Multi-Purpose Infrastructure for Greater Connectivity

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EPCOR Technologies

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Overview

- The Intelligent Community is here: Big Data, Connectivity and Mobility

- A merging of traditionally independent industries

- Two key foundational elements: power and communications

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Traffic & ITS

- Advanced Traffic Management Systems
- Advanced Traveller Information Systems
- Traffic Management Centres
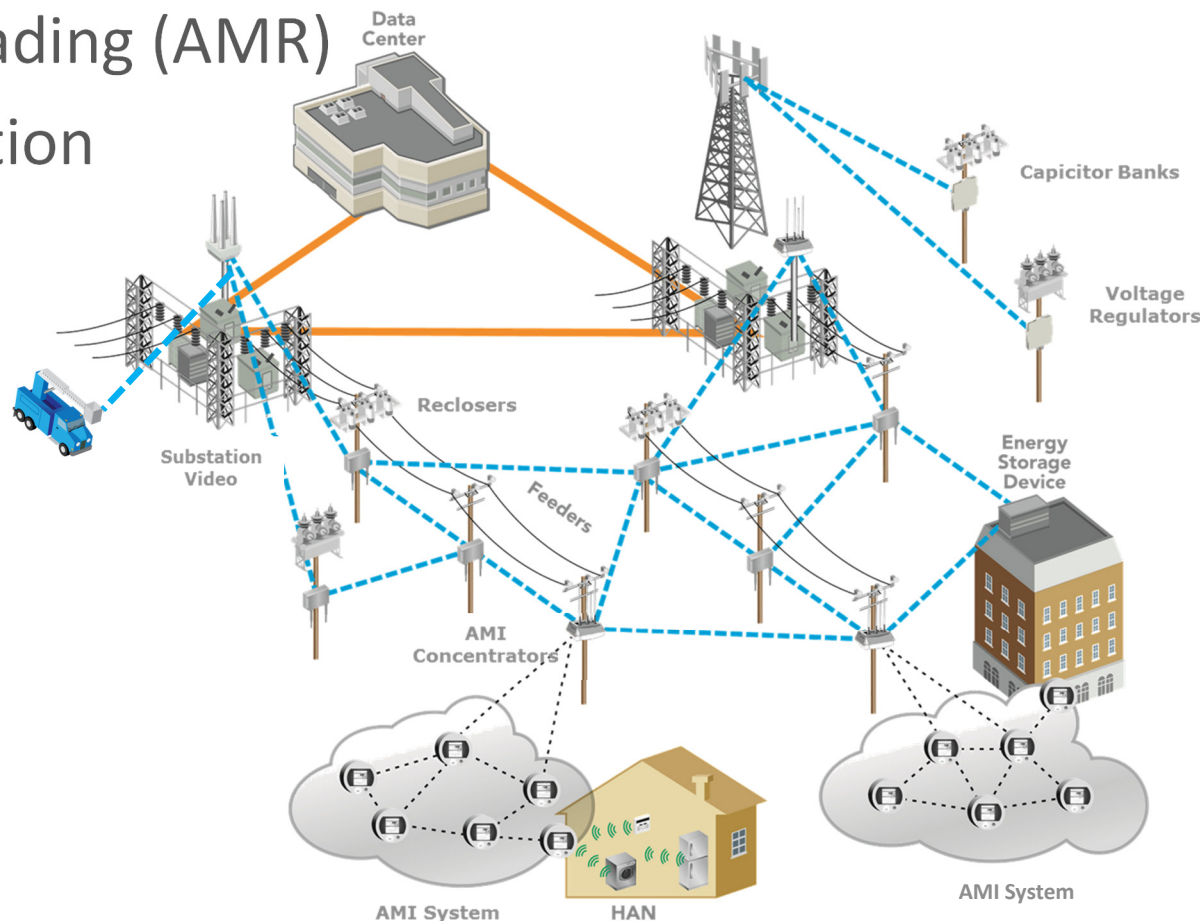- Remote management, control and information dissemination (ex: CCTV, DMS, RWIS, VSLS, WIM)

