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Open for Intelligence Everywhere

Unified Edge Orchestration at Scale

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MARKET CONTEXT

What drives EdgeOps (DevOps for the Edge)?

Exponential growth is forcing a highly distributed, decentralized computing environment across all global sectors.

75%

of all Enterprise Data is now generated at the Edge.

150B+

Edge devices projected to be deployed globally by 2025.

90%

of Enterprises are already using, evaluating, or planning Edge Computing within 12-24 months.

* 2023 Eclipse Foundation IoT & Edge Commercial Adoption Survey Report
* 2023 Eclipse Foundation IoT & Edge Developer Survey Report
* 2024 Eclipse Foundation IoT & Embedded Developer Survey Report

Challenges of Distributed Edge

Fragmented Landscape

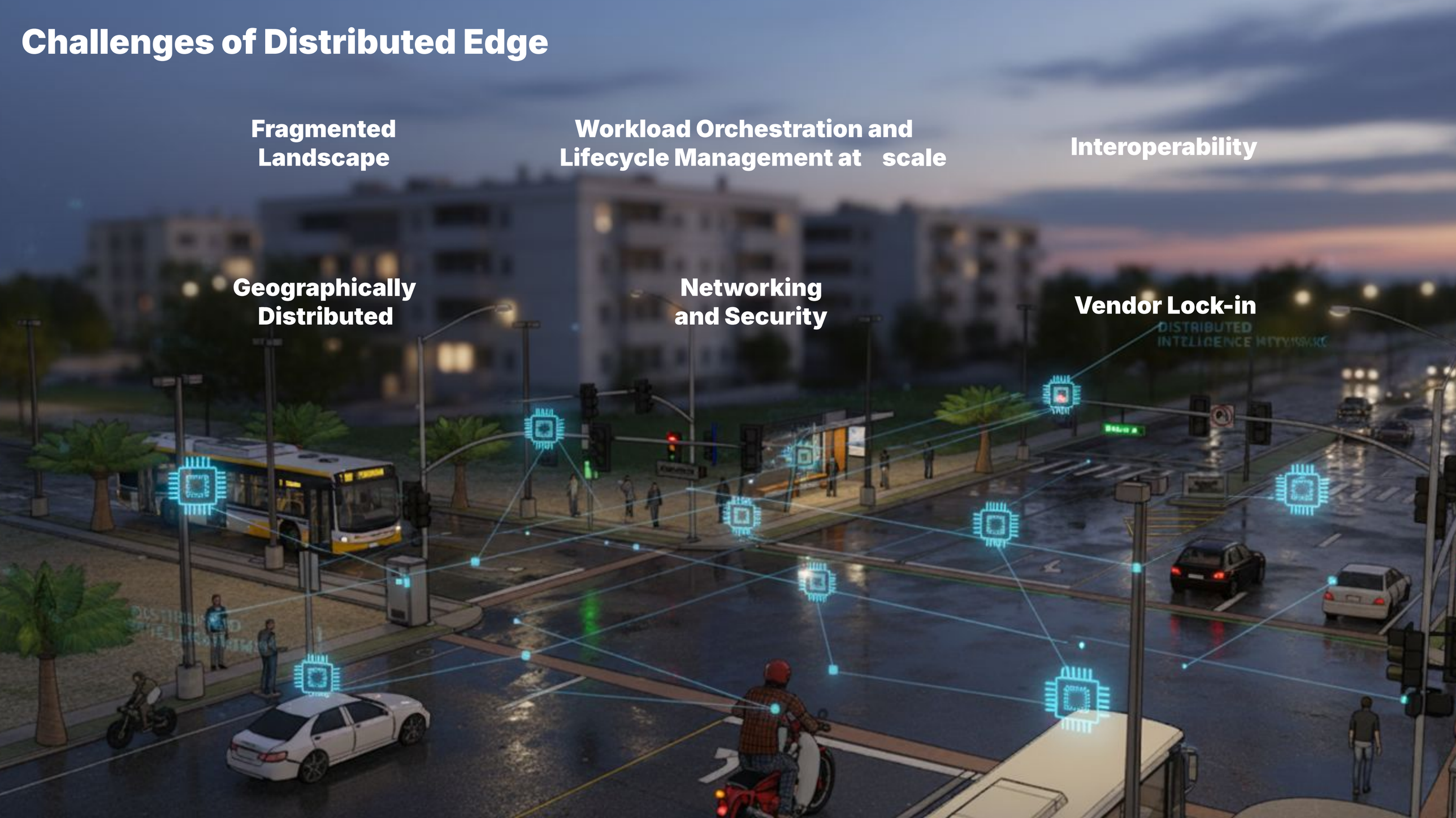
Workload Orchestration and Lifecycle Management at scale

Interoperability

Geographically Distributed

Networking and Security

Vendor Lock-in



pot Distributed Edge Computing Platform

From industrial compute boards to remote far-edge servers, transform every asset into an intelligent, interconnected device with a **lightweight, fully Open-Source platform**.

