Wireless Communications for the Smart Grid

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Utility Market Trends & Drivers

Global energy supply gap

Aging architecture

Aging workforce

Regulatory compliance and penalties

Movement to Alternative Energy Resources, Distributed Energy Resources and Plug-in Electric Hybrid Vehicles (PHEV)

Pressure from investors to improve ROI

Physical and cyber-security concerns

Public policy changes

Smart Grid Trends & Drivers

Smart Grid automation is M2M data communications-centric

It includes technologies that use secure communications to:

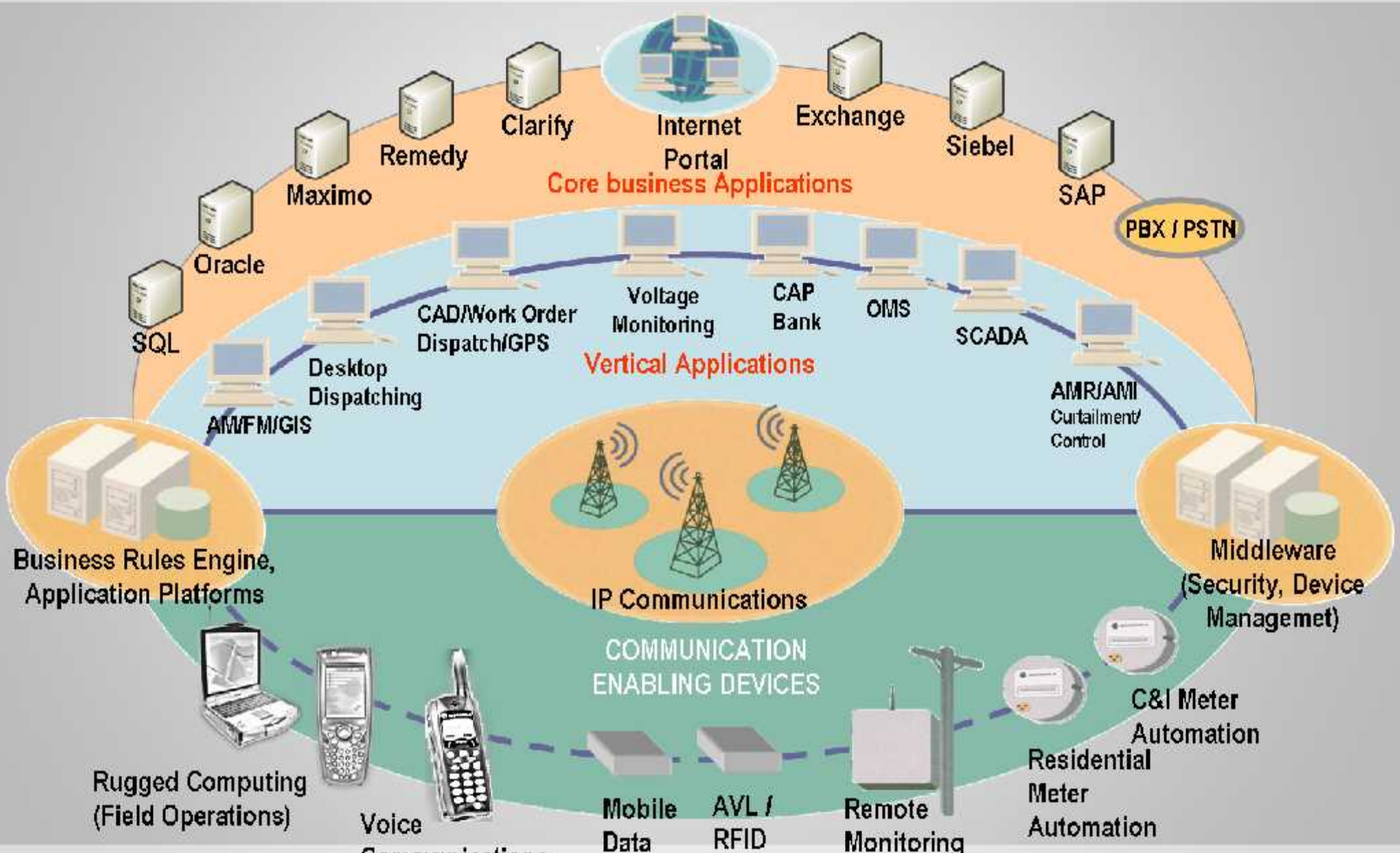
- Enable utilities to monitor & control the electric grid
- Provide improved customer service
- Improve worker productivity
- Promote alternative energy resources
- Make more efficient use of the electric grid and generation resources