Transit/Fleet

- Real-Time Passenger Information Systems

- Real Time Fleet Management and Telematics

- Automatic Vehicle Location and Passenger Counters

- Smart Transit: Buses, LRT, Taxi
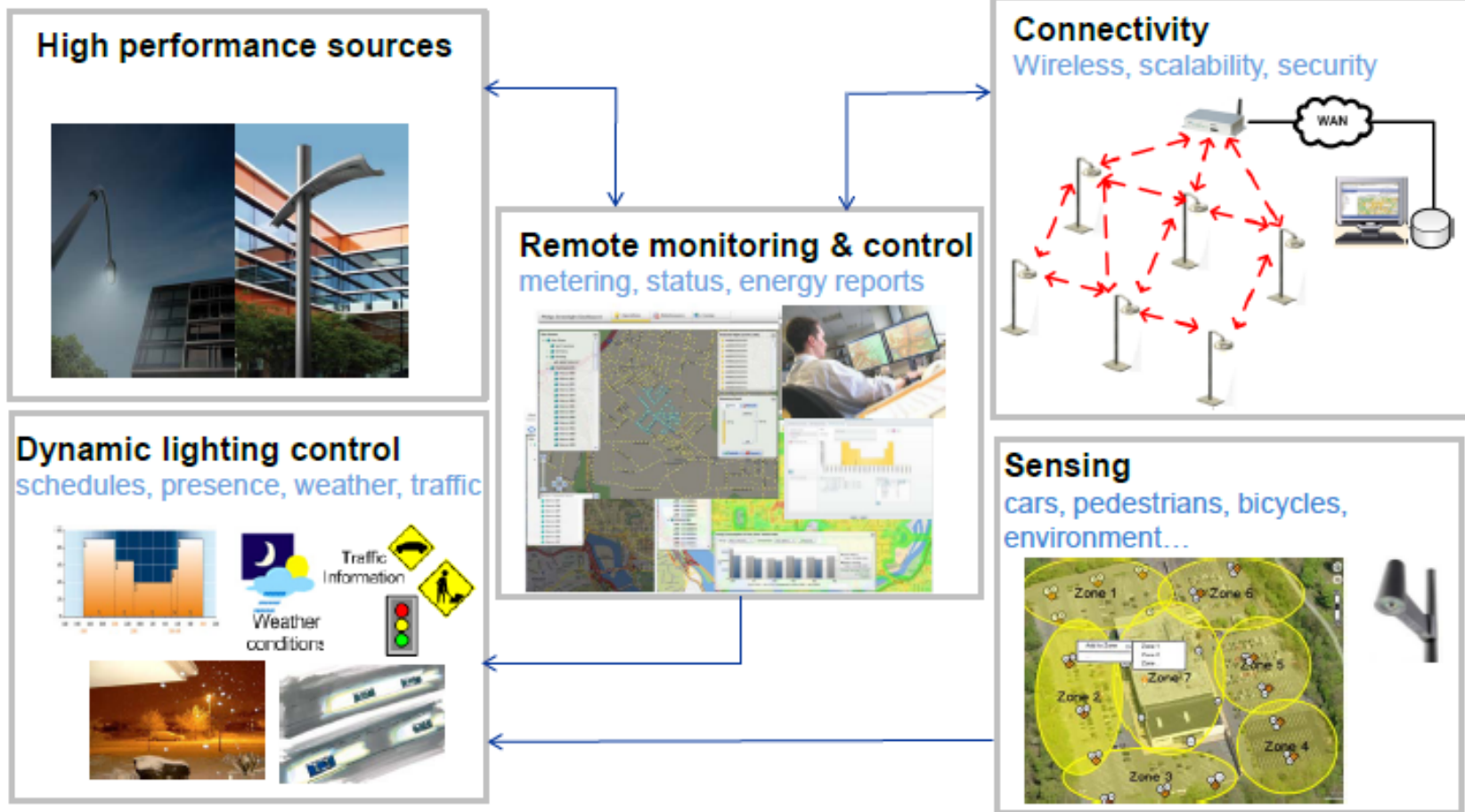
- Computer-Aided Dispatch
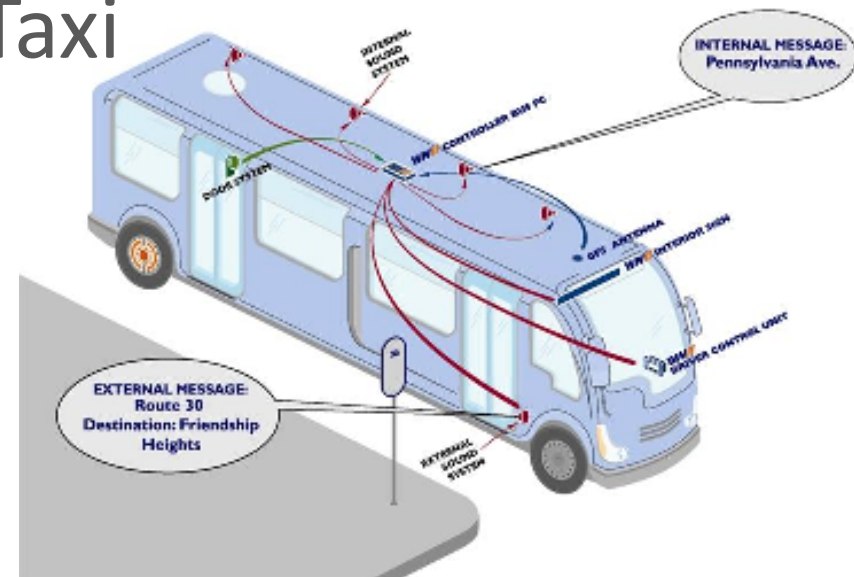
Utilities – Power/Water/Gas