Any Edge Workload

Edge AI • LLM & SLM • Real-time Analytics • Edge IoT Services • Computer Vision

Secure Service Mesh & Distributed Messaging

Built-in mTLS Layer 7 service mesh and distributed NATs message bus with decentralized JWT authentication and authorization.

Zero-Touch Remote Management

Instant, secure remote troubleshooting that eliminates physical site visits and dramatically lowers operational costs.

Intelligent Workload Orchestration

Automated, over-the-air deployment of Linux and WASM container applications to thousands of edge nodes.

Dynamic Policy & Lifecycle Management

Real-time, secure configuration updates, secrets, and built-in x509 certificate management at scale.

Universal Hardware Abstraction

Write applications once, run them on any vendor's hardware seamlessly.

Cluster Health and Resource Monitoring

Real-time visibility, health monitoring, and uptime tracking for every device and application.

Zero-Trust Security & Auto-Provisioning

Tamper-proof onboarding, automated threat isolation, fine-grained user RBAC, and zero-trust messaging policies.

Agnostic Execution: Any Linux • Docker • Containerd • RunWASI • Podman • Crun

Any Edge Device or Asset

x86 • ARM • GPUs

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pot Unified EdgeOps at Scale

A comprehensive, vendor-agnostic infrastructure delivering zero-trust security, resilient networking, and intelligent workload orchestration to the far edge.

Flexible Deployment

Control Plane Flexibility

Deploy backends on any public/private Cloud, K8s, or Bare-metal. Native support for SQLite, Postgres, and MySQL. External KMS support for Secrets and ConfigMaps.

Hardware Agnostic

Seamlessly manage x86, ARM64, GPUs, VMs, and lightweight industrial IoT devices.

Air-Gap Deployments

Securely onboard hardware and distribute workload images entirely offline.

Centralized Management

Unified operations via the comprehensive Graphical User Interface and `potctl` CLI.

Workload Orchestration

Agnostic Workloads

Native execution environment supporting any Linux and WASM containers.

Automated Lifecycle

Built-in Registry, ConfigMap, TLS Secrets, Volume Mounts, and intelligent Pruning managers.

Zero-Touch Debugging

Instant, secure remote shell access and real-time remote log monitoring without site visits.

Templates & Catalogs

Standardize global deployments with predefined application templates and microservice catalogs.

Resilient Networking

Secure Service Mesh

Default mTLS routing securing Edge-to-Edge, Edge-to-External, and External-to-Edge service interconnections.

Distributed Messaging

Embedded NATs infrastructure with persistent message stores and multi-tenant isolation.

Dynamic Authorization

Decentralized JWT authentication driving dynamic RBAC for the secure message bus.

Local Agent API

Empower localized systems with dynamic, real-time workload reconfiguration capabilities.

Zero-Trust Security

Unified IAM & PKI

Enterprise OIDC/RBAC for user access, paired with secure Ed25519 PKI identity for edge devices.

Automated Certificates

Built-in, zero-touch X.509 certificate manager ensuring continuous cluster-wide cryptographic trust.

EdgeGuard & Watchdog

Proactive unauthorized physical access detection and automatic termination of unverified workloads.

Continuous Monitoring

Comprehensive event auditing, health tracking, and deep resource utilization monitoring.

pot Business Value & Strategic Outcomes

Replacing fragmented, site-specific operations with a **unified orchestration model** that supports today's workloads and powers future edge-native business models.

Faster Deployment & Scalable Growth

A consistent operating model across all locations. Move from pilot to massive scale instantly with centralized rollouts and local edge execution. Scale at the pace of business, not manual operations.

Radically Lower Complexity & TCO

Consolidate endless edge silos into one layer. Intelligent automation eliminates manual site interventions, slashes OPEX, and maximizes existing hardware utilization to significantly decrease CAPEX.

Reduced Risk & Zero Vendor Lock-in

Open and entirely vendor-agnostic by design. Retain total freedom to choose or swap hardware, OS, and cloud providers. Make strategic technology decisions driven by business needs, not vendor roadmaps.

Enabling Edge-Native Service Models

Turn the edge from a cost center into an innovation engine. Rapidly deploy managed edge offerings and industry-specific solutions, expanding services without costly infrastructure redesigns.

THE UNIVERSAL EDGE CONTINUUM

Unified Orchestration Layer
Any Hardware • Any Location

Workload Orchestration | Secure Service Mesh | Distributed MessageBus | Zero Trust

Manufacturing | Utilities & Energy | Smart Cities | Retail | Logistics | Mobility / CCAM | Healthcare

