The Internet of Things

Vertical Solutions

The Internet Of Things

Vertical Solutions

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What Is the Internet of Things?

The Internet of Things is the intelligent connectivity of physical devices driving massive gains in **efficiency, business growth, and quality of life**."

Cisco Calls It The Internet of Everything (IoE)

People
Connecting People in More Relevant, Valuable Ways

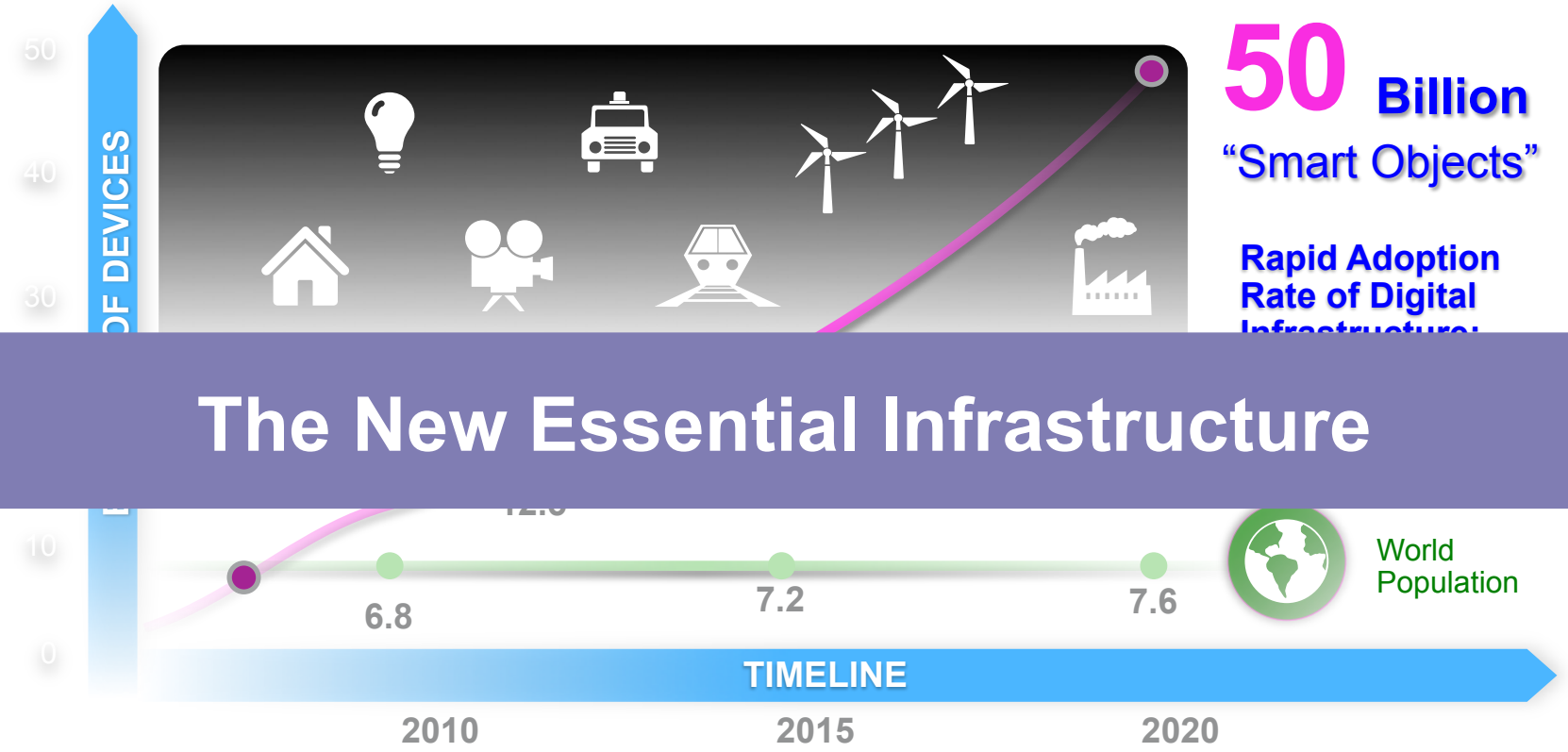
Process
Delivering the Right Information to the Right Person (or Machine) at the Right Time

Data
Leveraging Data into More Useful Information for Decision Making

Things
Physical Devices and Objects Connected to the Internet and Each Other for Intelligent Decision Making

Networked Connection of People, Process, Data, Things

IoT Is Here Now – and Growing!



The New Essential Infrastructure

Enablers/Drivers of IoT

More Innovation and Change than at Any Other Point in Our Lifetime

Technology Transitions

Network as the Platform

Business Transitions

The Data Aggregation Challenge

1.1 Billion
Data points generated by sensors **daily**

500 Gigabytes
Data generated by an offshore oil rig **weekly**

1000 Gigabytes
Data generated by an oil refinery **daily**

10,000 Gigabytes
Data generated by a jet engine every **30 minutes**

2.5 Billion Gigabytes
Data generated worldwide **daily**

90% of the world's data
Has been created in the last **2 years!**

Connected Objects Generate Big Data

46 million smart meters in the U.S alone
1.1 billion data points (.5TB) per day

A single consumer packaged good manufacturing machine generates
13MB data samples per day

A large offshore field produces 0.75TB of data weekly
A large refinery generates 1TB of raw data per day

10TB of data for every 30 minutes of flight
With >25,000 flights per day, petabytes daily

The World Generates More Than 2 Exabytes of Data Every Day

Cisco Internet of Things Portfolio

Manufacturing

Mining

Energy-Utility

Oil and Gas

Transportation

City

Defense

SP/M2M

Plantwide Ethernet, Intelligent Transportation, Smart Cities, S&C Refinery, Smart Connected Vehicle, Smart Grid