- ## Intelligent Utility Communications (Smart Grids)
  - Advanced Metering Infrastructure (AMI)
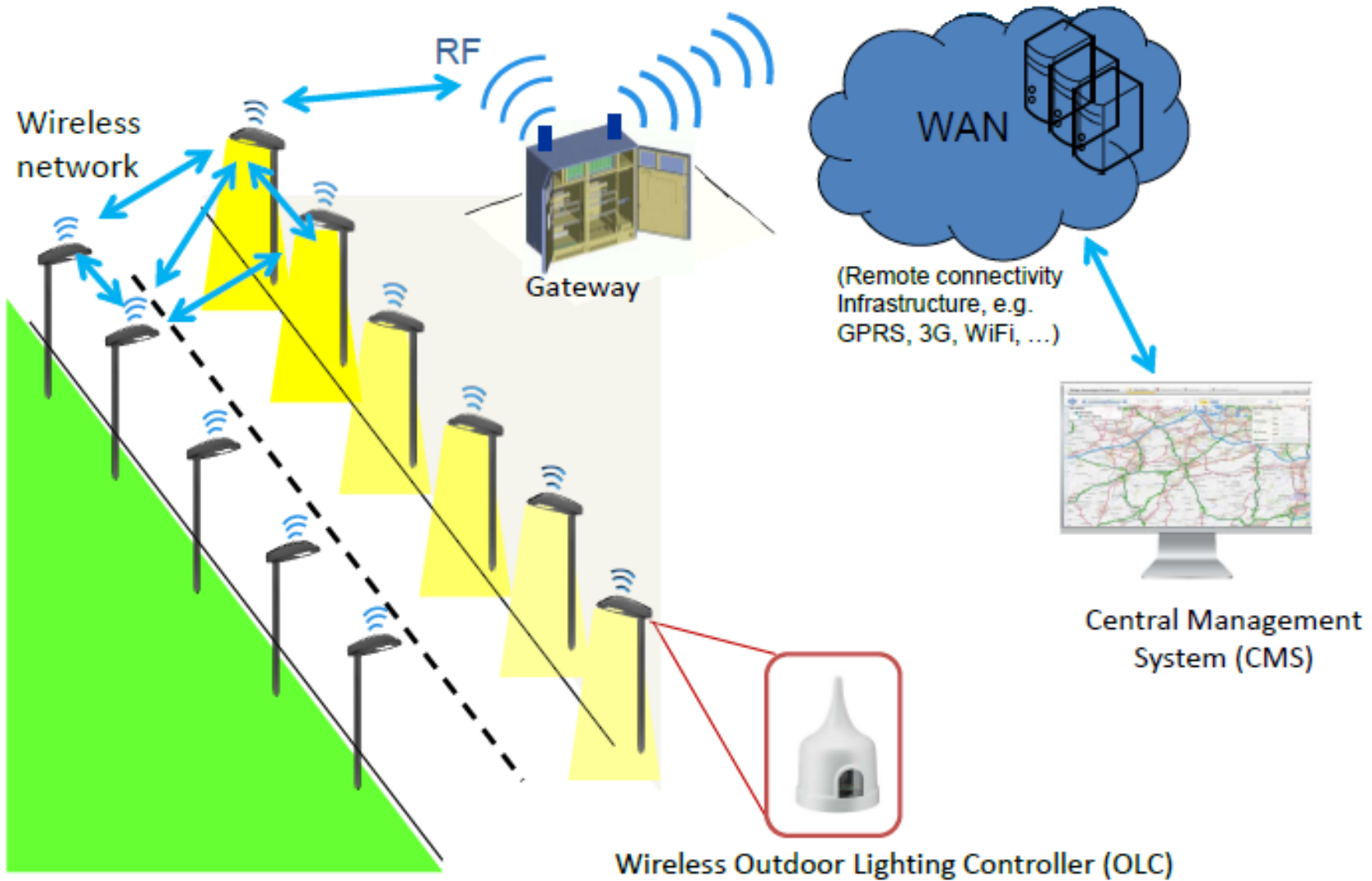 - Automatic Meter Reading (AMR)
  - Distribution Automation

