

**Secure the Lighting Asset and Data  
Optimize the WAN  
Simplify Provisioning**

**then Smart Lighting Will Scale!**

**Ron Victor**



# Smart Lighting impacts EVERYTHING!

Building Automation



Transportation



Oil and Gas



Energy



Industrial Automation



Mining



# IoT Transport Layer Challenges (Lighting also)



## Network Abstraction

- Uniform connectivity management in a disparate and dynamically changing IoT network (**Based on network characteristics, availability and cost**)

## Carrier Abstraction

- End to end route and flow management between edge and cloud **without numerous carrier dependencies (No separate peering relationships per carrier via secure tunneling et.al)**

## Protocol Abstraction

- Network configuration and management for M2M and M2C communication **should be protocol agnostic**
- QoS or other connection configurations should be abstracted via policy

## Security Abstraction

- Multi-segmented network security approach today is complex and error-prone

## Multi-tenant connectivity

- Requirement for tenant specific control of transport policies

# IoT Transport Layer Solution Requirements



## Network Abstraction

- **Software defined IoT Network**
  - Create an abstracted overlay network over disparate physical networks
  - Centrally managed single pane view into the IoT network

## Carrier Abstraction

- Provide mechanisms for dynamic creation of OTT secure tunnels independent of carriers

## Protocol Abstraction

- Uniform QoS Policy Language (QPL) with adapters across protocols

## Security Abstraction

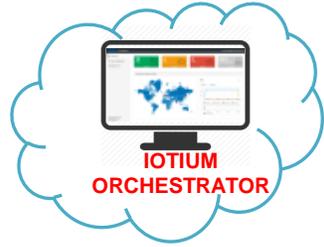
- Secure perimeter automatically enforced by iNodes (edge to edge)