IE 2000
IE 3000
CGS 1000
CGS 2500

Plant Switching

CGR 2000

ASR 903

Plant Routing

1552
Rugged
Wireless

CGR 1000

819H M2M ISR
Gateway Router

Field Network

5915 + 5921 +
5940 Rugged
Embedded
Services
Routers

ESS2020
Rugged Switch

Embedded Networks

Video Surveillance
Manager and IP
Cameras

Physical
Access
Manager

IPICS

Physical Security

Network Management and IoT Security

Fog Computing; Cisco IOx

Data Center/Virtualization

Building an IoT Ecosystem

VERTICALS

Manufacturing

Mining

Energy-Utility

Oil and Gas

Transportation

City

Defense

SP/M2M

INDUSTRY PARTNERS

Rockwell Automation, BOMBARDIER, EMERSON Process Management, Schneider Electric, ABB, Honeywell, ALSTOM, Itron, YOKOGAWA, OSIsoft

IoT ENABLERS

- Time Sync
- Pervasive Cyber Security
- Scalable Routing
- Deterministic Ethernet
- Guaranteed Delivery
- Big Data Management
- SP Services

RUGGEDIZED PRODUCTS

- Ruggedized Wireless AP
- Industrial Routers and Switches
- Industrial Security
- Hardened Mobile M2M Gateway
- IP Cameras
- Video Surveillance

CISCO'S APPROACH TO IoT

"Customer-In" Approach

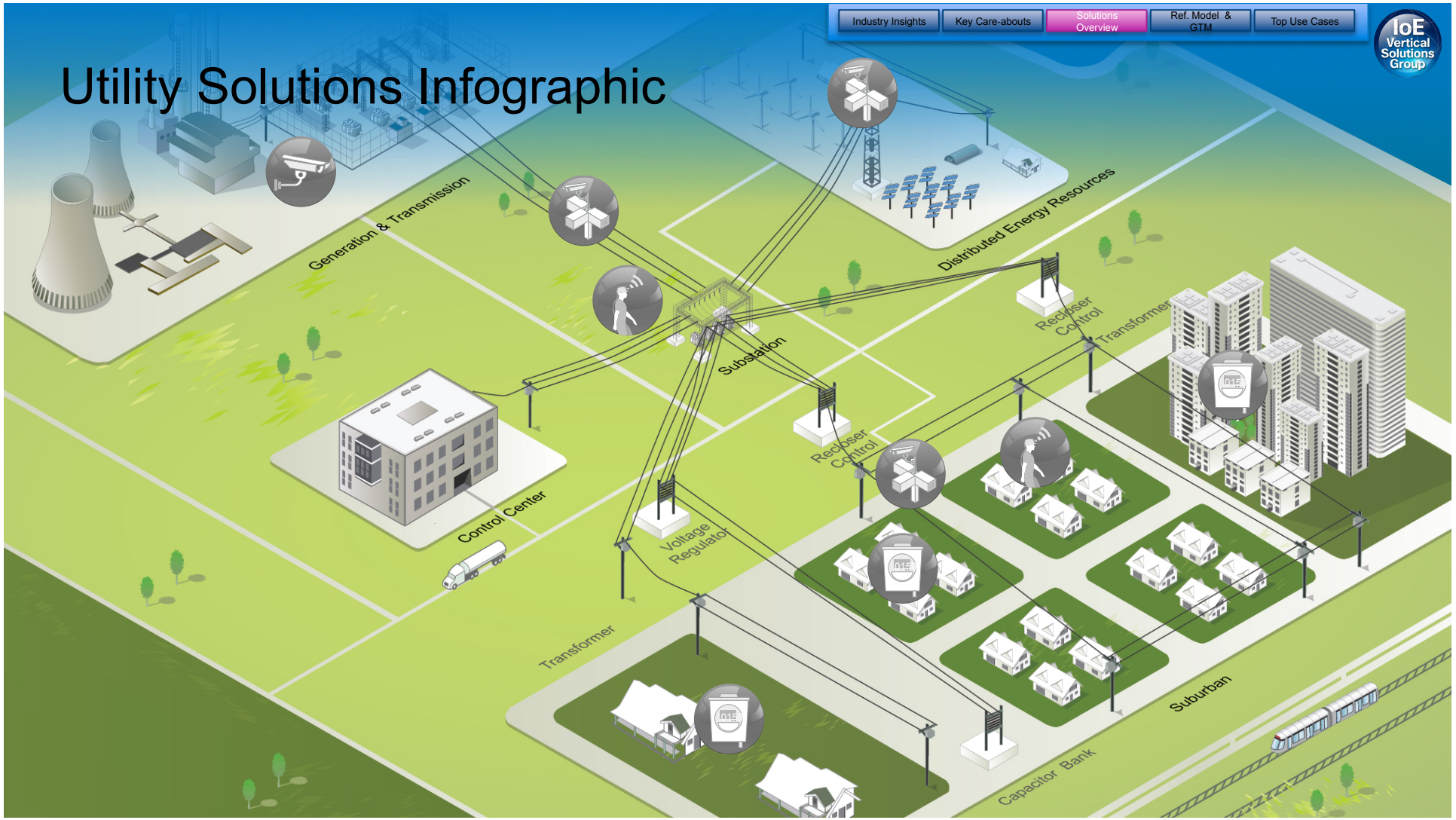
- Understanding of key business care abouts and pain points
- Relevance to LOB leaders / CXOs

Products/Technologies

- Best-in-class ruggedized products
- Smart solutions for verticals
- IoT architectures