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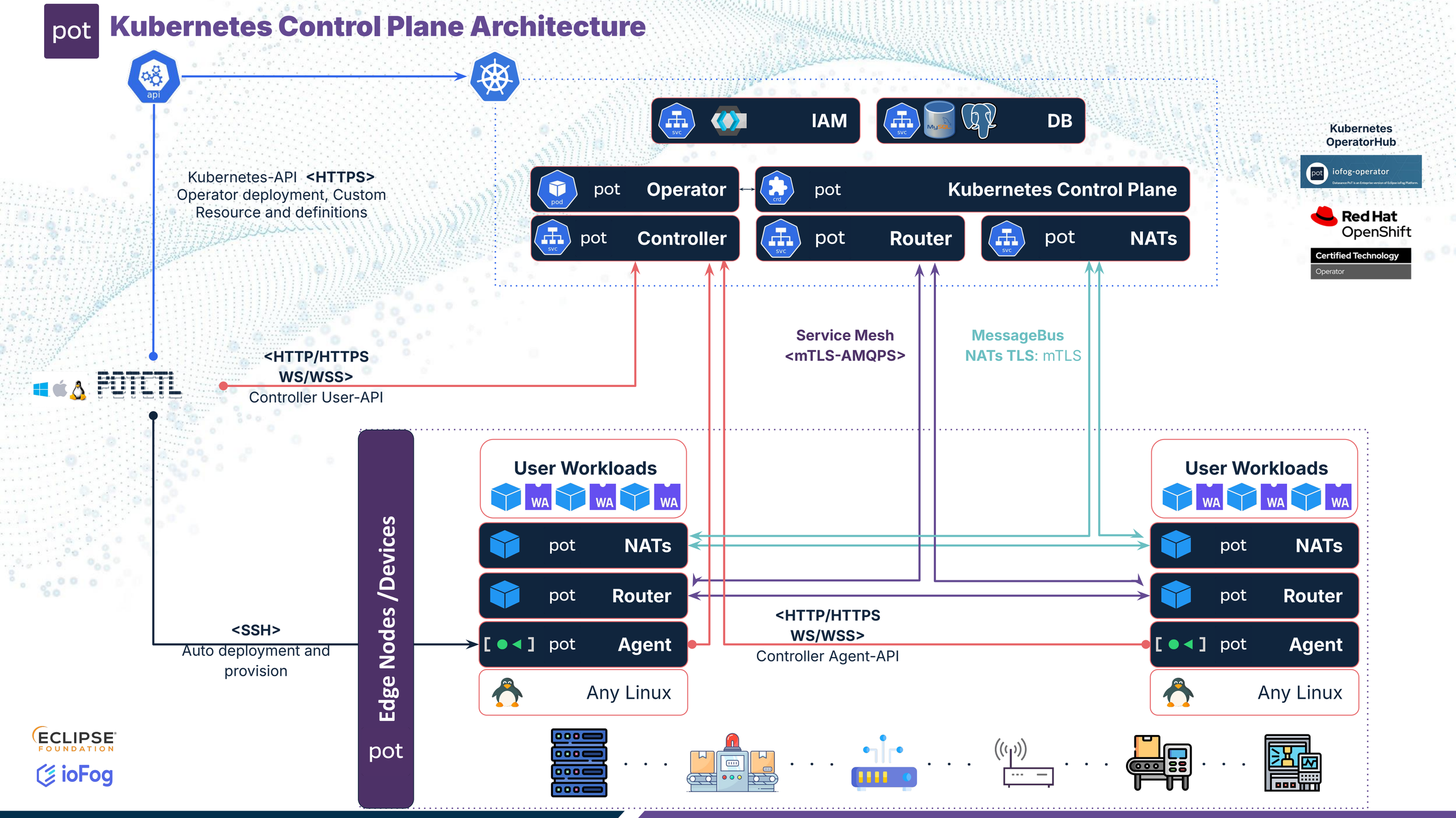