Street & Area Lighting

Adaptive/Intelligent Lighting

High performance sources

Connectivity
Wireless, scalability, security

Remote monitoring & control
metering, status, energy reports

Dynamic lighting control
schedules, presence, weather, traffic

Sensing
cars, pedestrians, bicycles, environment…

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Street & Area Lighting

RF

Wireless network

WAN

(Remote connectivity Infrastructure, e.g. GPRS, 3G, WiFi, …)

Gateway

Central Management System (CMS)
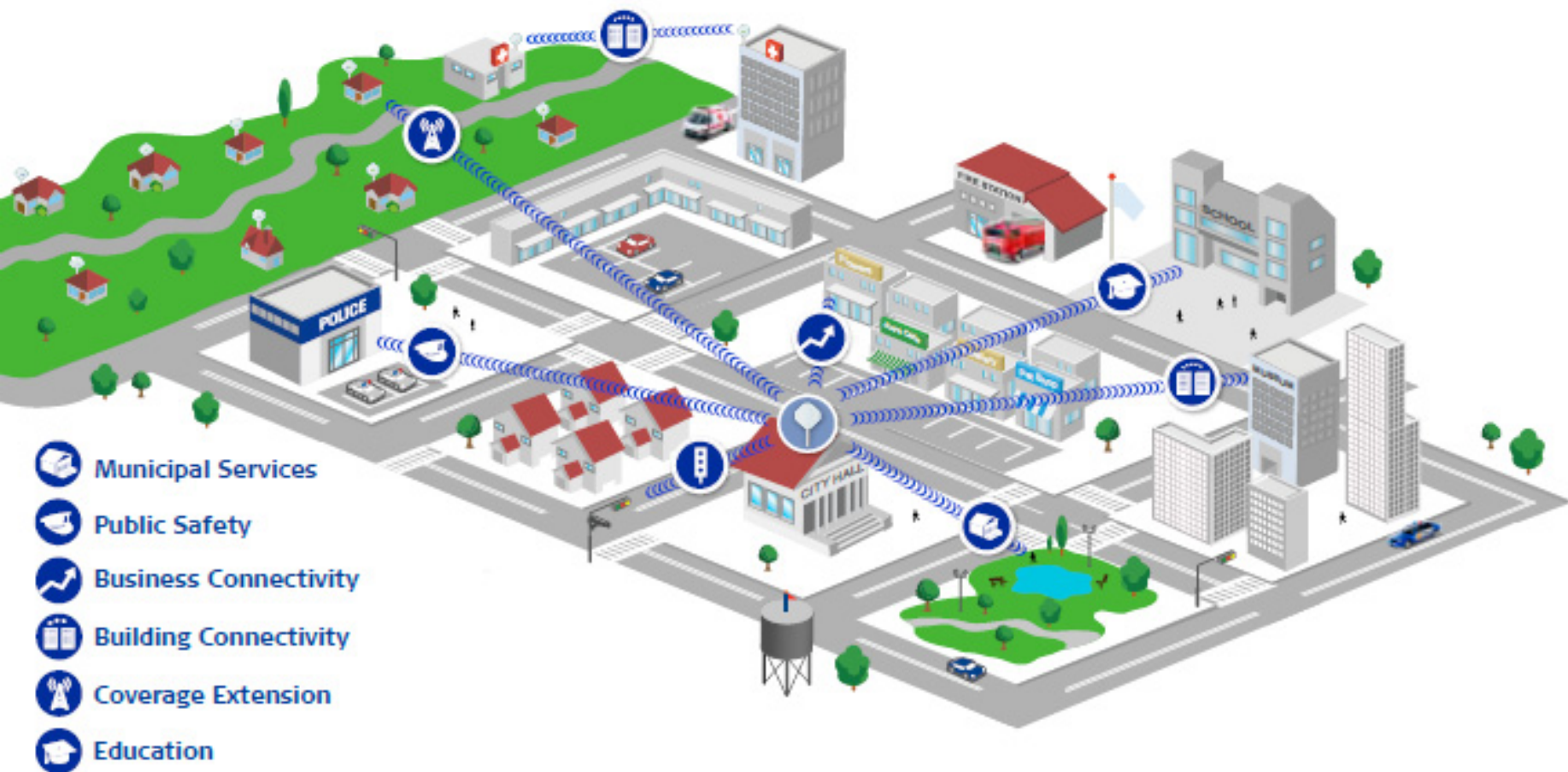
Wireless Outdoor Lighting Controller (OLC)

