

# Managing Smart Grid Communications Network Interoperability

#### Presented by:

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 Growing Complexity in the Communications Network

 Smart Grid Communications Network Management

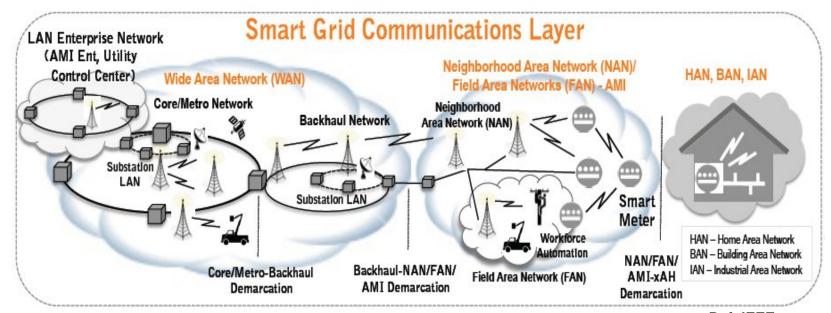
The "Managed Evolution" Approach



## Utility Communications Challenges

Millions of new, intelligent devices Multiple, integrated communications networks

Varying degrees of network visibility



Ref: IEEE

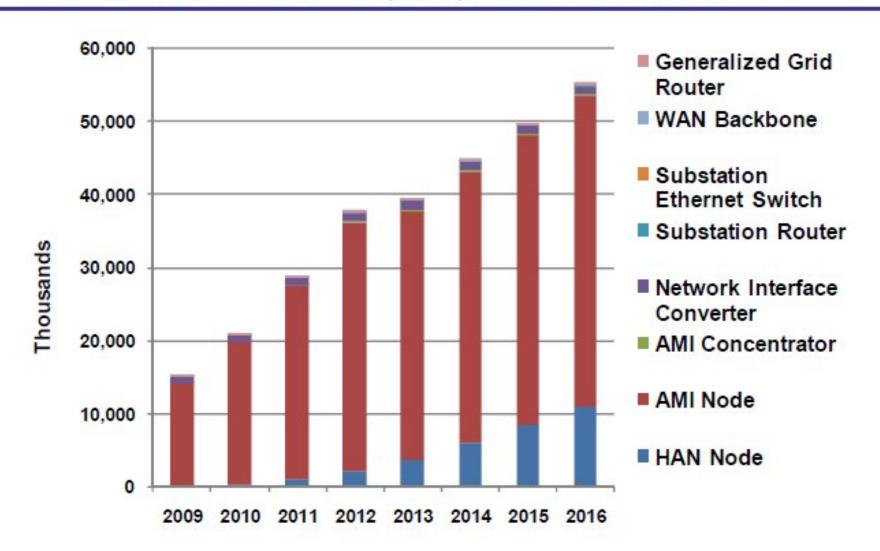
Growing volumes of data Reliability, Ubiquity, Latency, Security

Network Capacity



#### Communications Device Growth

Communications Device Forecast, Units, World Markets: 2009-2016



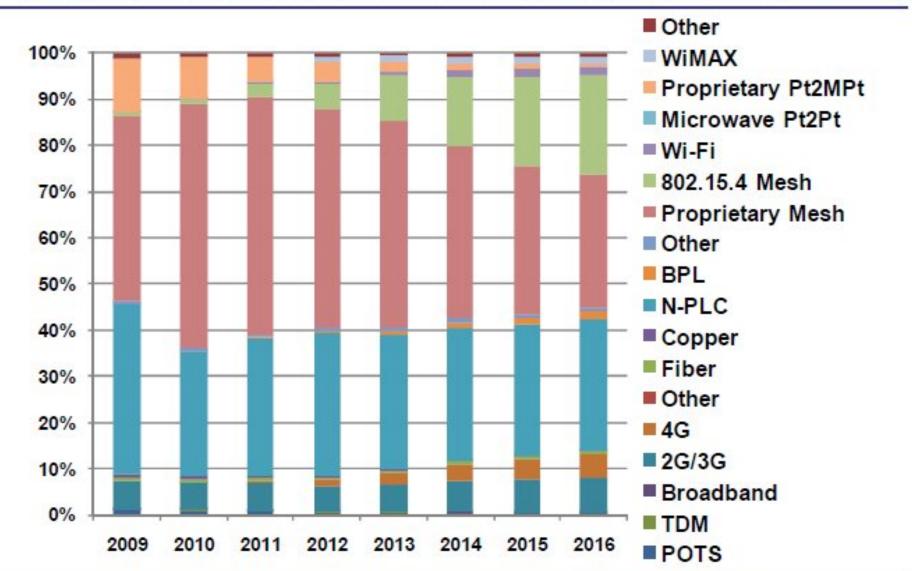
(Source: Pike Research)





