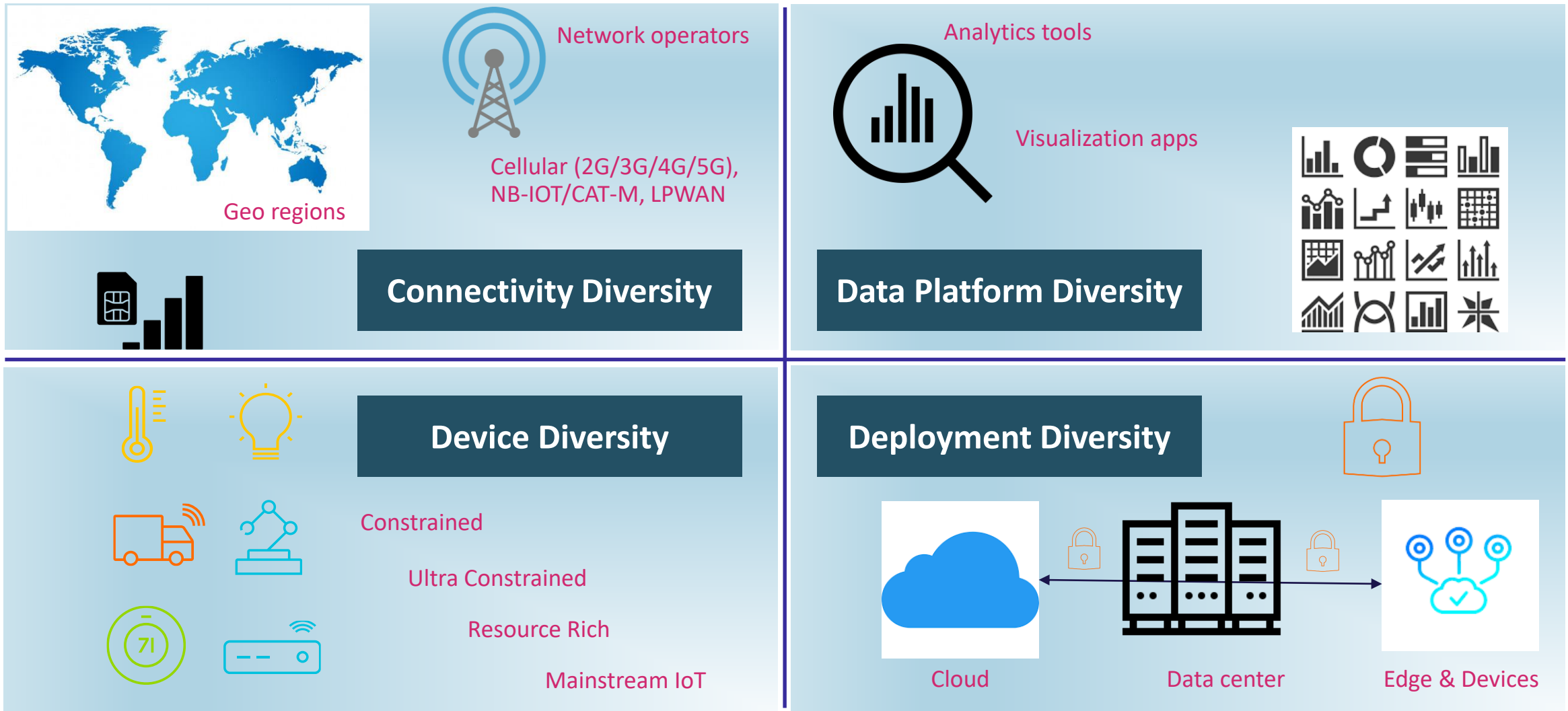Need to ensure that the data is accurate, complete and consistent

Security

Need to ensure that the transport of the data is done securely to cloud

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However, IoT is diverse

A landscape of multiple verticals, broad range of use-cases, and wide variety of devices

Ultra-Constrained	Constrained	Mainstream IoT	Resource-Rich
Temperature Sensor — Connected Light	Asset Tracking Sensors	Smart Meter	Edge Gateway — Manufacturing Robot
• Dumb sensor/actuator • Measure	• Simple data pre-processing • Simple decision-making context helped	• Data pre-processing • 'Robot' autonomous context-based decision	• Data processing & analytics • Autonomous context-based decision • Controlling other devices
Wired — Vertical specific	NB-IOT · WiFi · Zigbee · 6LoWPAN	WiFi · Wired	WiFi · Wired