Smart Grid application timing, coverage, latency, bandwidth, security and business case requirements are varied

- This often results in data application silos … the *"Un-Connected Utility"*

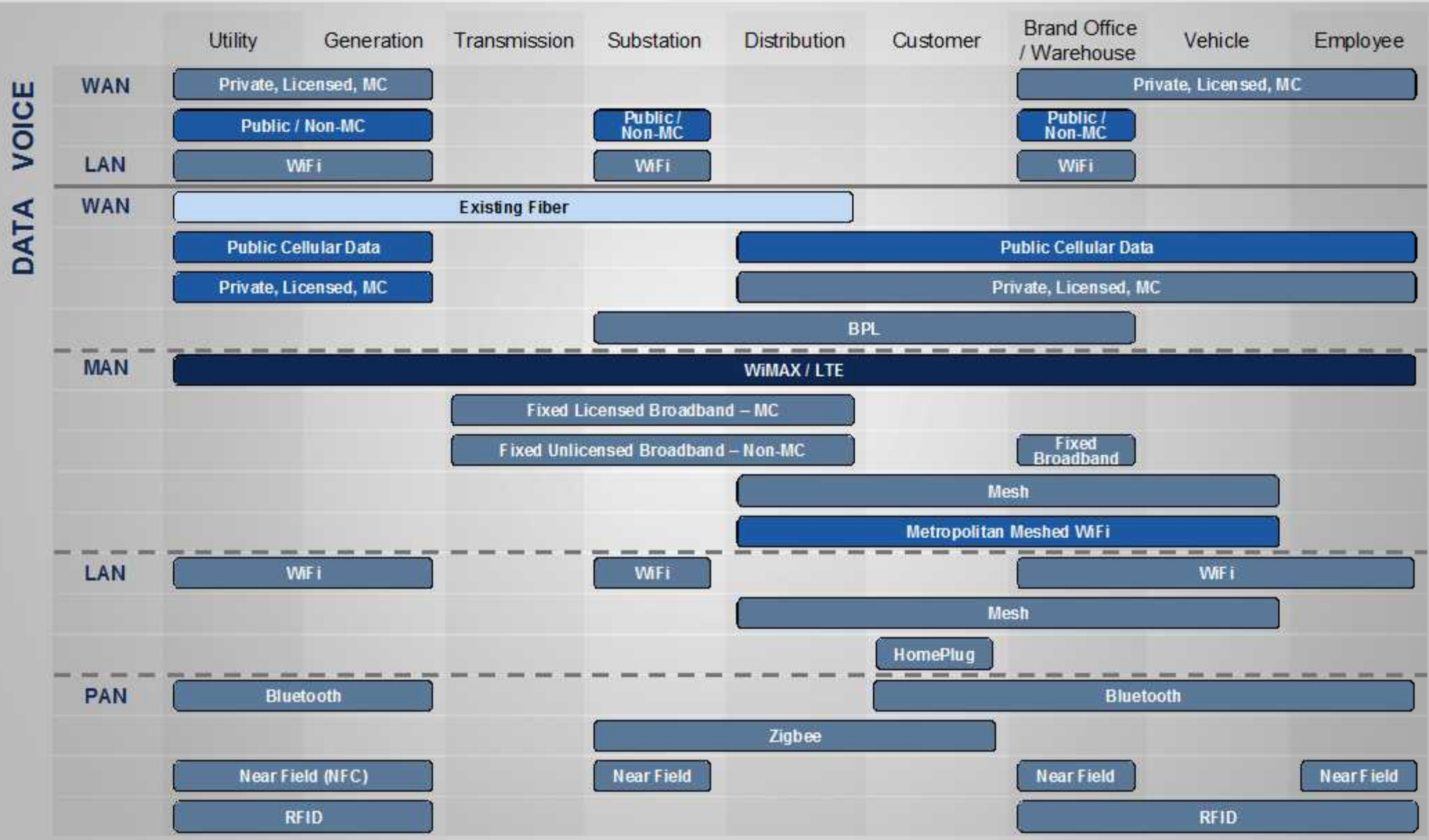
Secure wireless communications will play an important role in the Smart Grid