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# Municipal

- Municipal Services
- Business Education

- Public Safety, Emergency Response
- Healthcare

- Education
- Rail
- Retail

- Municipal Services
- Public Safety
- Business Connectivity
- Building Connectivity
- Coverage Extension
- Education

Telecommunications

- Small cell or micro network antennas
- Wifi networks
- Increased antenna density in congested areas

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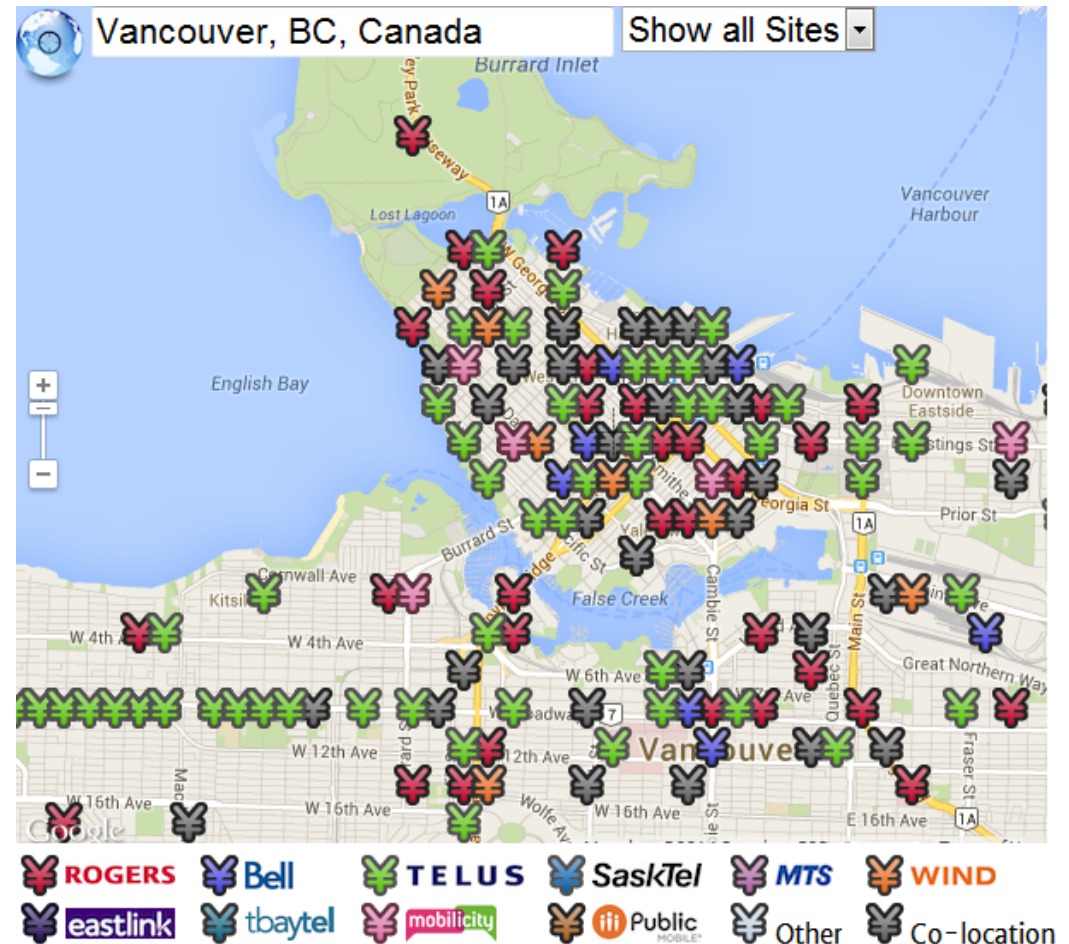
Vehicle Technology

Connected Vehicles (V2V, V2I)

· Safety: Collision Avoidance

· ATMS without field sensors

· Roadside Equipment

Autonomous Vehicles

Electric & Hybrid Vehicles

· Smart Parking, Charging Stations

Sampling of Vendors and Manufacturers

ABB Tropos
Alvarion
Arada Systems
Cisco
DimOnOff Litenode
Elster
ENCOM Wireless
Ford
GE Light Grid
Google
Huawei
IBM

International Road Dynamics
Intuicom
Kapsch
LED Roadway Lighting
Lumen IQ
Phillips StarSense
S&C Electric
Samsung
Savari Networks
Sensus FlexNet
Shaw

Siemens RuggedCOM
Silver Spring Networks
Streetlight Vision
Telensa
Telus
Toyota
Trapeze Group