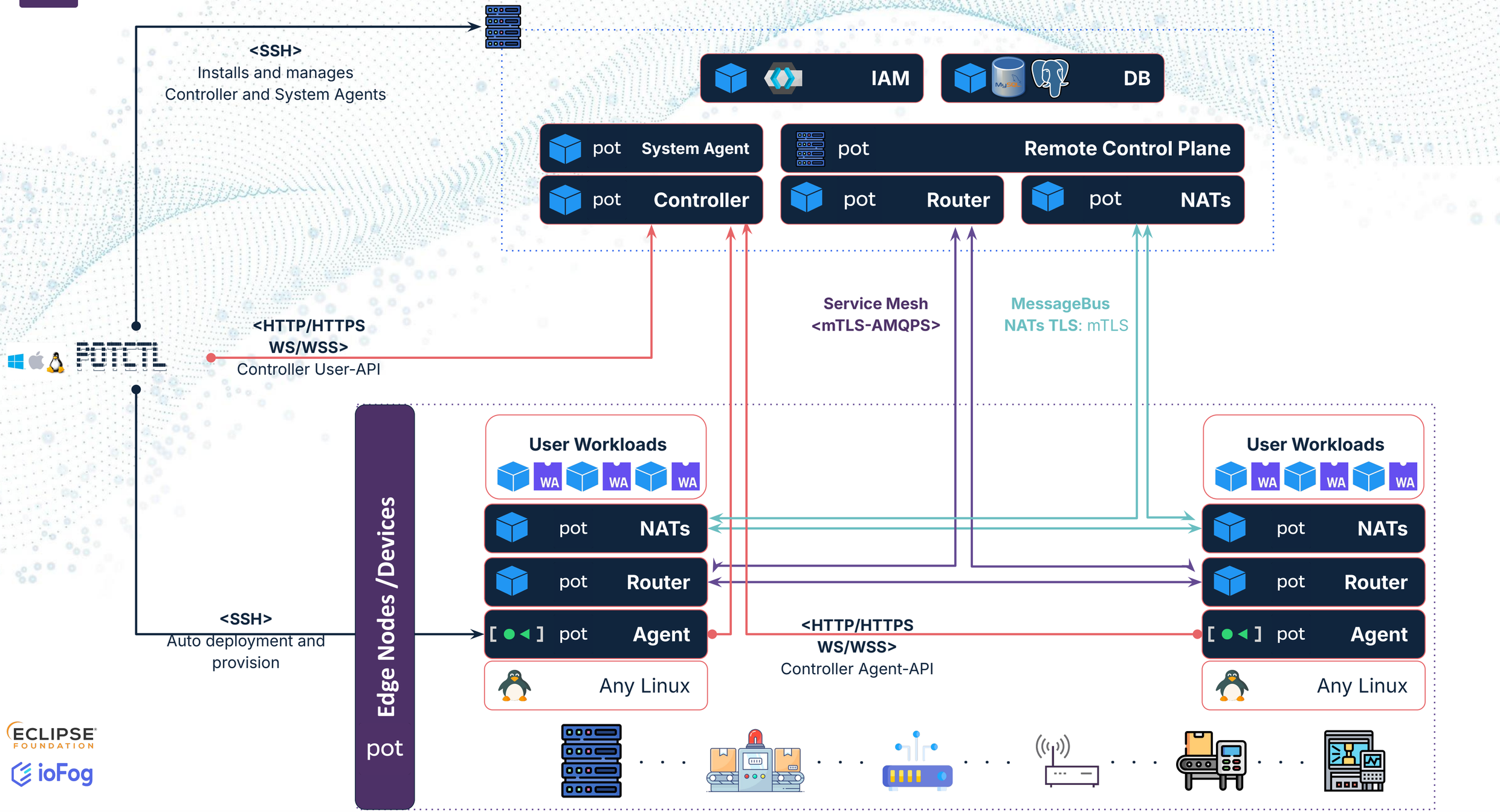
pot Kubernetes Control Plane Architecture