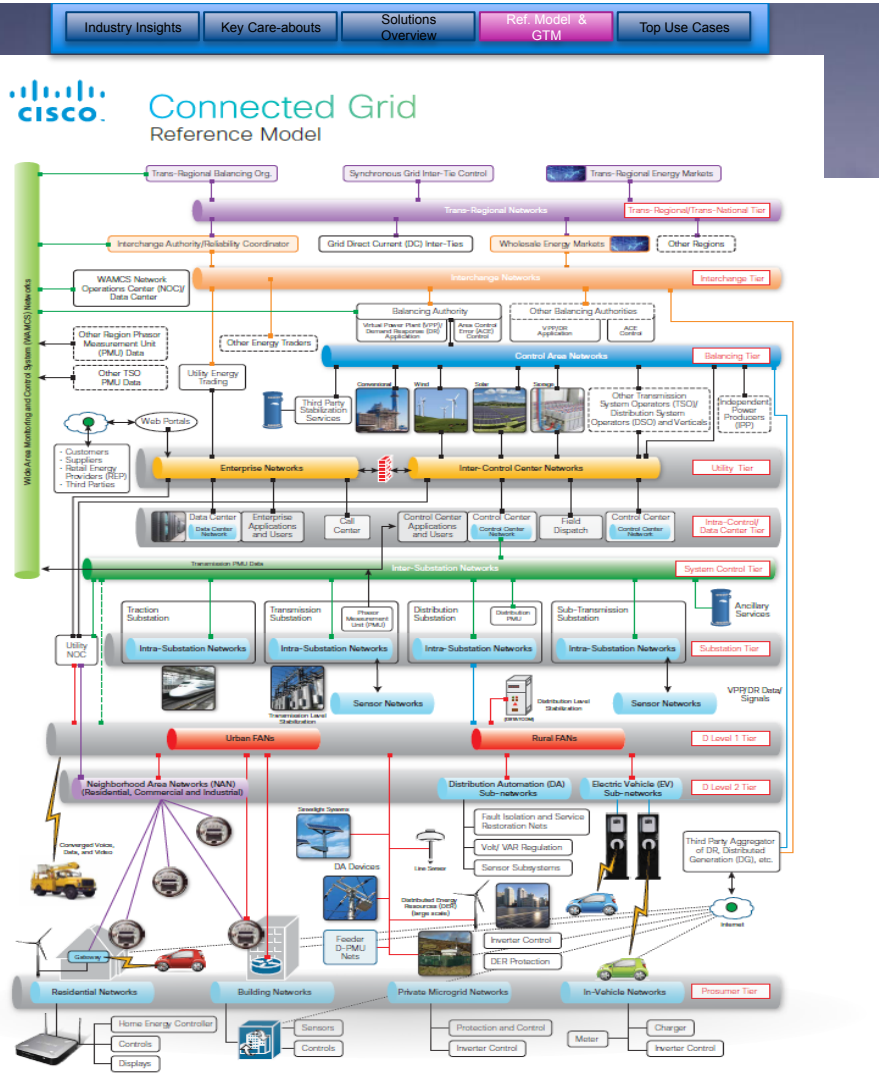
Strategic Partnerships

- Industry partners
- Vertical software / service partners
- Service providers

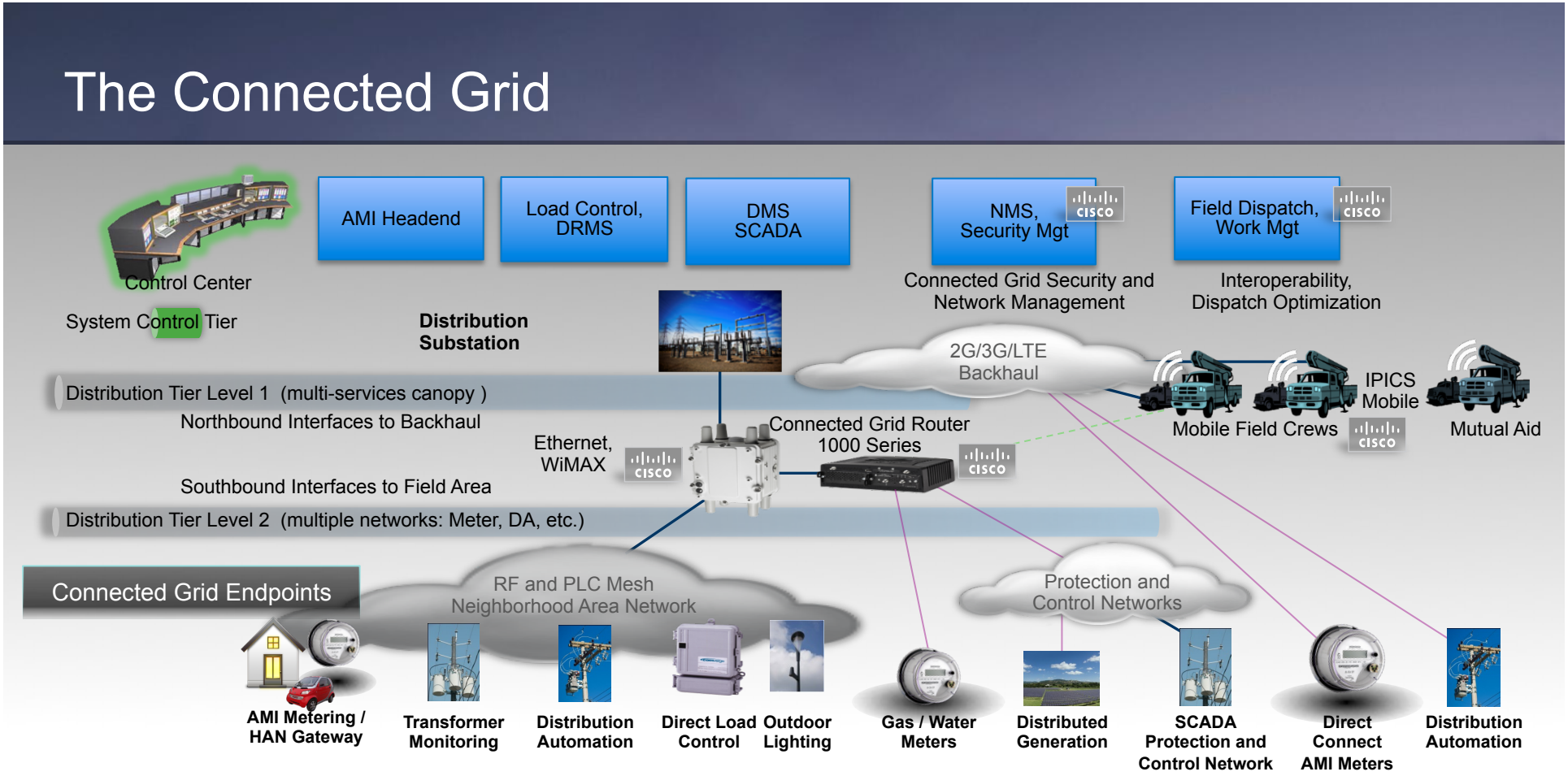

Industry Insights
Key Care-abouts
Solutions Overview
Ref. Model & GTM
Top Use Cases
IoE Vertical Solutions Group
Utility Solutions Infographic
Generation & Transmission
Distributed Energy Resources
Substation
Recloser Control
Transformer
Recloser Control
Control Center
Voltage Regulator
Transformer
Suburban
Capacitor Bank