Current Operational Environment

- Unique objectives/goals among various stakeholders and asset owners

- Traditionally very distinct and segregated industries

- Security and privacy

- Budgeting and operational limitations

- Regulatory, jurisdictional and legal

System Implementation

Common Hurdles

- Significant capital investment
  - Power connections
  - Backhaul connections

- Limited space, ROW and infrastructure availability
  - Interference challenges
  - Facility/building access

- Electrical and Communication tie-in, code challenges
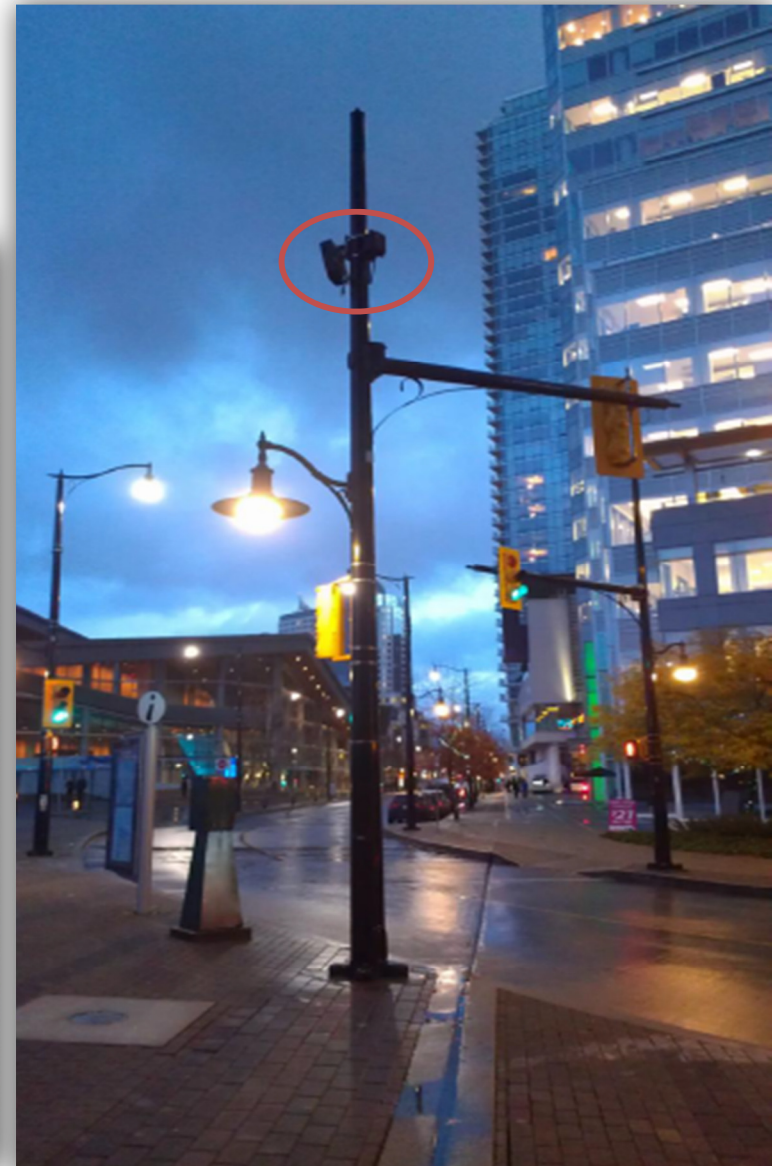
- Limited bandwidths, licensed spectrum

Potential Solutions

- Shared Infrastructure:

Traffic, Lighting, Utility, Telecom Infrastructure is uniquely positioned for use in these systems.
  - Joint-use space possibilities
  - Common power connections

- Multi-Purpose Networks

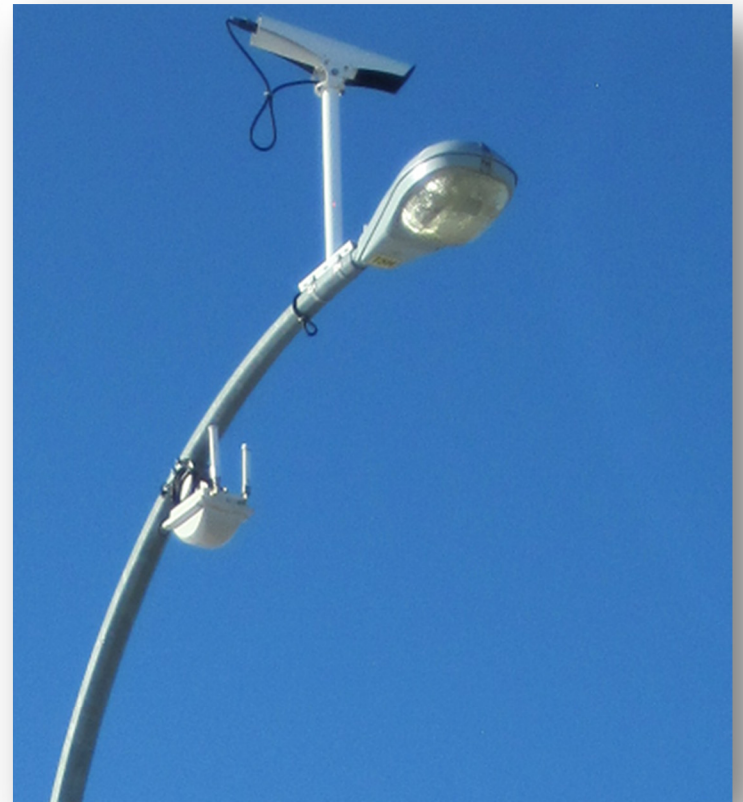# Multi-Purpose Traffic/Lighting Infrastructure