Bare-metal/VM Control Plane Architecture



ECLIPSE FOUNDATION

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pot Edge Cluster Controllers

Controller -n (instance or replica)

Controller -2 (instance or replica)

Controller -1 (instance or replica)

OIDC Provider

User Auth Provider

API Server (REST -WS)

Event Auditing Middleware

RBAC Middleware

Agent Orchestration

- Provision Manager
- Auth Key Manager
- Config Manager
- Status Manager
- Change Tracking
- Versioning
- Exec Sessions
- Log Sessions
- Volume Mounts

- RBAC Manager
- Secret Manager
- Certificate Manager
- ConfigMap Manager
- NATs Auth Manager
- Service Manager

Agent Workloads Orchestration

- Image Registries
- Applications
- Router Microservices
- Catalog Images
- Microservices
- NATs Microservices
- App Templates
- Exec Sessions
- Log Sessions

(Embedded Sqlite) DB Provider

Vault Provider

External Database

External Secret Store

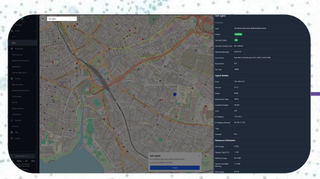
Agent

Agent

Agent

Agent

PoT Users



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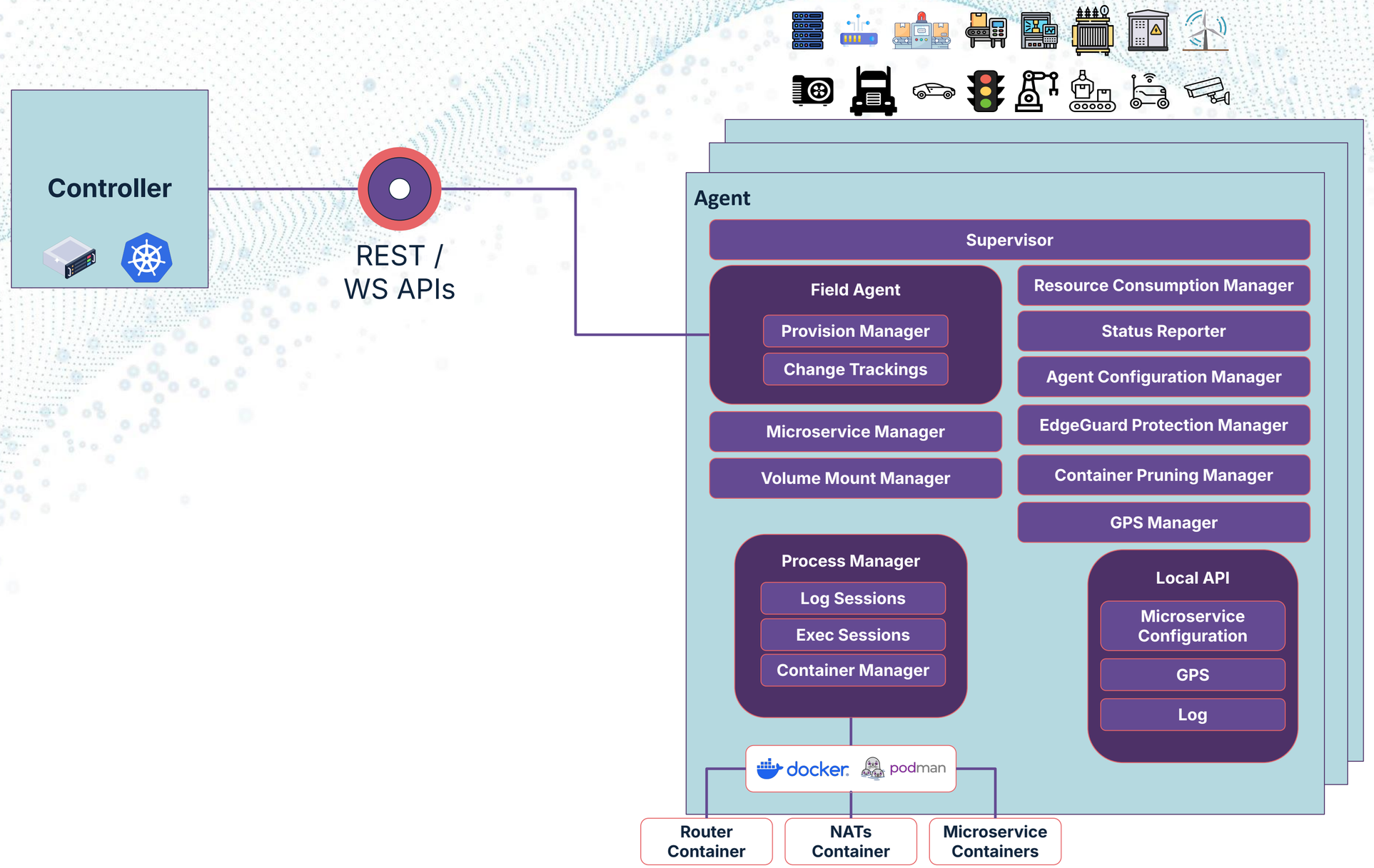
pot Edge Device Agents