GridBlocks™
Reference Model

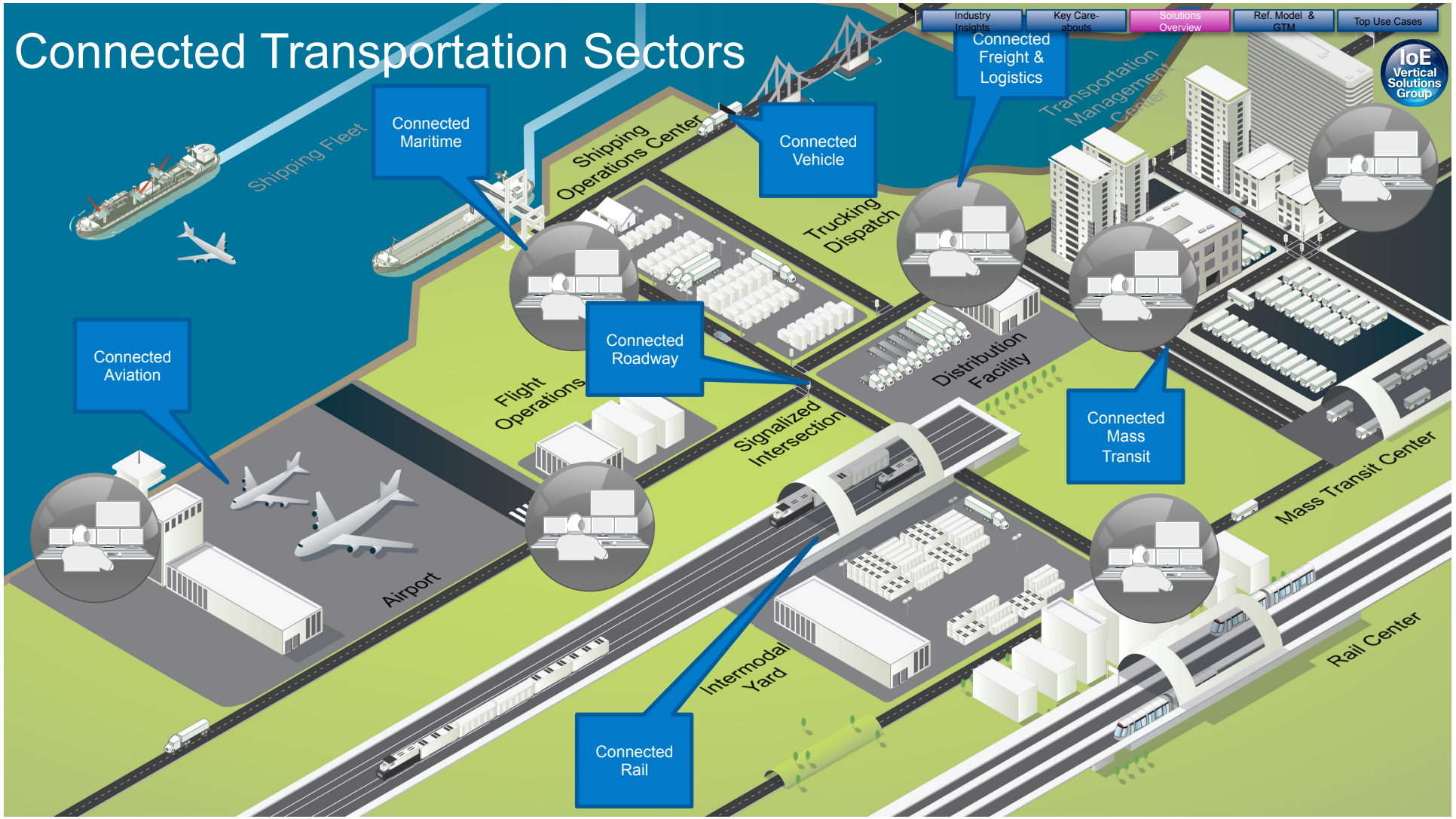
- Describes the power delivery chain
- Architectures detail networking each of the eleven tiers in this model
- Results in a complete end-to-end architecture for converged power delivery chain communications
- Framework for
  - Integrating legacy devices
  - Using existing products in new ways
  - Integrating new ecosystem partners
  - Developing new products and services
- Provides a platform for innovation



The Connected Grid



Millions of Potential Grid Endpoints


Connected Transportation Sectors
Industry Insights
Key Care-abouts
Solutions Overview
Ref. Model & GTM
Top Use Cases
IoE Vertical Solutions Group
Connected Freight & Logistics
Transportation Management Center
Shipping Fleet
Connected Maritime
Shipping Operations Center
Connected Vehicle
Trucking Dispatch
Connected Aviation
Connected Roadway
Flight Operations
Distribution Facility
Signalized Intersection
Connected Mass Transit
Mass Transit Center
Airport
Intermodal Yard
Connected Rail
Rail Center