Telecommunication Small Cells

Multi-Purpose Traffic/Lighting Infrastructure

Wifi Networks

Multi-Purpose Traffic/Lighting Infrastructure

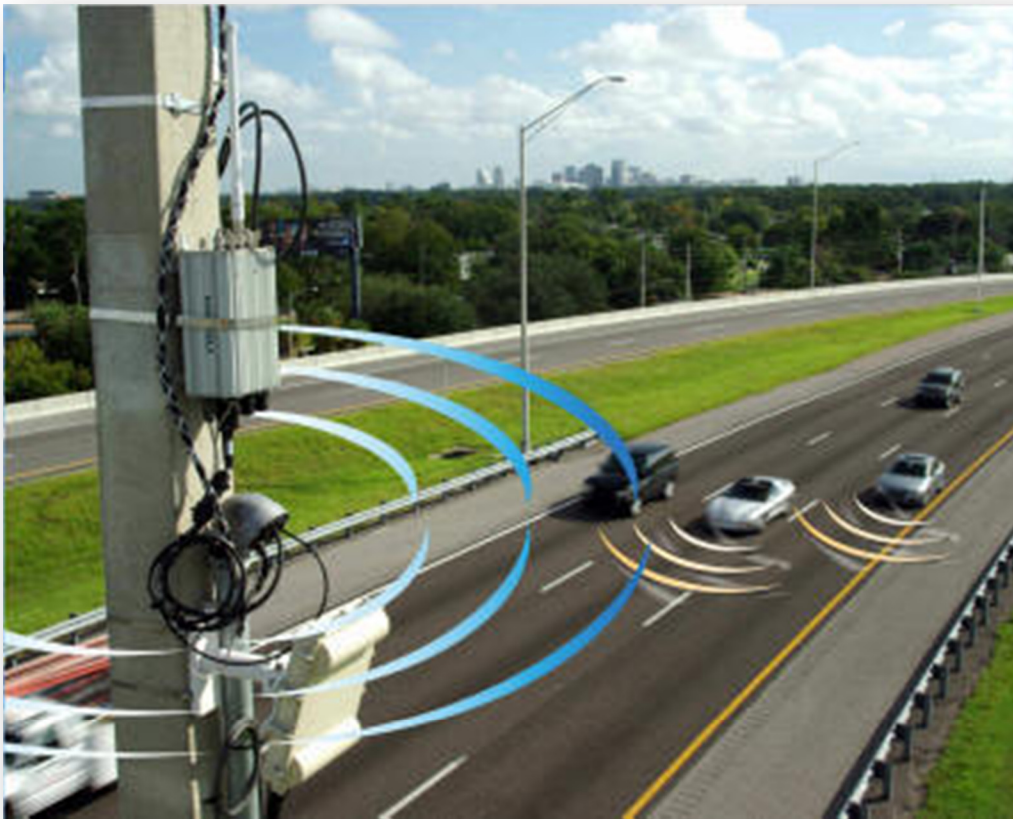## Municipal/ITS/Traffic Networks/Adaptive Lighting