## Multi-tenancy connectivity

- Visibility into each administrative domain at each end-point in the network

# A potential approach

## EASY TO DEPLOY CLOUD MANAGED SOFTWARE DEFINED NETWORK

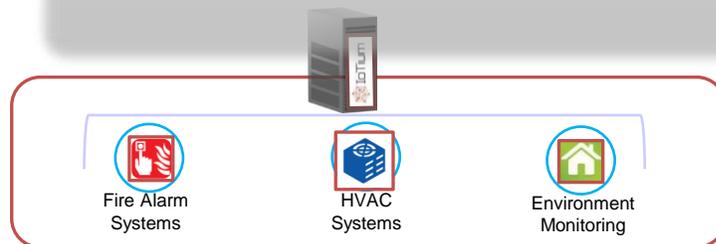


**N  
E  
T  
W  
O  
R  
K**



**iNode**

Primary product/SKU



# Use Case Scenarios

# Edge Intelligence Enabled Scalable Smart City

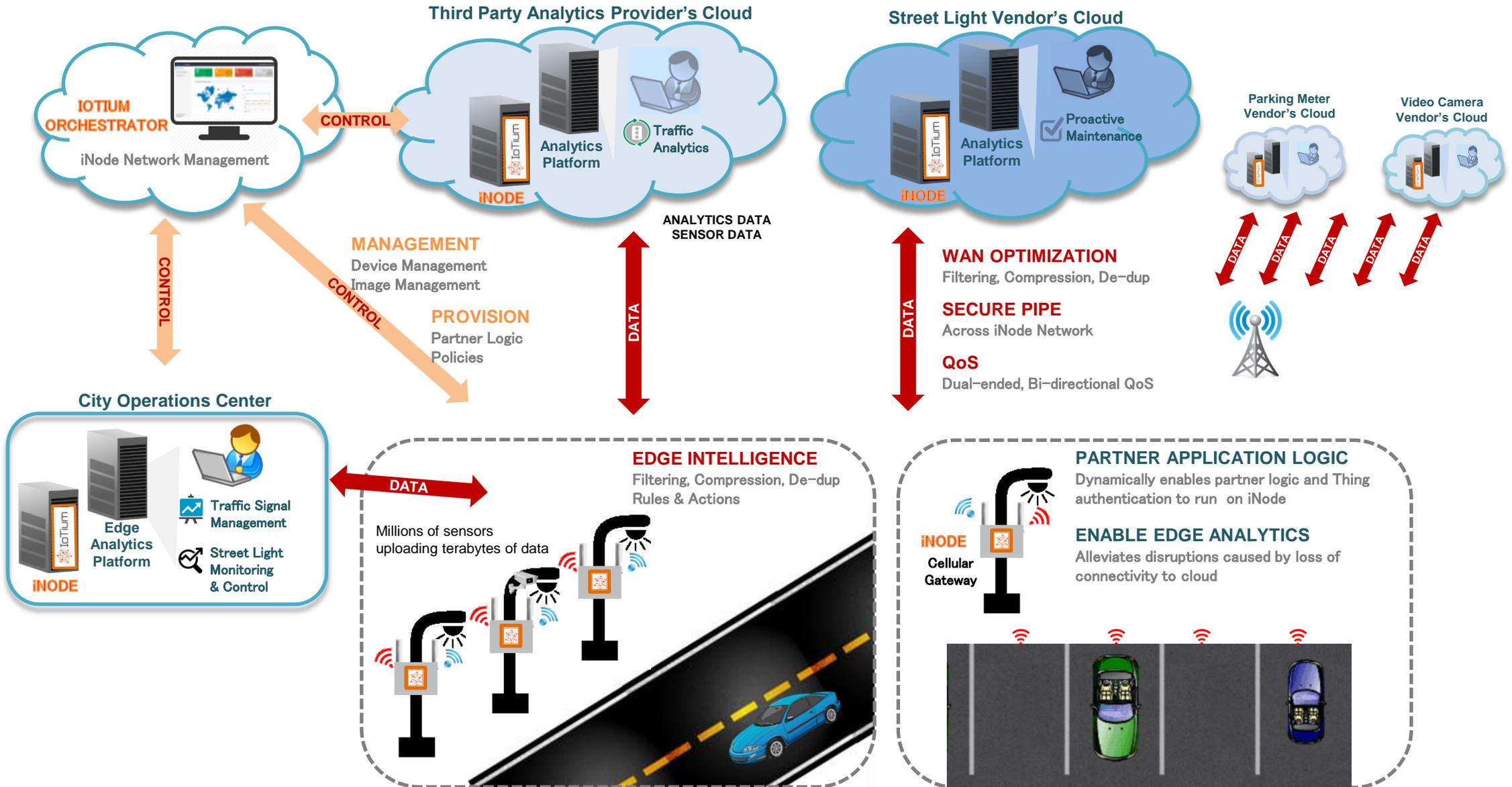


CLOUD

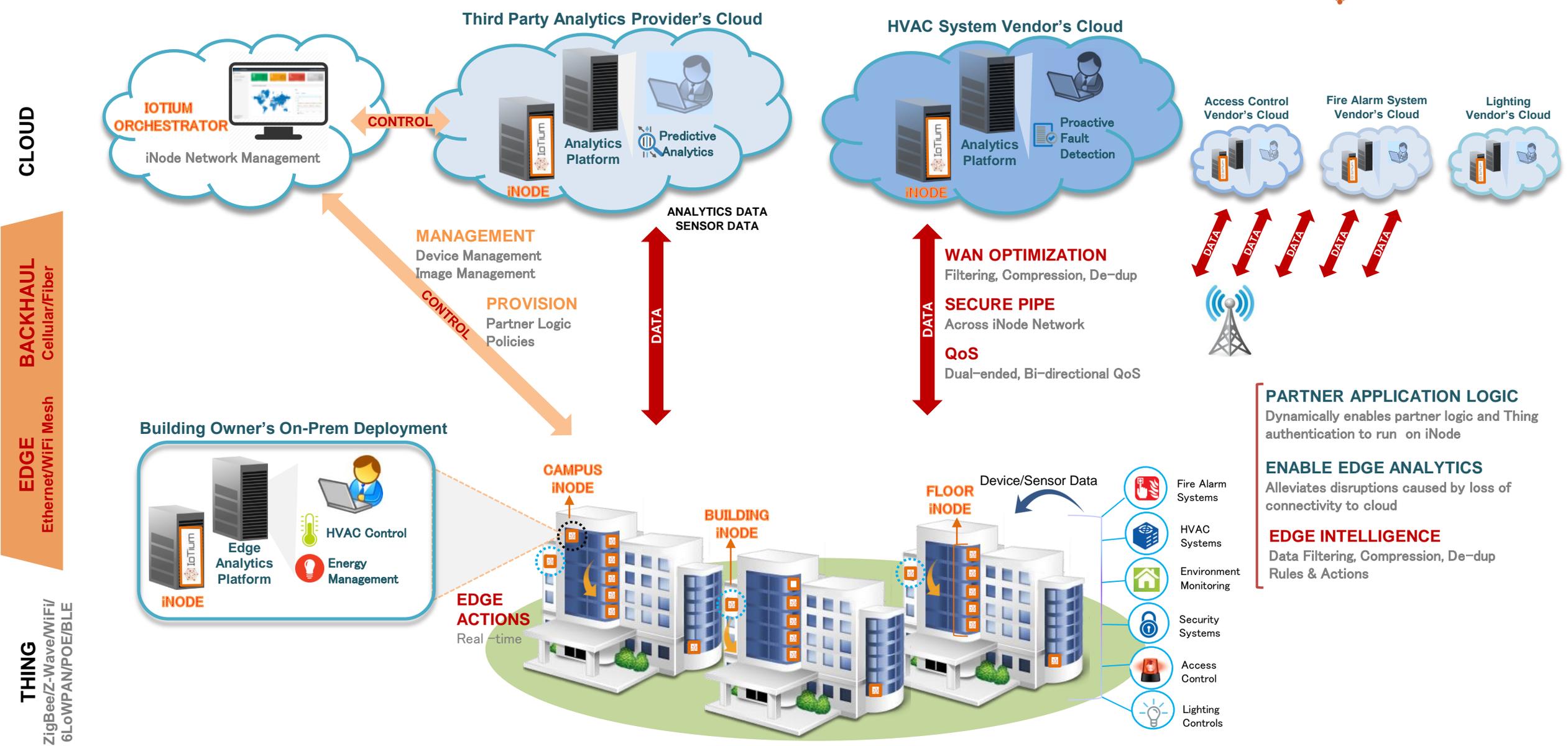
BACKHAUL  
Cellular

EDGE  
WiFi Mesh

THING  
WiFi, ZigBee, Z-Wave, BT