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Challenges in deploying and managing IoT devices

Network operators

Geo regions

Cellular (2G/3G/4G/5G),
NB-IOT/CAT-M, LPWAN

Connectivity Diversity

Analytics tools

Visualization apps

Data Platform Diversity

Device Diversity

Constrained

Ultra Constrained

Resource Rich

Mainstream IoT

Deployment Diversity

Cloud

Data center

Edge & Devices

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Challenge 1:
Vendor lock-in can be costly

We need to consider the device's entire lifetime

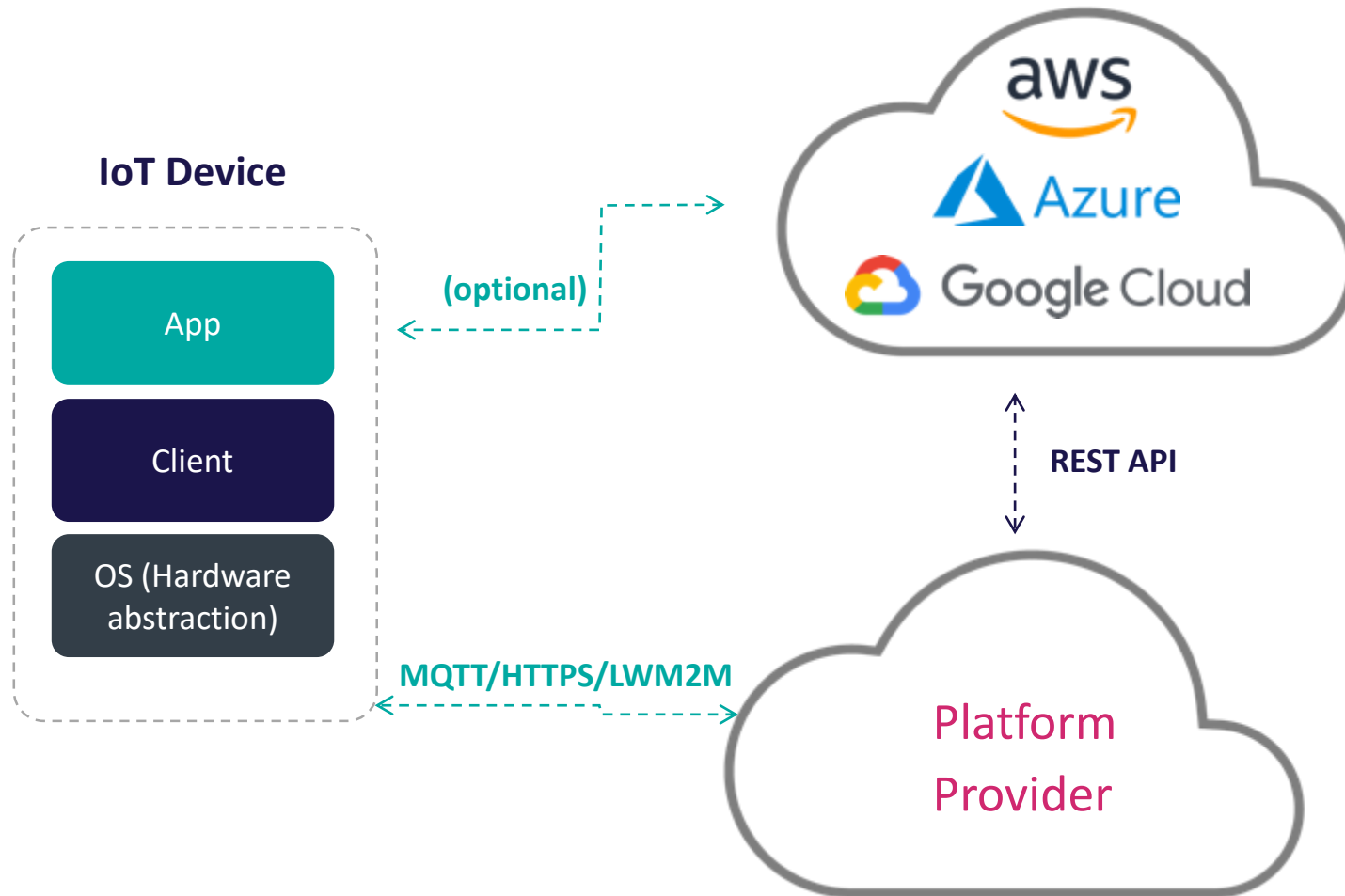**Cloud vendors may lock you in or change pricing models**