## Choices of Technologies is Diverse

Communications Node Technology Distribution, Units, World Markets: 2009-2016



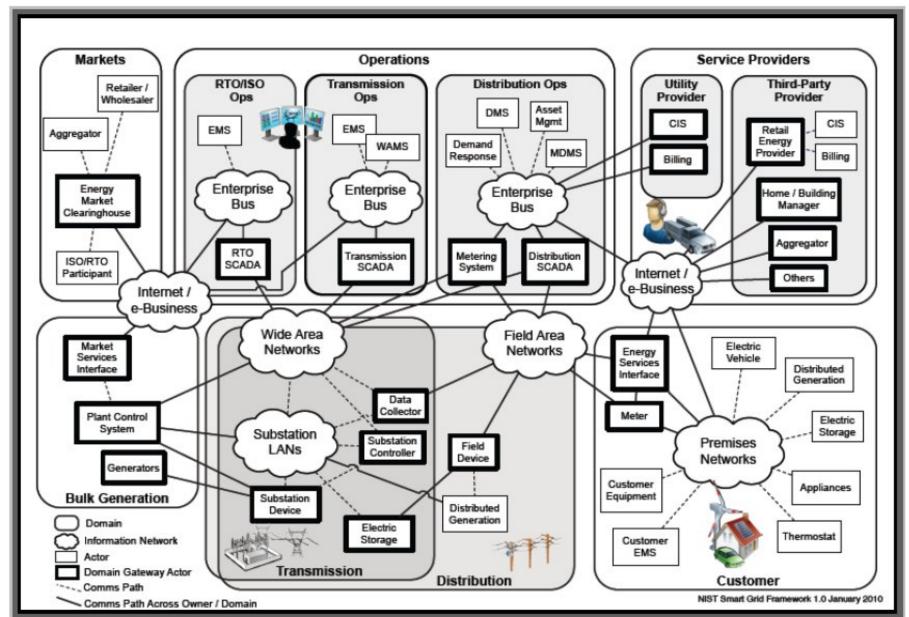
(Source: Pike Research)





#### NIST Framework Identifies Multiple Networks

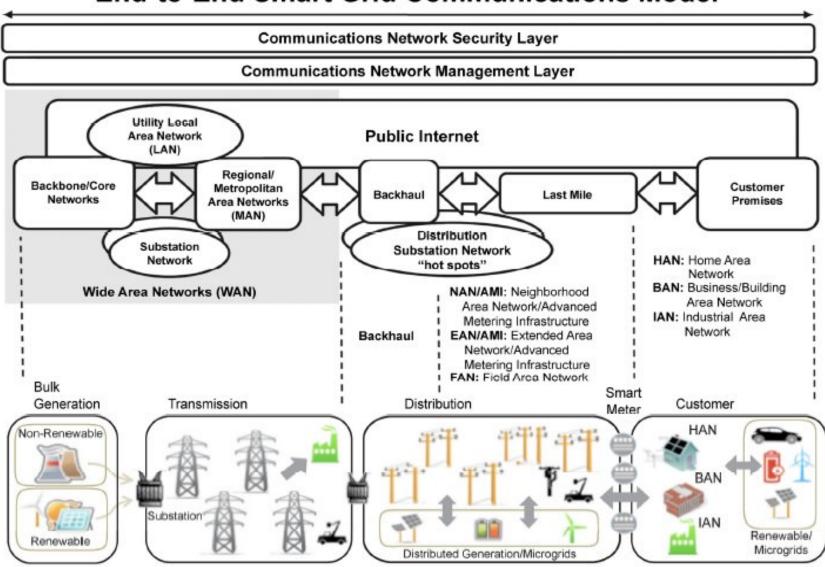
Figure 3-2. Conceptual Reference Diagram for Smart Grid Information Networks.