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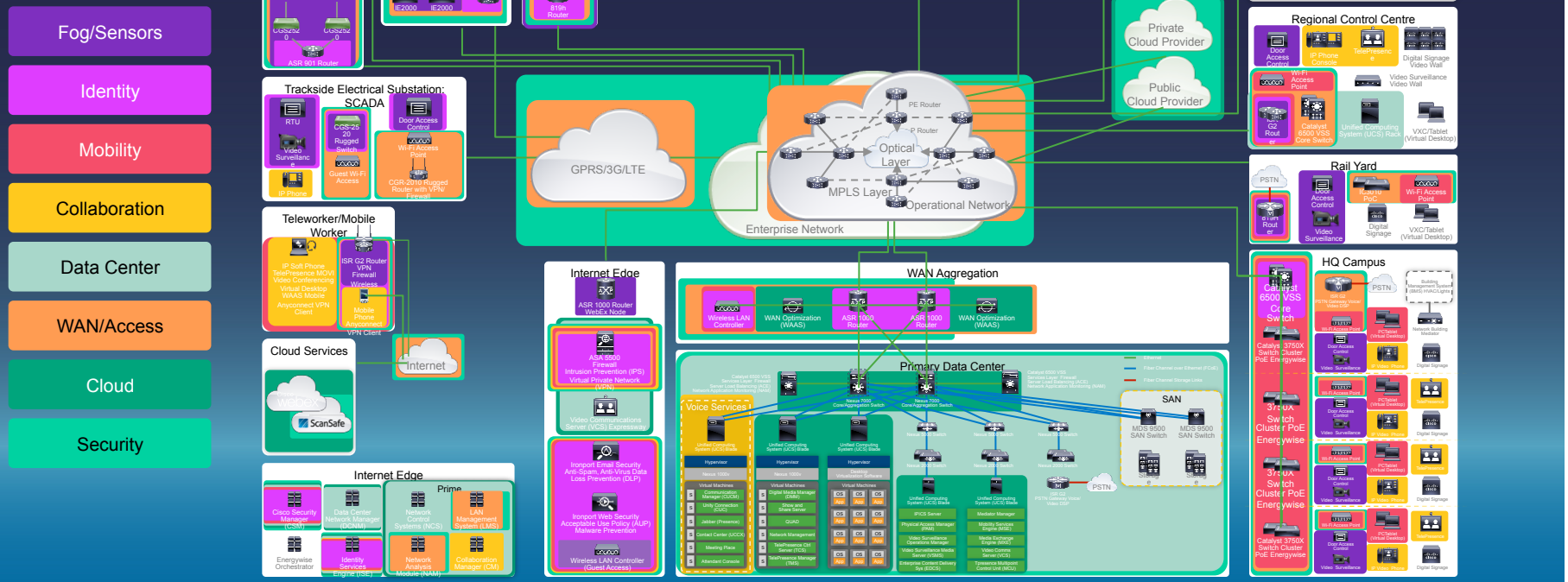