Chip prices may change, parts may become unavailable, SDKs are proprietary

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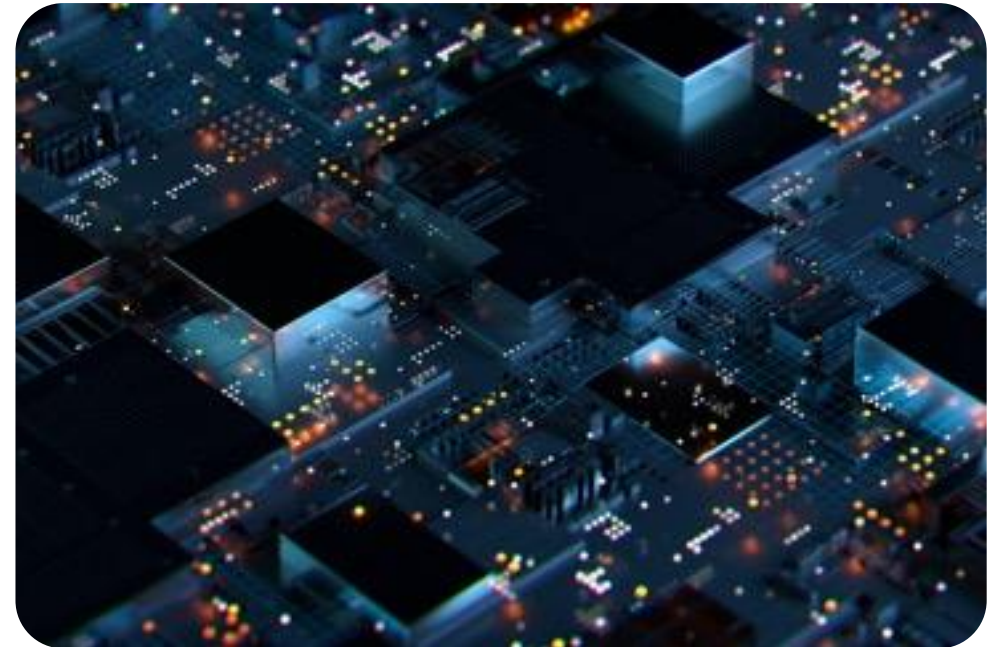
Solution 1:
Choice across technologies & products
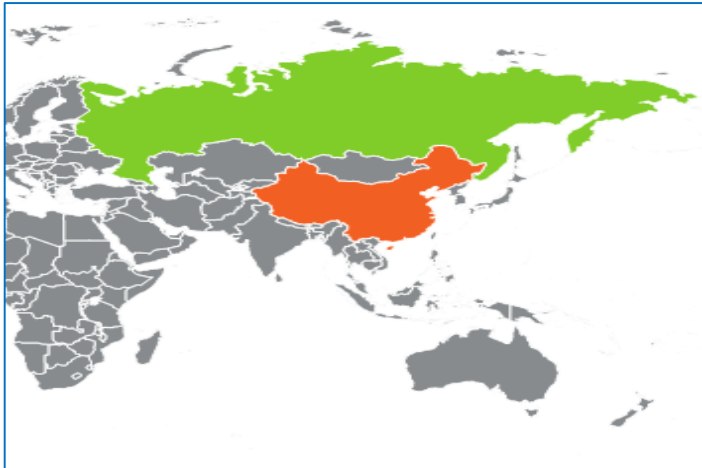
Future-proofs your investment by establishing abstraction

©Pelion 2021

Challenge 2:
Cloud deployment may not be an option

Regulations & policies may prevent cloud-based IoT management

Country Restrictions	**Vertical Regulations**	**Company Policy**

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Solution 2:
Flexibility for different market requirements

On-premises
Suitable for regulatory or internal compliance

<----->

Hybrid
Suitable for serving restricted markets

<----->

Cloud
Suitable for any unrestricted deployment

Benefits

- Increase revenue by opening new markets
- Stay compliant
- Maintain flexibility

With local Gateways to keep sensitive data off the cloud

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Challenge 3:
IoT projects fail to show sufficient ROI

70% of IoT projects fail because they do not demonstrate a route to profitability

Just connecting devices does not increase the bottom line

Special skills required are rare and expensive

Laws and regulations are requiring more security

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Solution 3:
New revenue streams from ecosystem services

