

# The Power of Data in Wind Farm Communication



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**Ken Austin**

Senior Product Marketing Specialist – Ethernet  
Phoenix Contact USA

## Speaker Introduction



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### Ken Austin

Senior Product Marketing Specialist - Ethernet

Phoenix Contact USA

- 13 years industrial Ethernet application experience
- Previous networking, programming, marketing
- Married, 3 children
- Still play ice hockey
- Enjoy A/V, home projects, automotive

# The Power of Data in Wind Farm Communication

## Agenda



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- Tech (R)evolution
- Network reliability
- The Horizon
- Summary

# The Power of Data in Wind Farm Communication

## Progression – Old Data



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### Prior Wind Farms

- Simple analog signals
- Some digital communication
- Heavy unmanaged switch use
- Copper Ethernet cabling
- Limited system vision
  - Diagnostics
  - Troubleshooting
- Difficult expansion

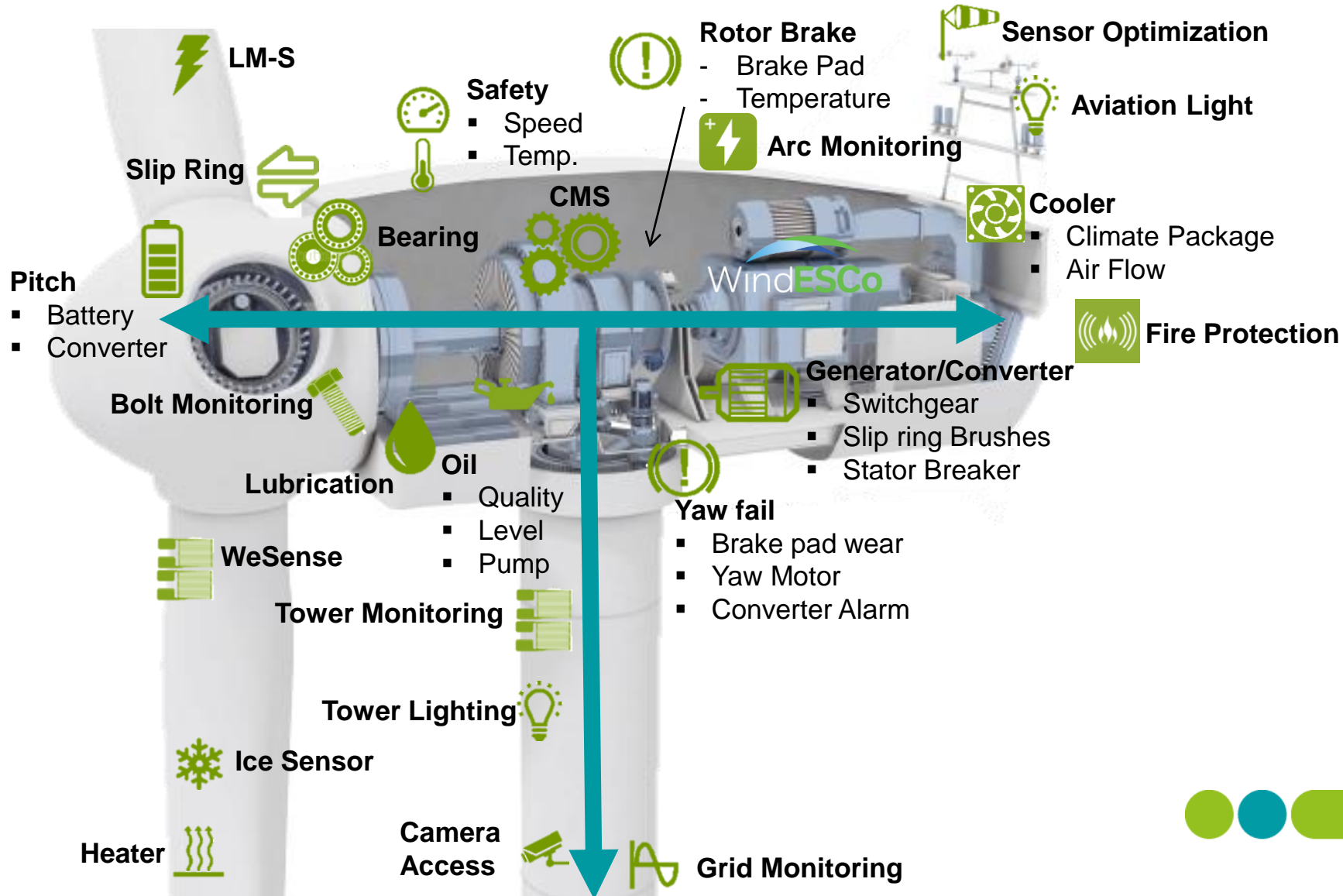