#### **IEEE Model Identifies Further Domains**

#### **End-to-End Smart Grid Communications Model**



Smart Grid Power & Electric System Layer

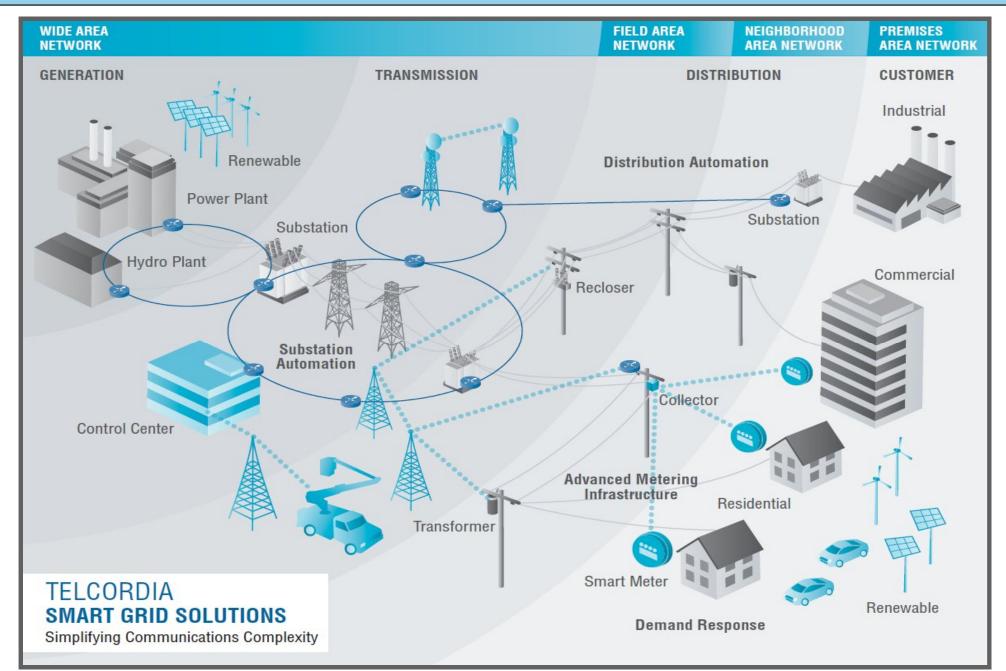
Figure 7-1—End-to-end smart grid communications model

Ref: IEEE Std 2030™- 2011



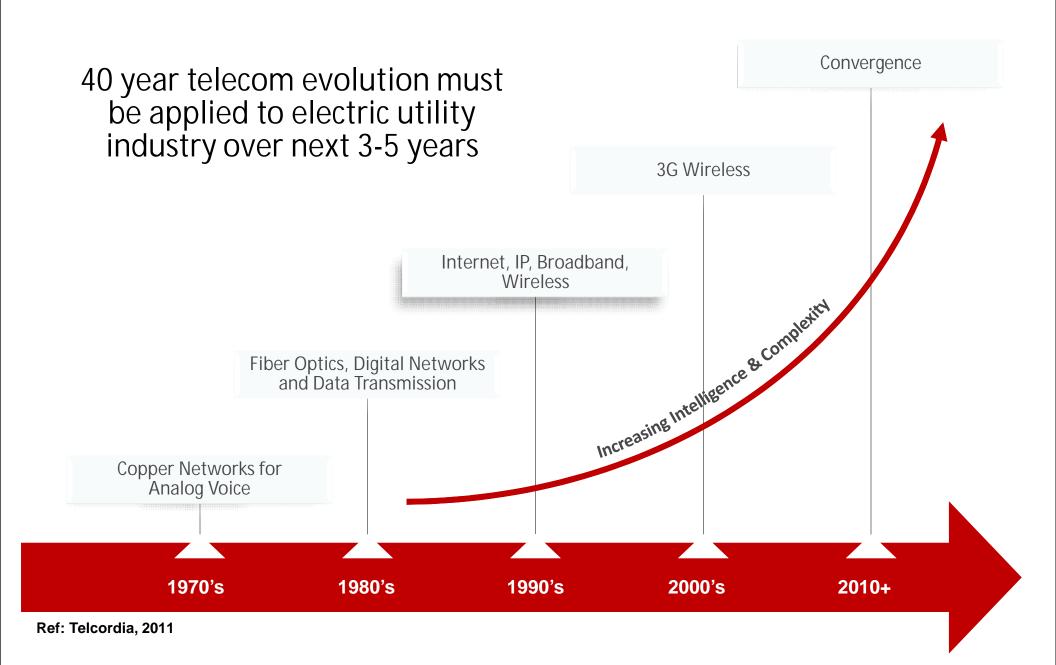


# Rationalizing the Complexity





#### **Communications Network Evolution**





### Managing Communications Network Complexity

How can I manage growing complexity while maintaining reliability, safety, and security?