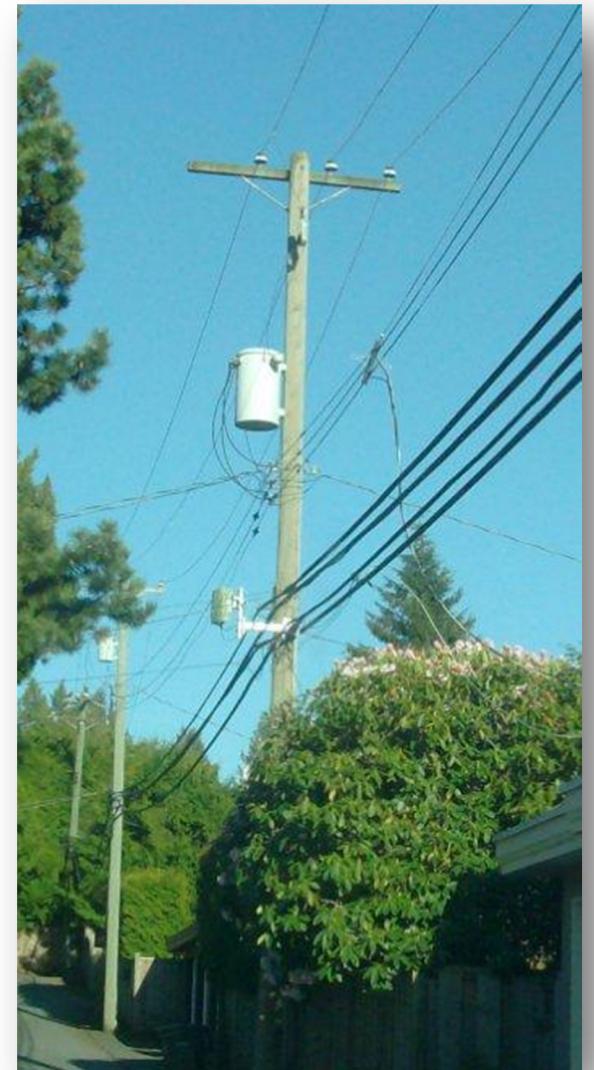# Multi-Purpose Traffic/Lighting Infrastructure

Utility Communications

Multi-Purpose Traffic/Lighting Infrastructure

Connected Vehicle Technology – Roadside Equipment

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Multi-Purpose Utility Infrastructure

Telecommunication Small Cells

Multi-Purpose Utility Infrastructure

Wifi, Utility Communications,

Access Points/Repeater Stations

Planning Considerations

Preparing for the future:

- Spare Infrastructure
  - Civil underground system: ducts, concrete base stub-outs, etc.
  - Electrical panel capacity
  - 24/7 power availability on poles. Adaptive street lighting provides a unique opportunity.
- Electrical code compliance
- Design stage discussion with stakeholders

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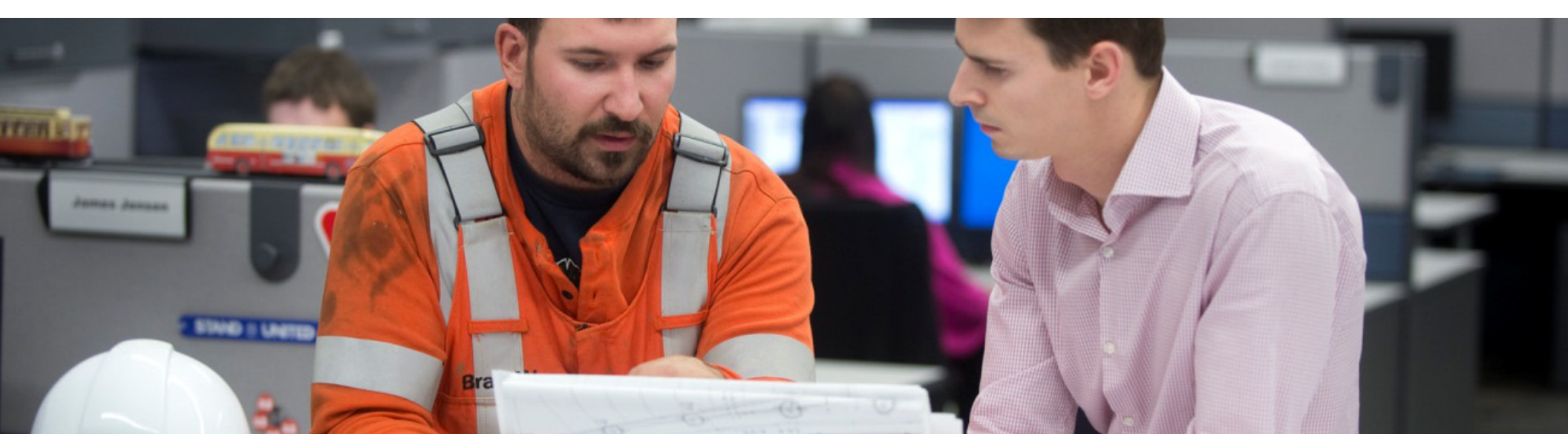
Concluding Remarks

- Awareness of technology and industry trends
- Opportunities for dialogue
- Potential cost-saving applications for asset owners

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Thank you.

Further inquiries:

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