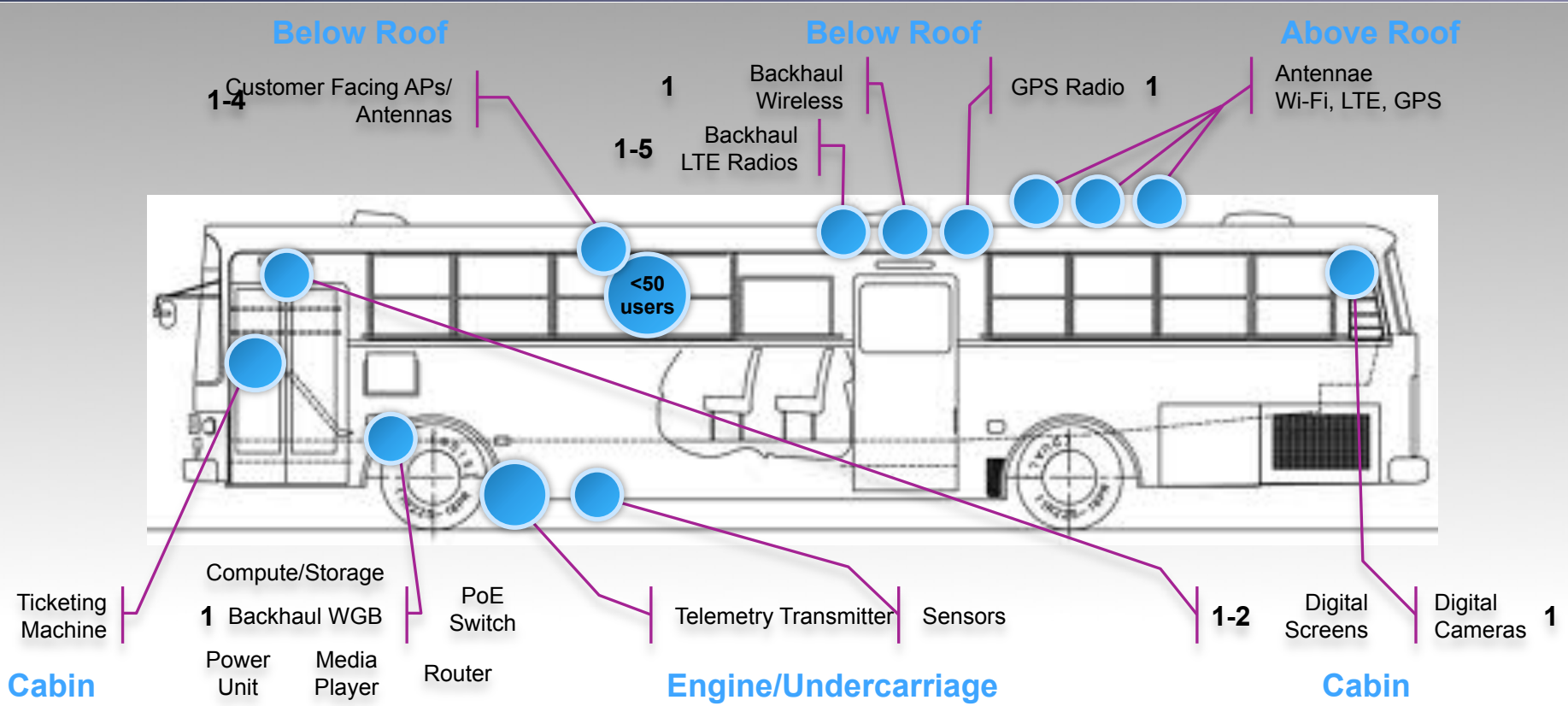
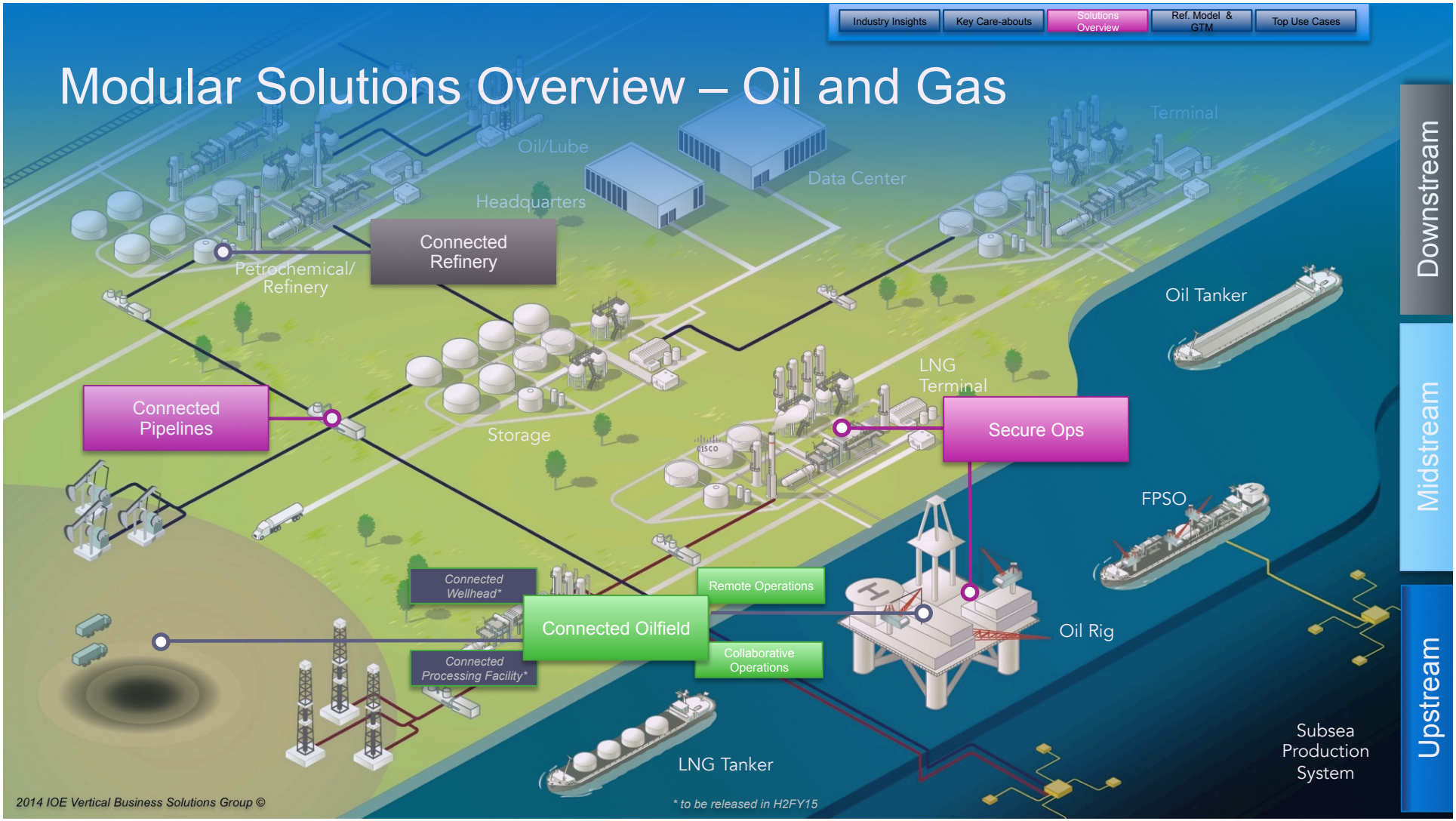
Connected Rail Reference Architecture