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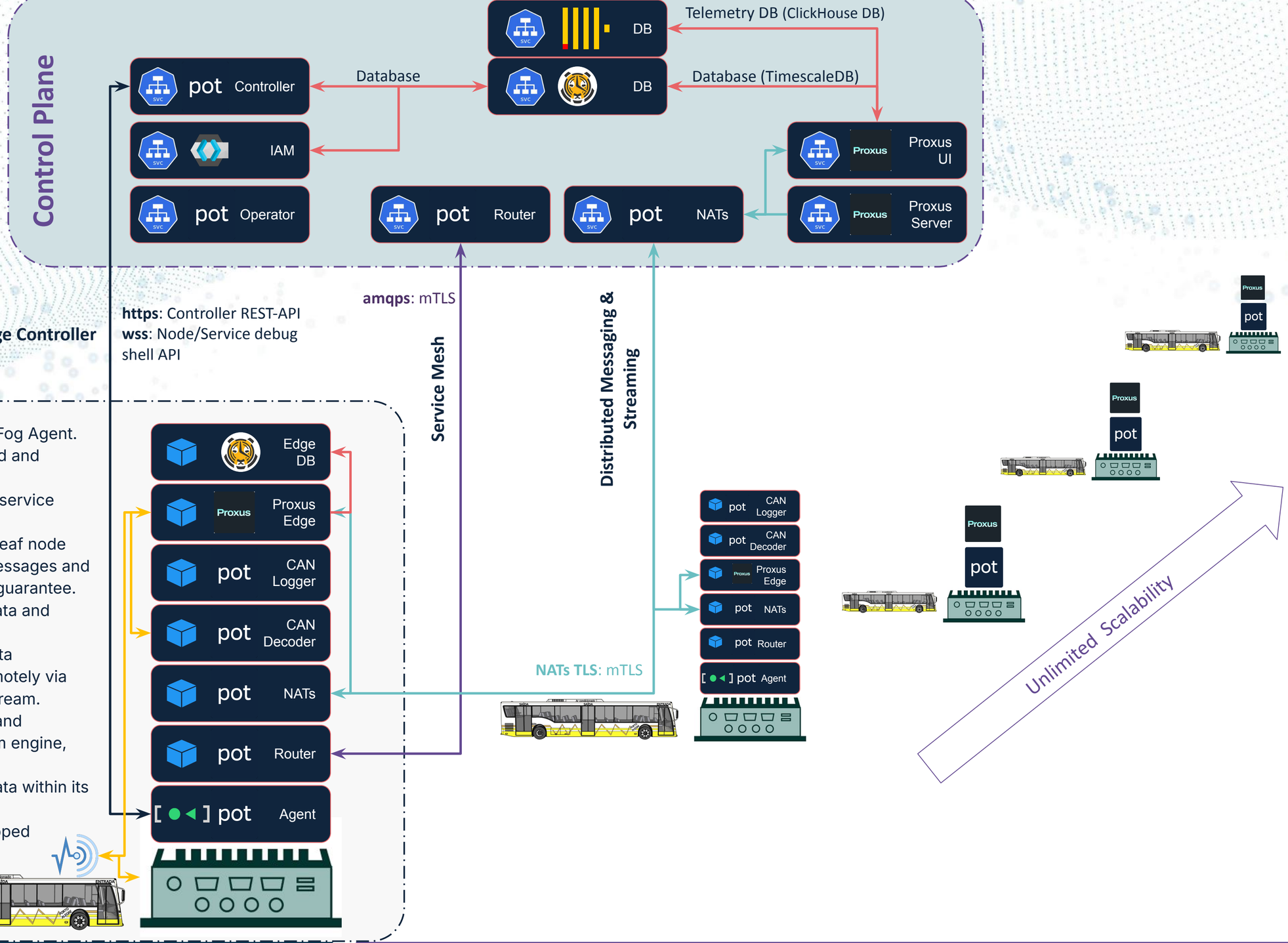
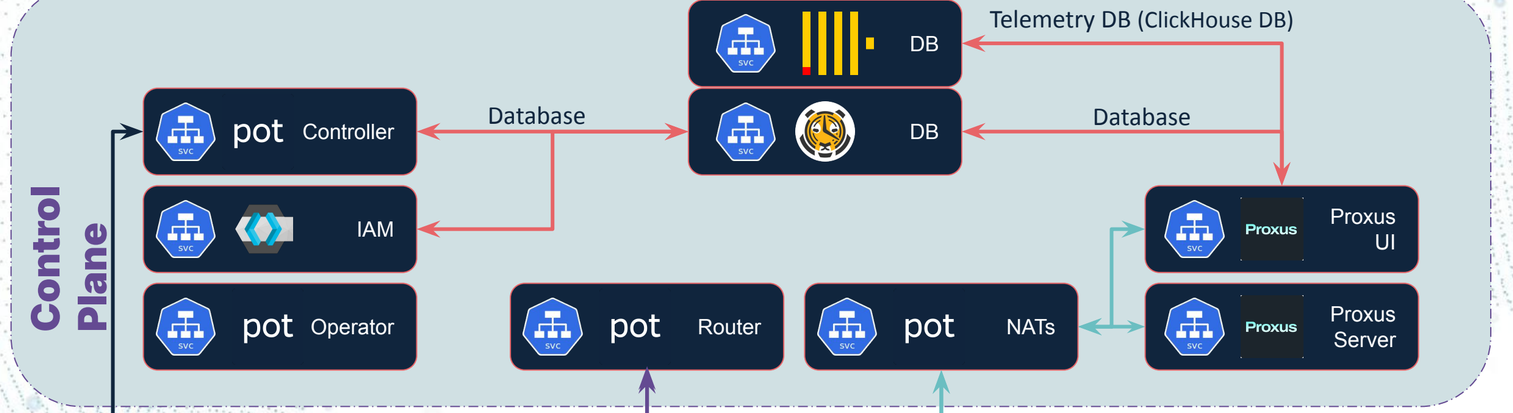
Use Case-1: Public Transportation



- **Agent**: Hardware agnostic Distributed-Edge/Fog Agent. Reports to the Controller, manage all workload and cluster resources on the Edge node.
- **Router**: Built-in Layer-7 router for distributed service mesh.
- **NATs**: Lightweight distributed message bus' leaf node with persistent message store. Distributed messages and streams throughout the cluster with delivery guarantee.
- **CAN Decoder:** Collects, decodes raw CAN data and serve decoded CAN data through websocket
- **CAN Logger:** Logs and archives raw CAN data
- **Proxus Edge**: IIoT Edge engine. Managed remotely via Proxus-UI and connects backend via NATs stream. Effortless aggregation data from any source and integration with IT services, built-in rule-alarm engine, user defined functions for complex logic.
- **Edge DB:** Local DB for storing raw/archive data within its retention policy.
- **Any Service:** Any 3rd party or internal developed service.