Cloud-Native Apps

Your Developers

Container Orchestration Market Place

Your Partners

Edge Devices

Benefits

- Increase revenue through additional services / marketplaces
- Build and expand your ecosystem
- Tap into existing resource pools for cloud native development

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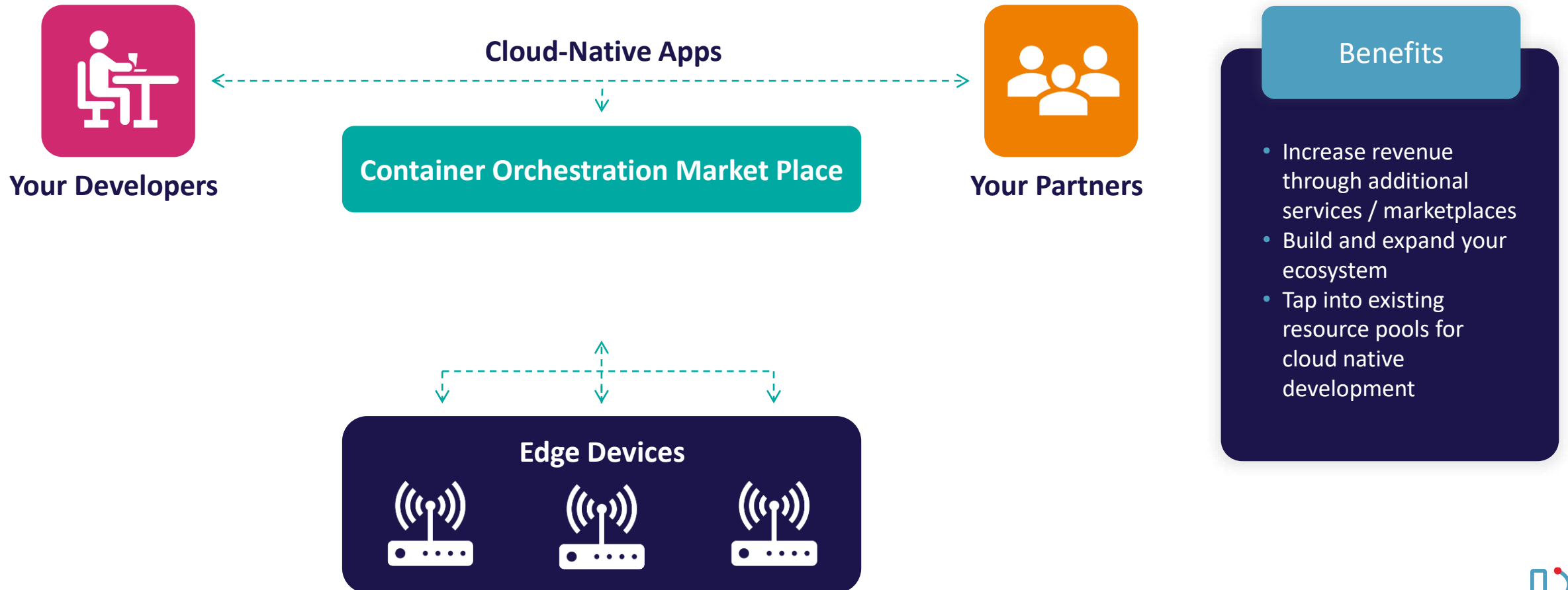
Key capabilities to accelerate IoT value

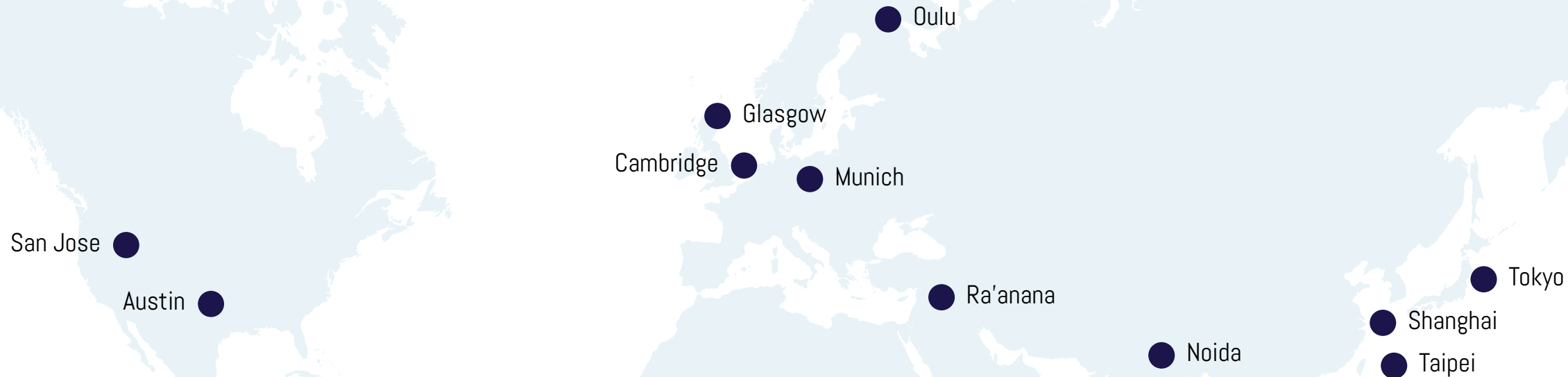|	
Delta Updates	Fractional and cost-efficient remote updates for IoT devices
Device Sentry	Monitoring of device health metrics for usage-driven design and operation
One-Touch Provisioning	Easy manufacture, deployment, and field authentication
Chip-to-Cloud Security	To ensure trusted data for business applications