The Connected Bus and Mass Transit




Industry Insights
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Top Use Cases
Modular Solutions Overview – Oil and Gas
Terminal
Oil/Lube
Data Center
Headquarters
Connected Refinery
Petrochemical/ Refinery
Oil Tanker
LNG Terminal
Connected Pipelines
Storage
Secure Ops
FPSO
Connected Wellhead*
Remote Operations
Connected Oilfield
Oil Rig
Collaborative Operations
Connected Processing Facility*
LNG Tanker
Subsea Production System
Downstream
Midstream
Upstream
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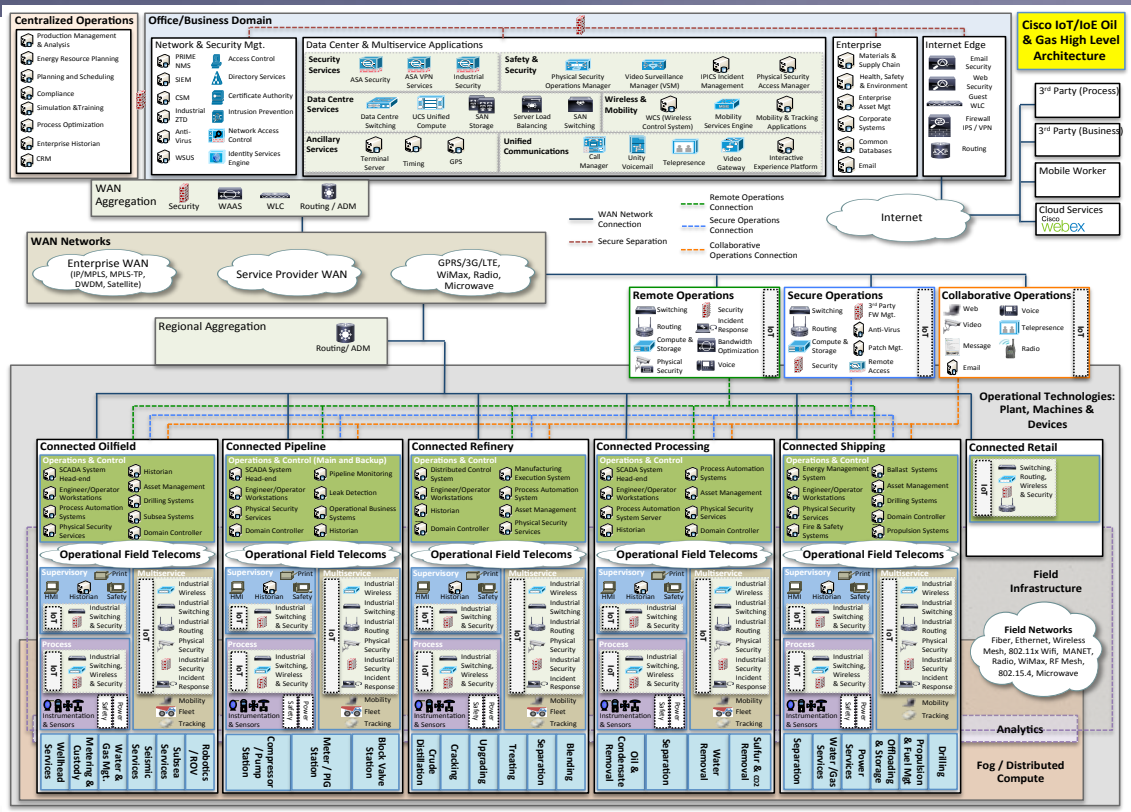
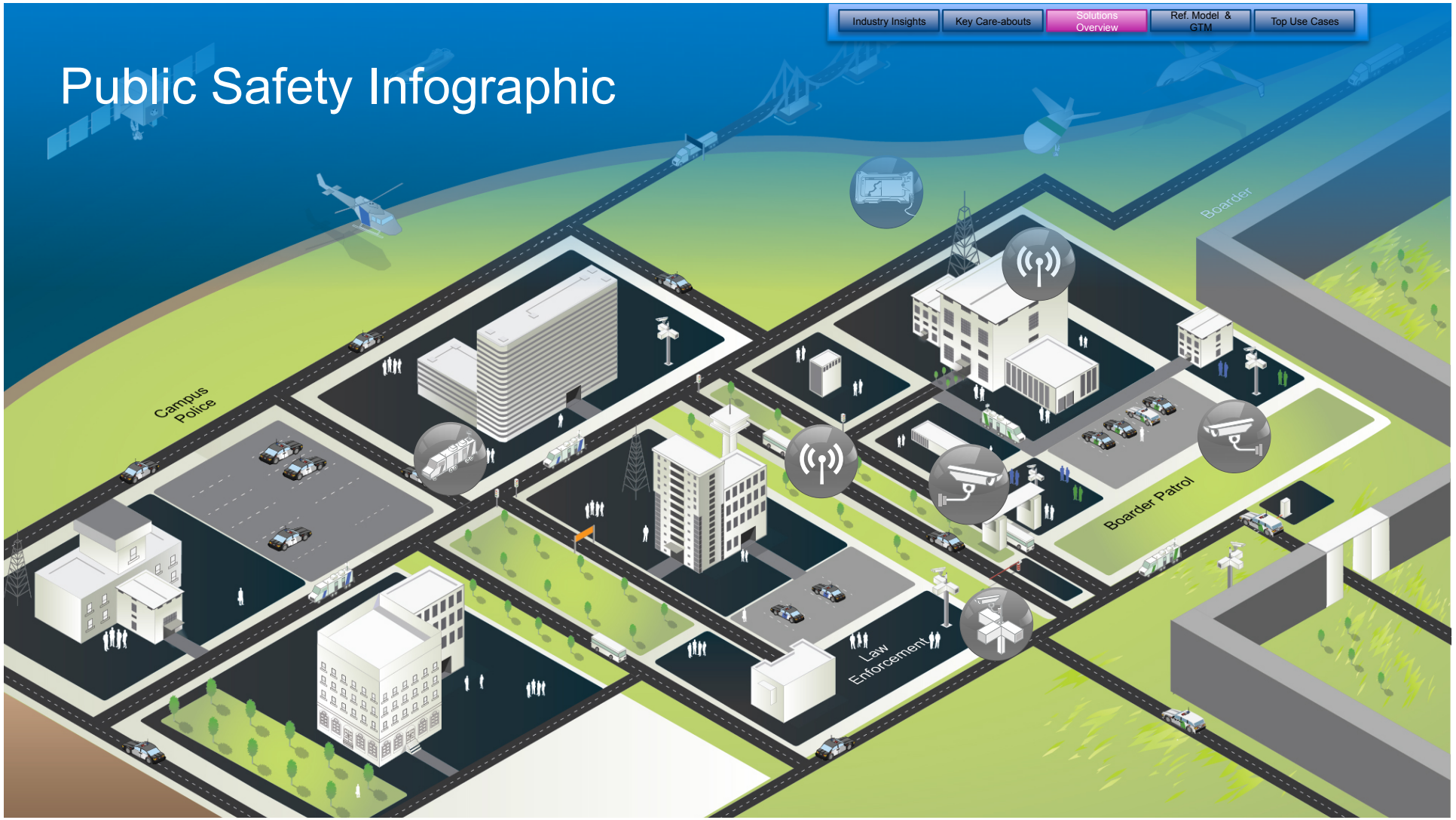
* to be released in H2FY15

O&G Reference Model

Forward-looking view on how to integrate a **Process Control** environment with a digital communications network.

- A flexible, modular approach that supports a phased oil and gas transformation
- An open standards-based vision of **Oil & Gas** delivery solutions connectivity
- A lower cost of ownership and new value creation by helping to enable new services and functional integration
- A framework for developing custom **Process Control** modernization roadmaps for companies well into the future