Use Case-2: Utility (Energy)



Edge Controller

https: Controller REST-API
wss: Node/Service debug shell API

amqps: mTLS

Service Mesh

Distributed Messaging & Streaming

NATs TLS: mTLS

Edge Device Plane

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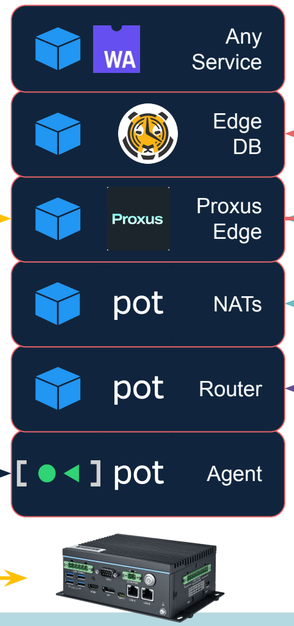
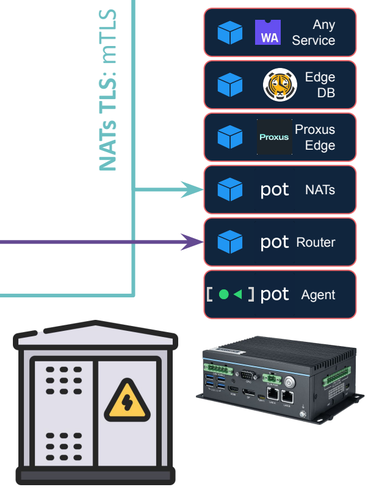
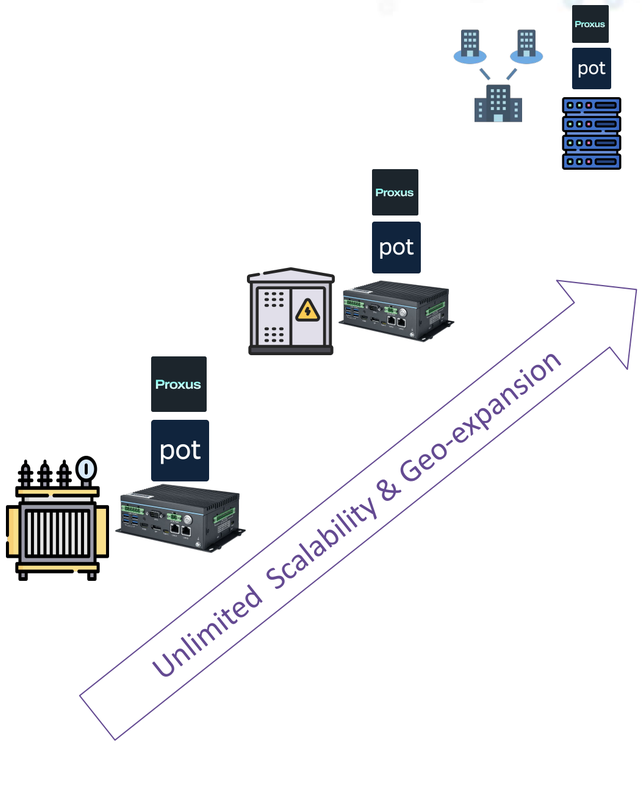
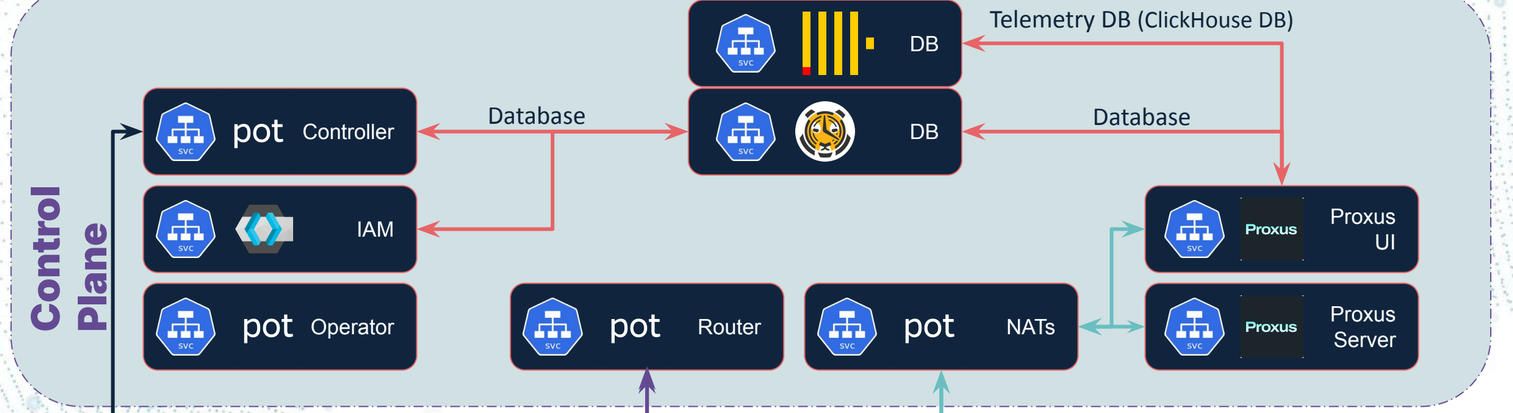