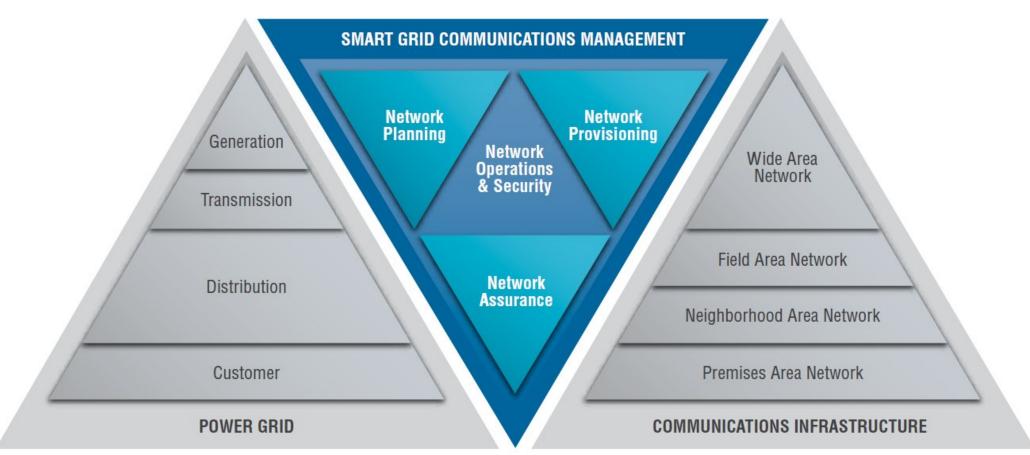


- Know your network
- Configuration & control
- Maintain accuracy
- On-going operations & maintenance





## Communications Network Management



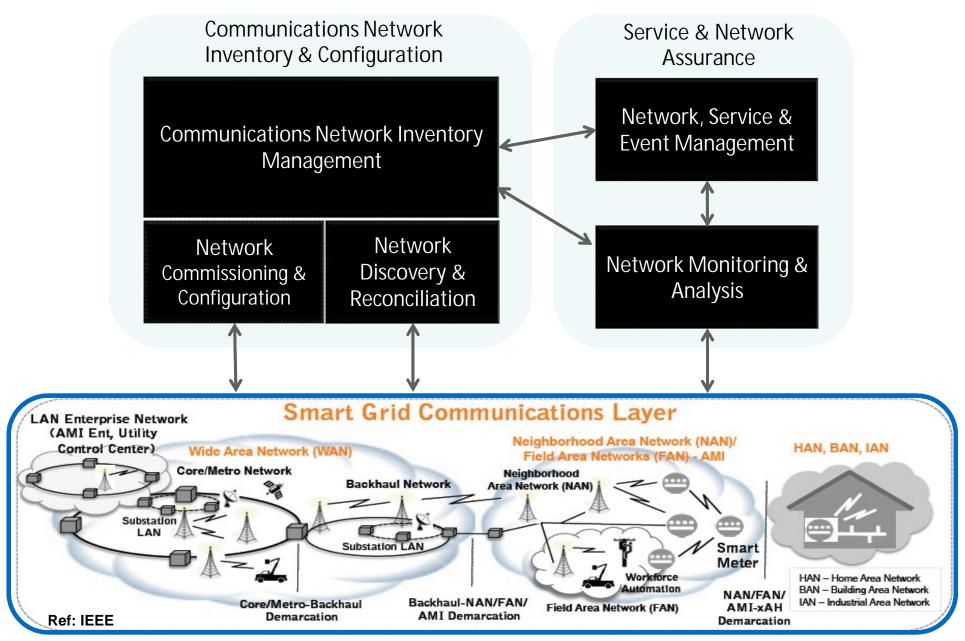
Ref: Greentech Media - "The Missing Chapter in Every Smart Grid Plan"