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Pelion building upon our Arm heritage to help customers address IoT challenges

Oulu

Glasgow

Cambridge

Munich

San Jose

Tokyo

Austin

Ra'anana

Shanghai

Taipei

Noida

300+
Inspired Professionals

500+
Ambitious Customers

150+
Thriving Partners

5
Networked Continents

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Other Pelion features at a glance

Firmware Update
- Highly secure delta updates with support for resume

Edge application management
- Container orchestration based on Kubernetes

Connectivity
- Support for Bluetooth, NB-IoT, Wi-Fi, Ethernet, Wi-SUN (mesh)

Protocol Translation
- Support any protocol, including BLE, Zigbee, Z-Wave, BACnet, Modbus

REST APIs
- An API-based platform using RESTful interfaces

Web Dashboard
- Custom dashboards and a full portal based on Pelion APIs

Device Sentry
- Monitor CPU, RAM, network traffic and thread count

Device Echo
- Obtain the desired and last reported device state

Factory Tooling
- Zero-touch provisioning, with first-to-claim

Access Management
- Flexible IAM support and PKI-based device identities

Secure Device Access
- Based on IETF ACE standard

One-Touch Provisioning
- Easy manufacture, deployment, field authentication

Laying the foundation of Taiwan's smart city

Leading Taiwanese manufacturer of advanced industrial and embedded computing platforms.

Challenges

- High energy costs
- Limited control over utilities on a city-wide scale
- Stringent security specifications

Solution

- IoT node deployment to 4,000 existing lampposts across the city
- City-wide remote lighting control from one dashboard
- Solution comprising Arm chipset, Mbed OS, NB-IoT comm modules, device mgt.
- Predictive maintenance and planning using remote device management

Outcomes

- Fast time-to-scale within the constraints of available infrastructure and energy saving
- Data-driven insights on live weather, air quality, noise, live traffic update
- Platform for free wi-fi, wireless charging, interactive touchscreens, digital signage

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Edge Application Enablement
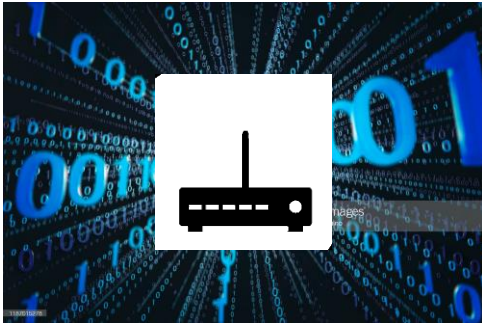
Challenges

- Lack of local data insights from cloud-run applications
- Limited responsiveness to operational events like production line issues at the edge
- Fragmented ecosystem of industrial technology providers creating barriers to innovation

Solution

- Kubernetes-based orchestration of containerized edge applications
- High responsiveness at the edge due to low latency of locally run applications, even when there is no connectivity to centralized systems
- Foundation to support an edge application marketplace hosting 3rd party applications

Outcomes

- Higher operation efficiency, lower time to resolution of issues, and richer insights
- Ability to add new revenue streams by enabling partner ecosystem to deploy value-added applications
- Competitive advantage of industry-specific innovation with partner ecosystem

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Thank You
Obrigado
Merci
谢谢
ありがとう
Gracias
Kiitos
감사합니다
धन्यवाद
شكرًا
תודה

http://pelion.com/device-management/