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## Turbine – Internal Data

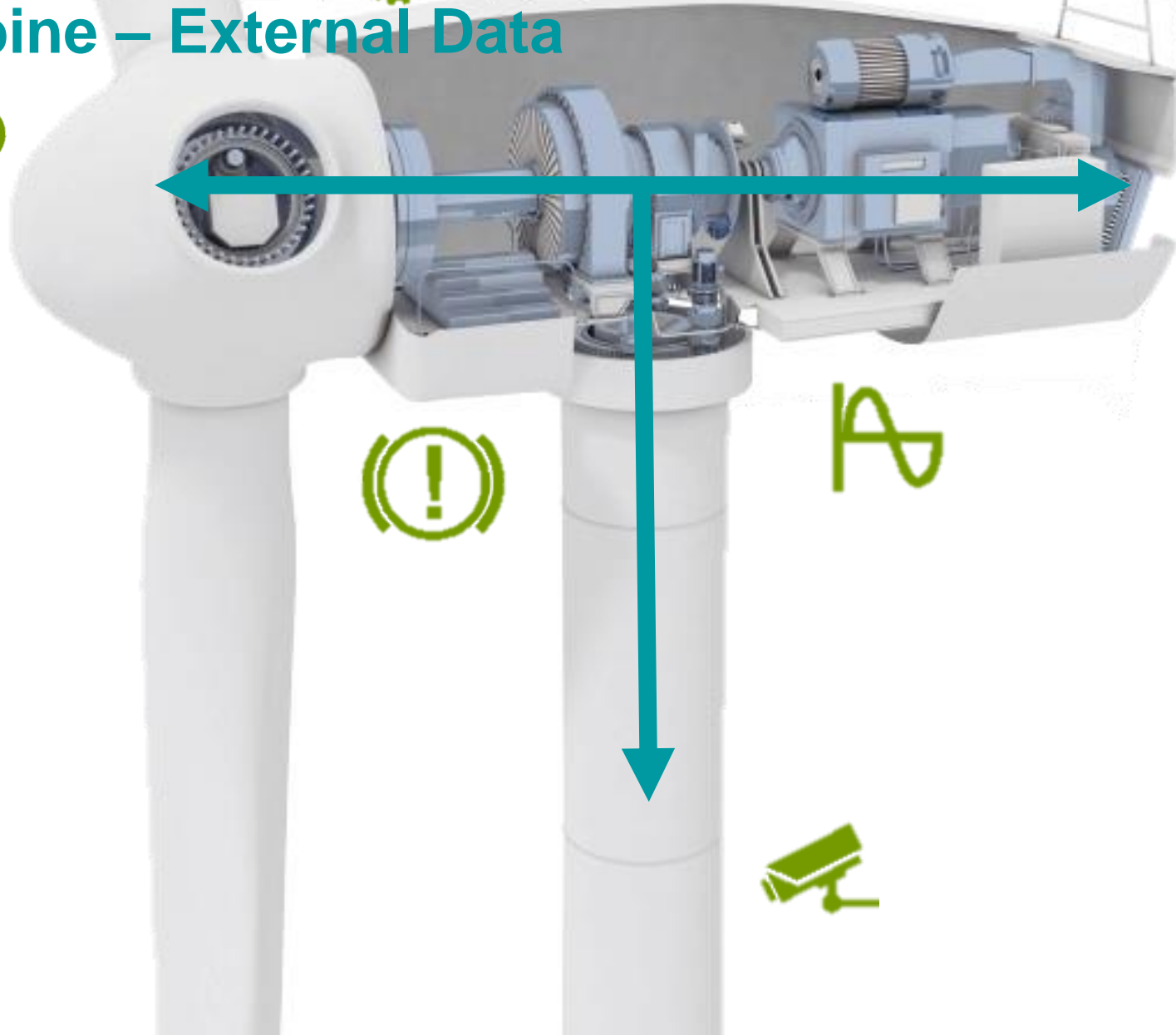


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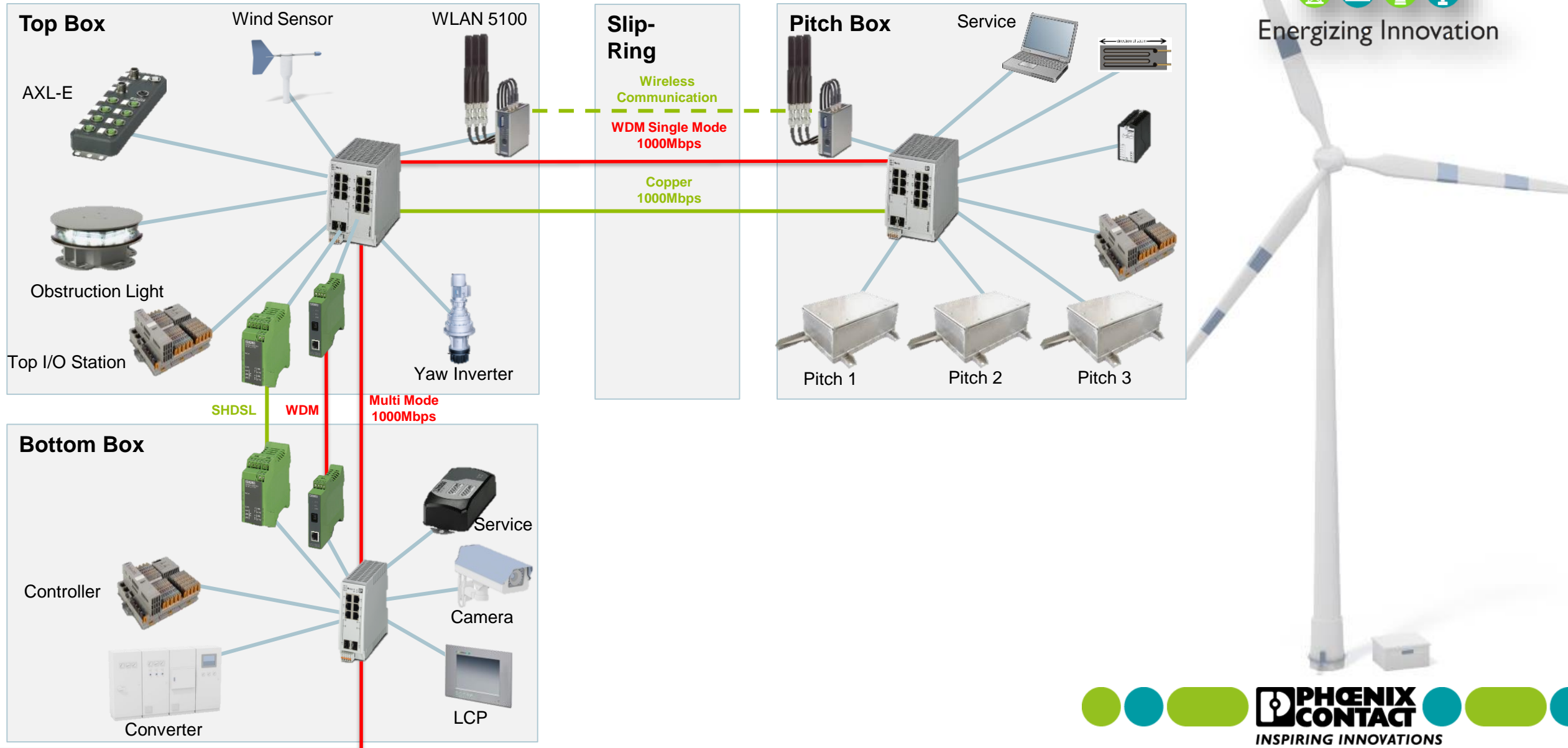
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## Turbine – External Data



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# Turbine Communication



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## The Wind Park Network



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Smart Turbines/Devices require smart networks

- VLAN
- SNMP
  - Diagnostics/Configuration
  - Traps
- Redundancy
- LLDP
- Management
  - Switch / Device / Network
- Security

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## The Wind Park Network



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- High speed communication backbone (1Gbit/s)
- Robust infrastructure for high network availability
- Reliability due to network redundancy
- Flexibility in design for easy modifications

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## The Wind Park Network



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What about expansion?

- Quite difficult in older networks
- Secondary network deployment
- WLAN inclusion (long range)
- PoE

What about security and/or remote connectivity?

- Monitoring/Messaging
- Diagnostics

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## The Horizon

### SPE (PoDL) impact:

- Cost effective
- Signal and power
- Space saving
- Faster install
- Enabler of IIoT
  - Smart sensors

SPE and PoDL will be significant in Wind Energy



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## The Horizon

### TSN 802.1Q

- Series of standards (PTP)
- Deterministic communication in the network
- Uses regular Ethernet



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TSN will add to network reliability in Wind Energy

## Wind Network



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- Key Take Aways:
  - Easier expandability
  - Reduced downtime
    - Better diagnostics
    - Predictive Capabilities
  - Faster pro/re-action

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**Questions?**

**Thank You**