A "Connected Utility"



There Are Many Network Options

= Private
= Public
= Future
= Existing Resource
MC = Mission Critical



Consider The Five C's When Choosing Networks

Control

The ability to control your network – particularly in the event of disasters

Coverage

Covering your entire service territory – even very remote areas

Capacity

Ensuring enough data capacity – for today's applications and future applications

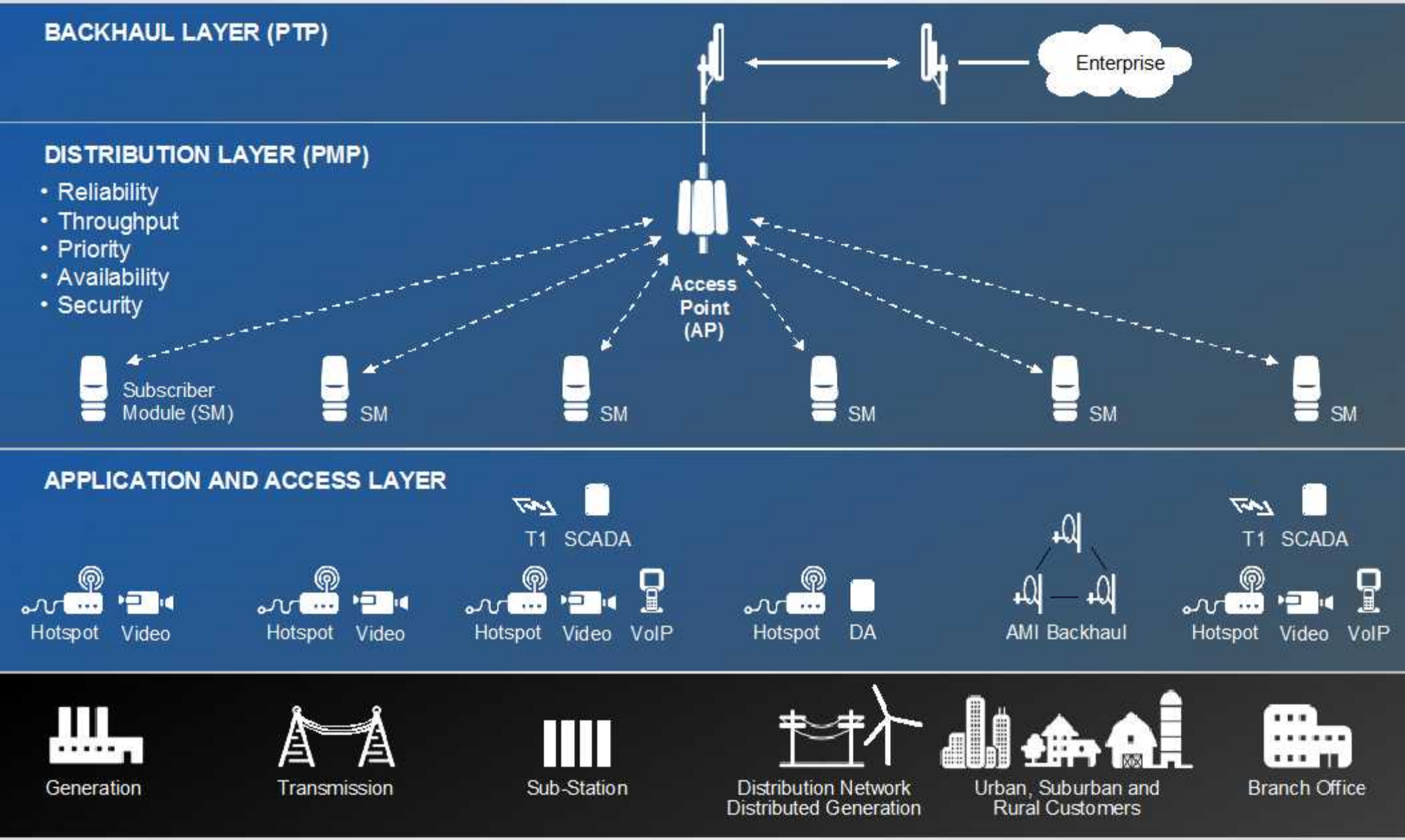
Capabilities