### Inadequate communications network operations a major threat





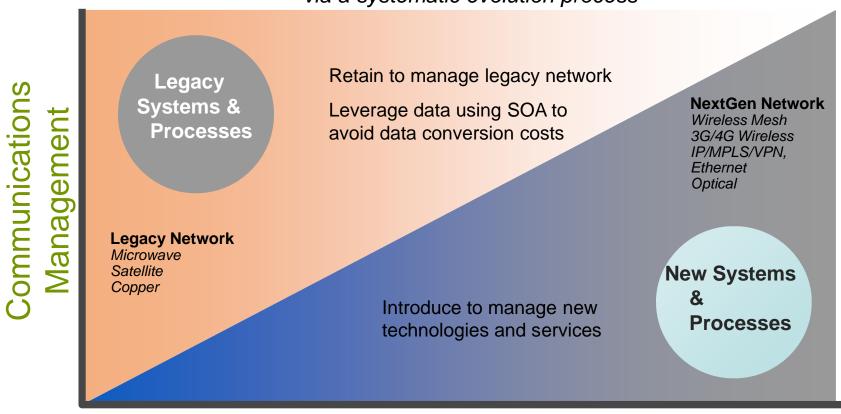
# Communications Network Management Architecture Concepts





# Managed Evolution Approach

Leveraging existing while introducing new communications technologies via a systematic evolution process



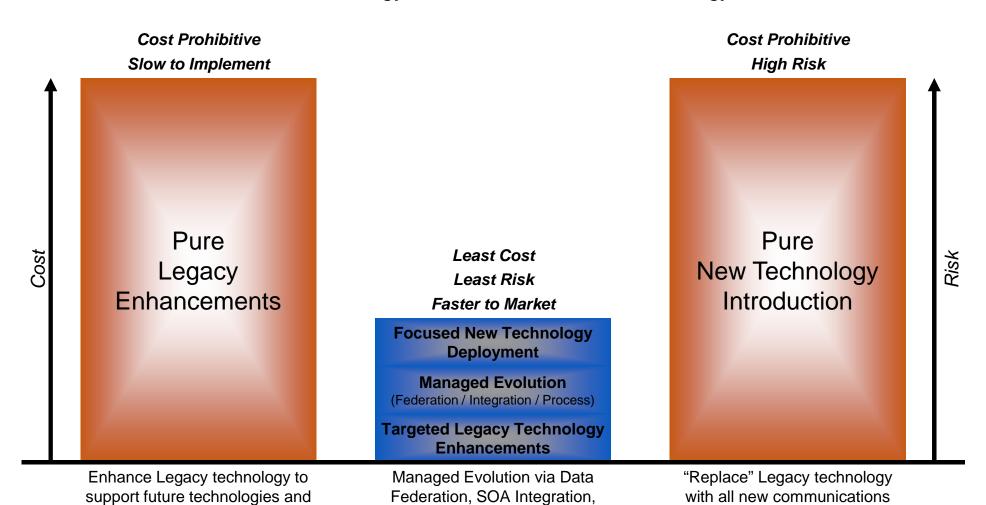
#### Time

- SOA provides an approach that supports "open" and "evolve" tactics and mitigates data migration/management issues
- Federated data techniques demonstrate the viability and value of an evolution strategy



#### Hybrid Approach Yields Lowest Cost & Risk

Managed Evolution provides lower cost, & lower risk by leveraging both legacy communications technology investments and new technology introduction



applications

systems & technologies

Process Design, etc.



#### Recommendations

- Include Communications Network Management as part of your Smart Grid strategic planning
- Seize this opportunity to plan and design a future-proof communications network management architecture
- Introduce a Managed Evolution approach to integrate legacy & new business process, data management, systems evolution and new technology introduction



Leverage cross-industry processes, systems & technology best practices to assure Smart Grid reliability, safety, security



#### **About Telcordia**

The trusted expert for solving the most complex communications challenges.

Deep expertise in communications networks, operations, and services

Provider of communications network software and services to global markets

High reliability, scalability and transaction volume software solution experience

Leadership positions in standards bodies and industry forums including NIST and IEEE

More than 1800 patents issued including wireless and data networking and IP security

Global leader in large scale, complex systems-of-systems communications network programs

Long standing 30+ year Bell system history in communications and network operations

~3000 Employees 21 Offices in 11 countries Revenues: ~\$750M+