Use Case-3: Smart Manufacturing



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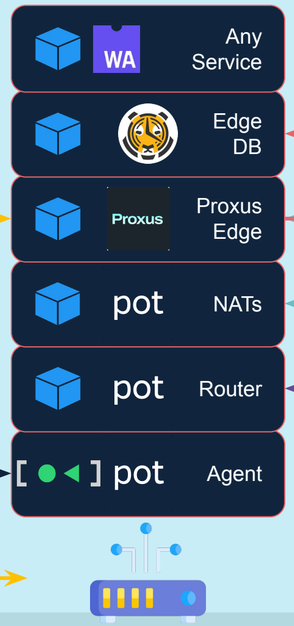

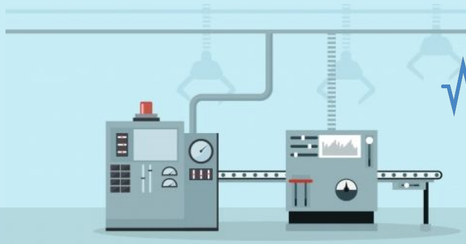

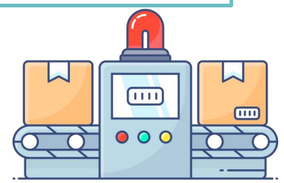

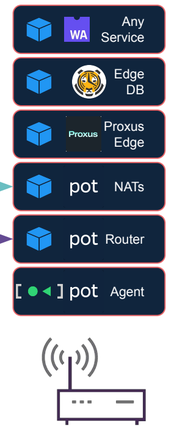

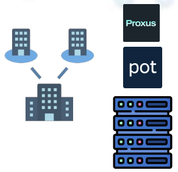

Q&A

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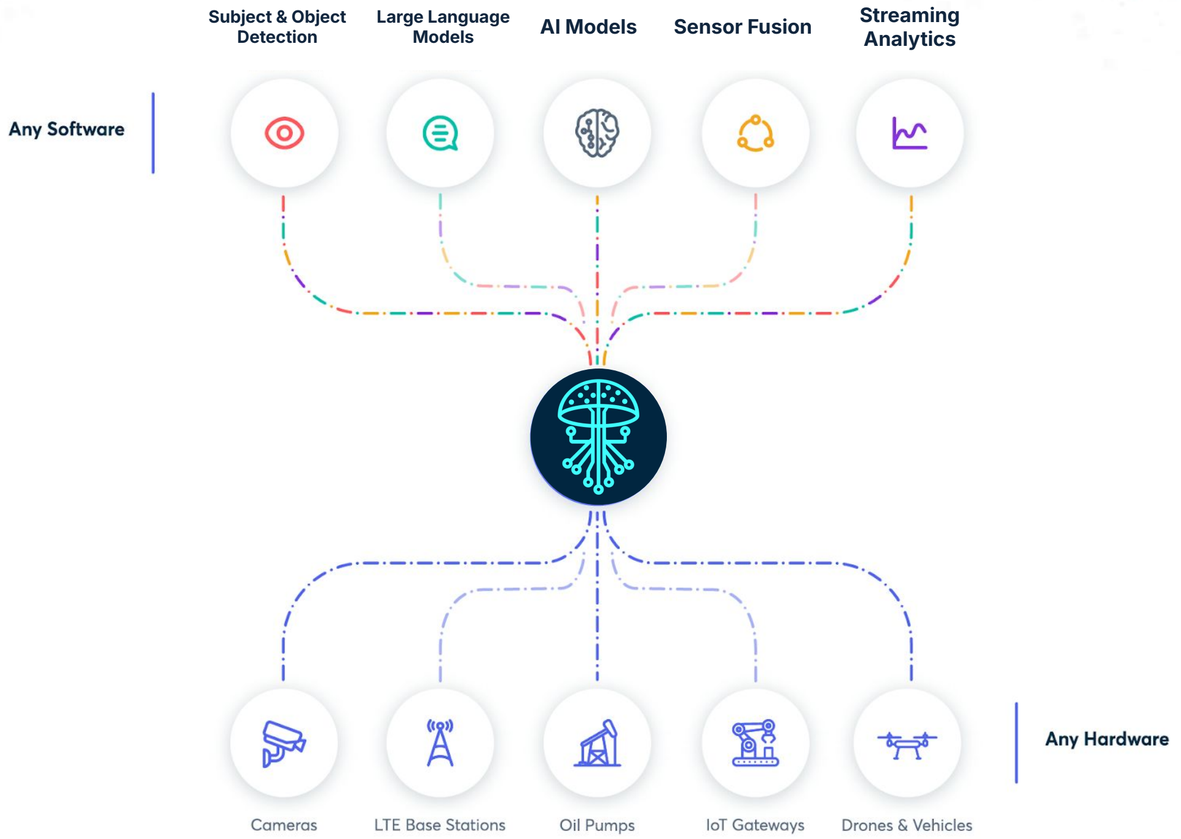
Enterprise Open Source Distributed Edge Platform
Secure, Lightweight and Hardware Agnostic Platform
Brings cloud-native skills and practices to edge-native workloads



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