# Edge Intelligence Enabled Smart Building



# Edge Intelligence Enabled Scalable Smart Energy

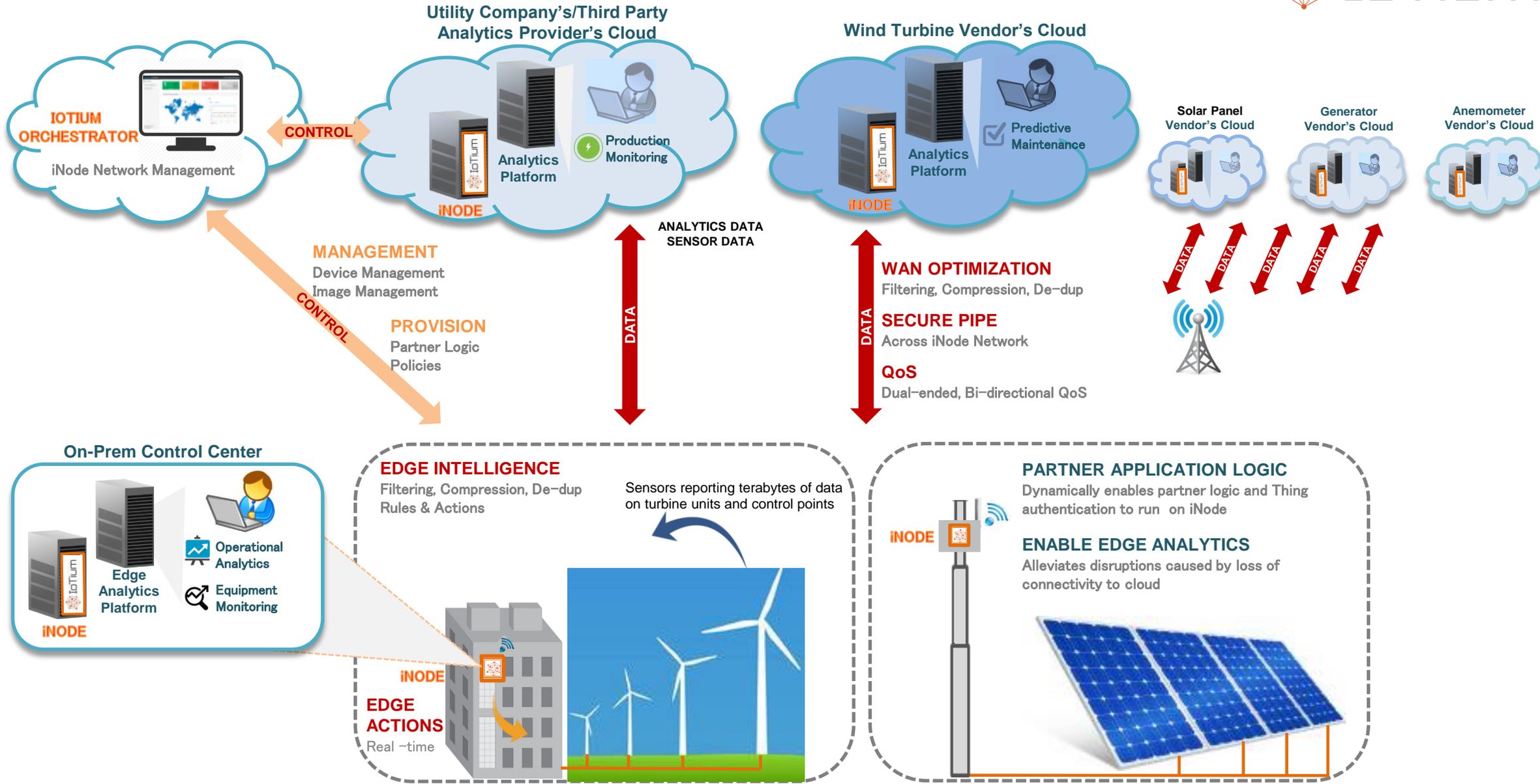


CLOUD

BACKHAUL  
Cellular

EDGE  
Ethernet/WiFi Mesh

THING  
Fiber Optic



# The solution requirements

- Software Defined IoT Network
  - Seamlessly interconnect devices, Edge servers and multiple Cloud platforms
  - Centrally managed single pane view into the IoT network
  - Firewalled Device Network (Secured Perimeter)
- Multi-tenanted IoT Data Broker
  - Policy driven data forwarding between multiple cloud/on-prem destinations
  - Policy driven QoS and bandwidth optimization
  - Discrete data isolation, policy isolation and segmentation
- Edge Compute Services
  - Protocol adapter software lifecycle management
  - Network-wide deployment and visibility of services
  - Enable Edge analytics

# The IoT Network done right!



WAN  
Optimization



Quality of  
Service



Secure Pipe



Enables Edge  
Analytics &  
Actions



Interconnect  
Devices, Edge  
Servers and  
Multiple Data  
Centers



Zero Touch  
Provisioning &  
Management



# THANKS!