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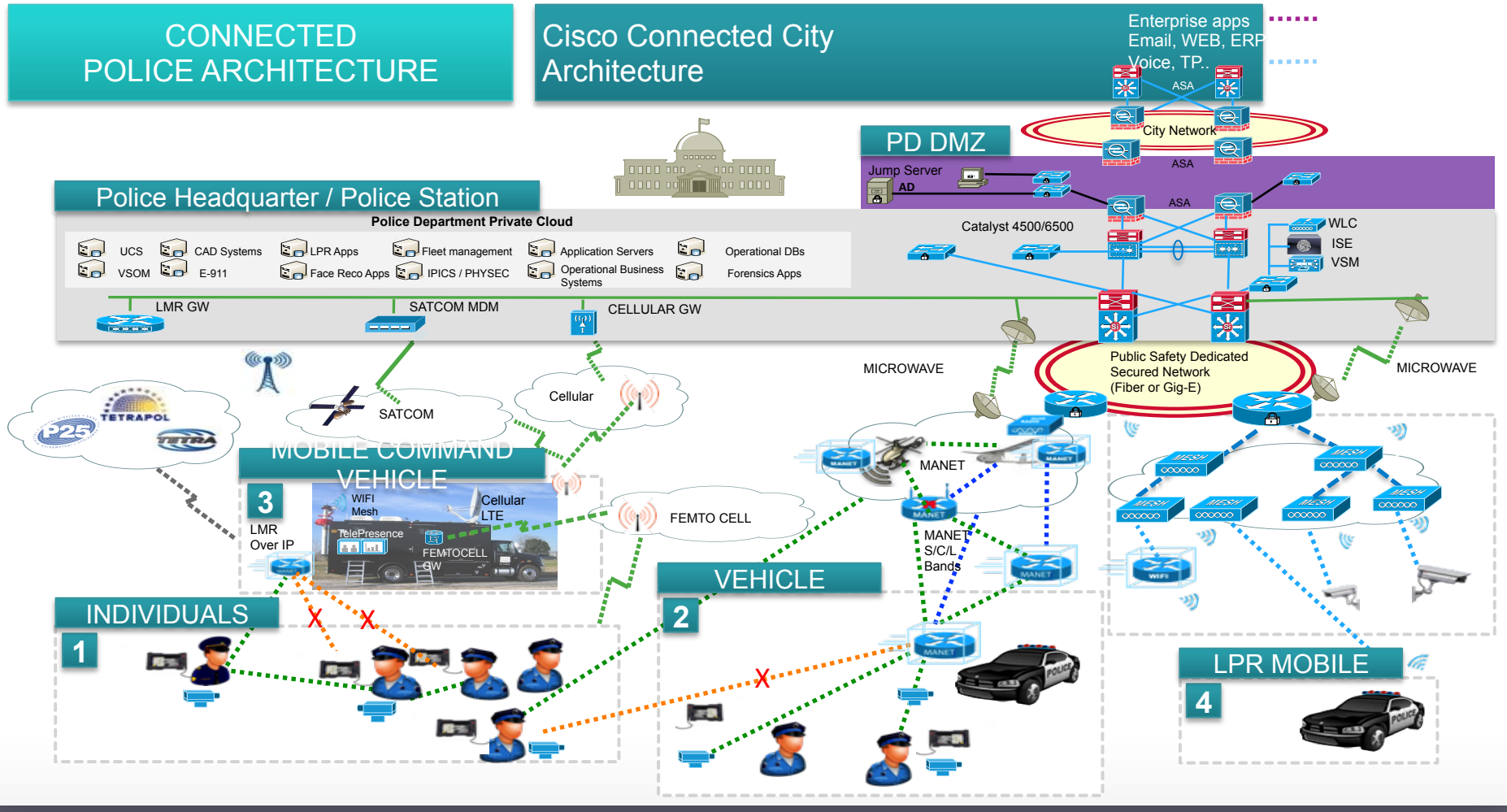
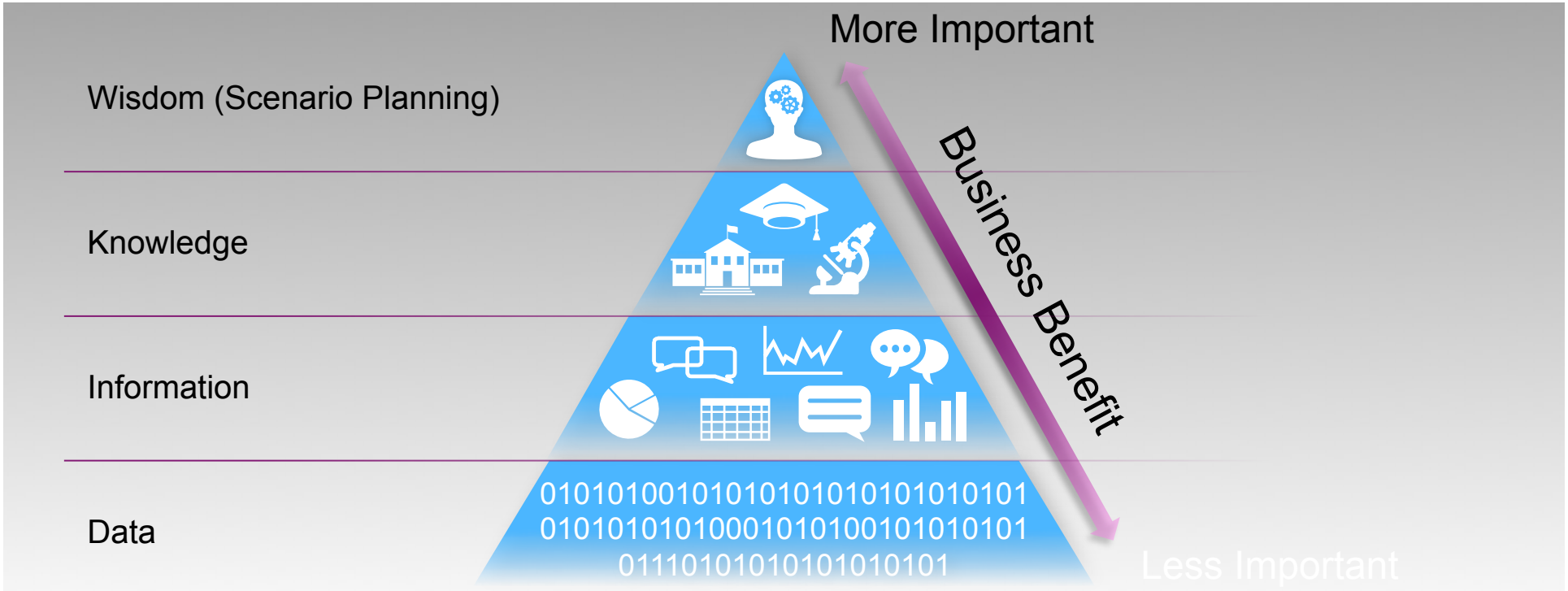
Top Use Cases
Public Safety Infographic
Campus Police
Boarder
Boarder Patrol
Law Enforcement

CONNECTED POLICE ARCHITECTURE

Cisco Connected City Architecture



IoT Transforms Data into Wisdom



Big Data becomes Open Data for Customers, Consumers to Use

CISCO