Robust, secure, and proven capabilities for current and future requirements

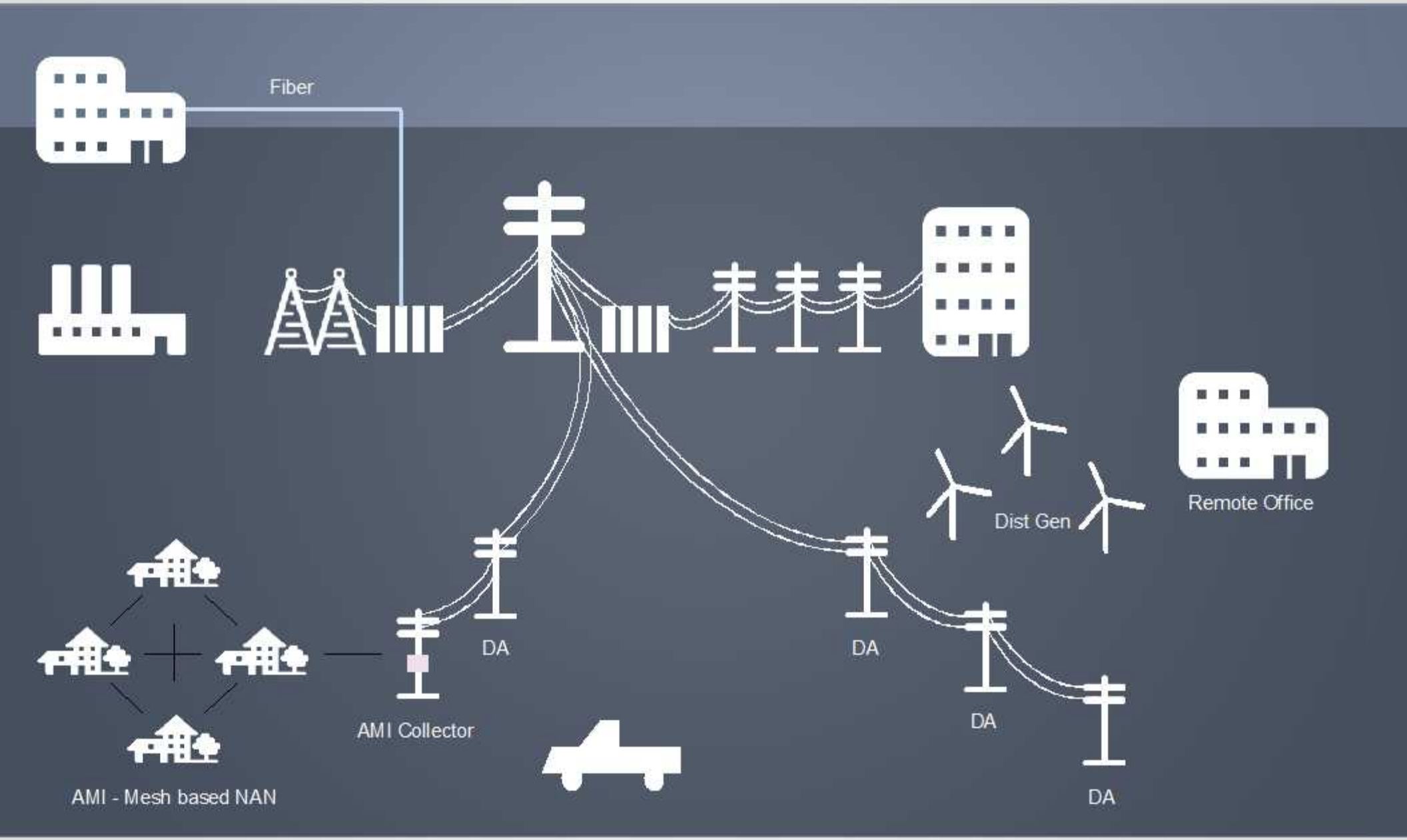
Cost

A cost-effective solution that meets your business case

Leveraging Private Backhaul Applications



Architecting The Network



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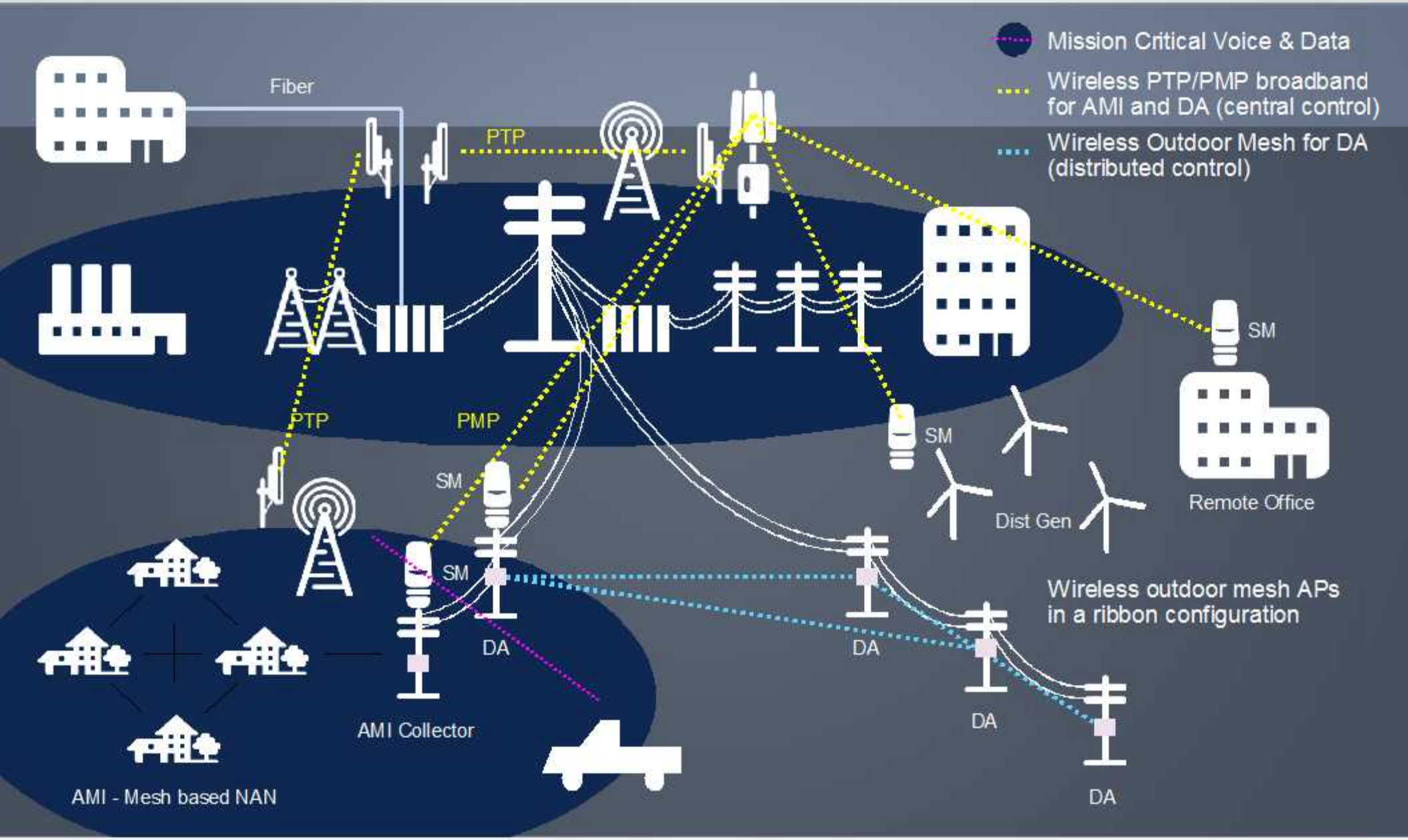

Spectrum for the Smart Grid

Unlicensed Spectrum used today in the Smart Grid

- 900 MHz, 2.4 GHz
- Interference is inevitable
- Security and reliability of unlicensed spectrum is difficult
- Coverage is limited by the unlicensed band power limits

Licensed spectrum and private networks afford more flexibility in coverage, security and deployment

Data bandwidth use always exceeds early projections

More than one wireless network will be used in the Smart Grid

Achieving the entire Smart Grid vision will require access to licensed spectrum

Thank You!

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Learn more at:
www.motorola.com/connectedutility1