IT/OT Convergence

**Moderator – Lee Felter,
Principal Security Engineer, MRO**

**Presenter – Doug Peterchuck,
Director Enterprise Operational Technology,
OPPD**

MIDWEST
RELIABILITY
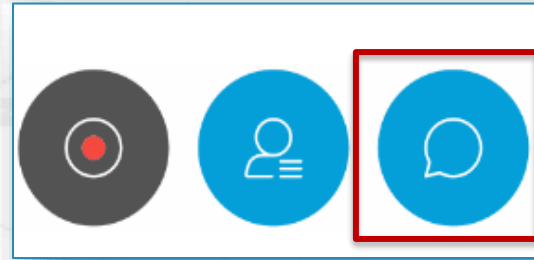ORGANIZATION

CLARITY   ASSURANCE   RESULTS

WebEx Chat Feature

Open the Chat Feature:

The chat feature will appear to the right of the WebEx window.

Attendees should chat their questions to: "MRO Host".

Select MRO Host by using the drop down arrow in the "To" field.

CLARITY   ASSURANCE   RESULTS

MRO Upcoming Events

- **Webinars**
  - Sept 21 - 10:00 to 11:00 a.m.
    - Readiness Assessment EOP-012
  - Dec 12, 2023 10:00 a.m. - 11:00 a.m.
    - 2023 Regional Winter Assessment Webinar
- **Conferences**
  - Sept 26–28
    - Hybrid Security Conference in OKC

HERO
HIGHLY EFFECTIVE RELIABILITY ORGANIZATION

FIVE BASIC PRINCIPLES:

1. **Preoccupation with failure**
   Attention on close calls and near misses ("being lucky vs. being good"); focus more on failures rather than successes.

2. **Reluctance to simplify interpretations**
   Solid "root cause" analysis practices.

3. **Sensitivity to operations**
   Situational awareness and carefully designed change management processes.

4. **Commitment to Resilience**
   Resources are continually devoted to corrective action plans and training.

5. **Deference to Expertise**
   Listen to your experts on the front lines (ex. authority follows expertise).

4

Annual HERO Award

Nominate Someone Today!

MIDWEST RELIABILITY ORGANIZATION

HERO
HIGHLY EFFECTIVE RELIABILITY ORGANIZATION

Please take a moment to complete the survey

https://www.surveymonkey.com/r/TXZXH8L

Disclaimer for organizational group hosted events or materials

Midwest Reliability Organization (MRO) is committed to providing outreach, training, and non-binding guidance to industry stakeholders on important industry topics. Subject Matter Experts (SMEs) from MRO's organizational groups and the industry may develop materials, including presentations, provided as a part of the event. The views expressed in the materials are those of the SMEs and do not necessarily express the opinions and views of MRO.

OPPD's IT/OT Convergence Journey

Doug Peterchuck – Director of Enterprise Operational Technology

Omaha Public Power District

MRO Webinar

8/29/2023

OPPD Vision/Mission/Values

Vision – Leading the way we power the future

Mission – To provide affordable, reliable and environmentally sensitive energy services to our customers.
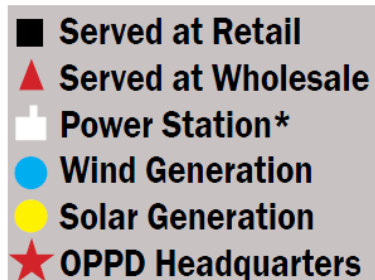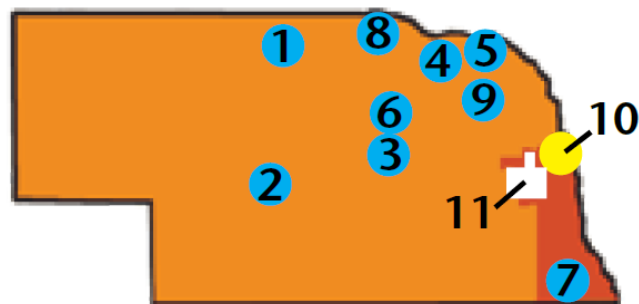
Values

— We have a PASSION to serve

— We HONOR our community

— We CARE about each other

Net Zero Carbon Emissions by 2050

OPPD Service Area and Generation

Legend:
- ■ Served at Retail
- ▲ Served at Wholesale
- ⌂ Power Station*
- ● Wind Generation
- ● Solar Generation
- ★ OPPD Headquarters

Map station labels:

Fort Calhoun Station
Nuclear plant (ceased operations October 2016)

Fort Calhoun Community Solar Facility
5 megawatts (2019)

Elk City Station
Landfill gas plant, 6.3 megawatts

North Omaha Station
Coal & natural gas plant, 577.9 megawatts

OPPD Headquarters

Jones Street Station
Oil plant, 122.6 megawatts

Sarpy County Station
Oil & natural gas plant, 316.5 megawatts

Cass County Station
Natural gas plant, 322.8 megawatts

Nebraska City Station Unit 1
Coal plant, 654.3 megawatts

Nebraska City Station Unit 2
Coal plant, 691.0 megawatts

● Wind Farms

#		MW	
1	Ainsworth	10	MW
2	Broken Bow I	18	MW
	Broken Bow II	43.9	MW
3	Petersburg	40.5	MW
4	Elkhorn Ridge	25	MW
5	Crofton Bluffs	13.7	MW
6	Prairie Breeze	200.6	MW
7	Flat Water	60	MW
8	Grande Prairie	400	MW
9	Sholes	160	MW

● Solar

10	Fort Calhoun Community Solar	5 MW

Landfill Gas

6 MW

Hydro

81 MW

From Western Area Power Administration
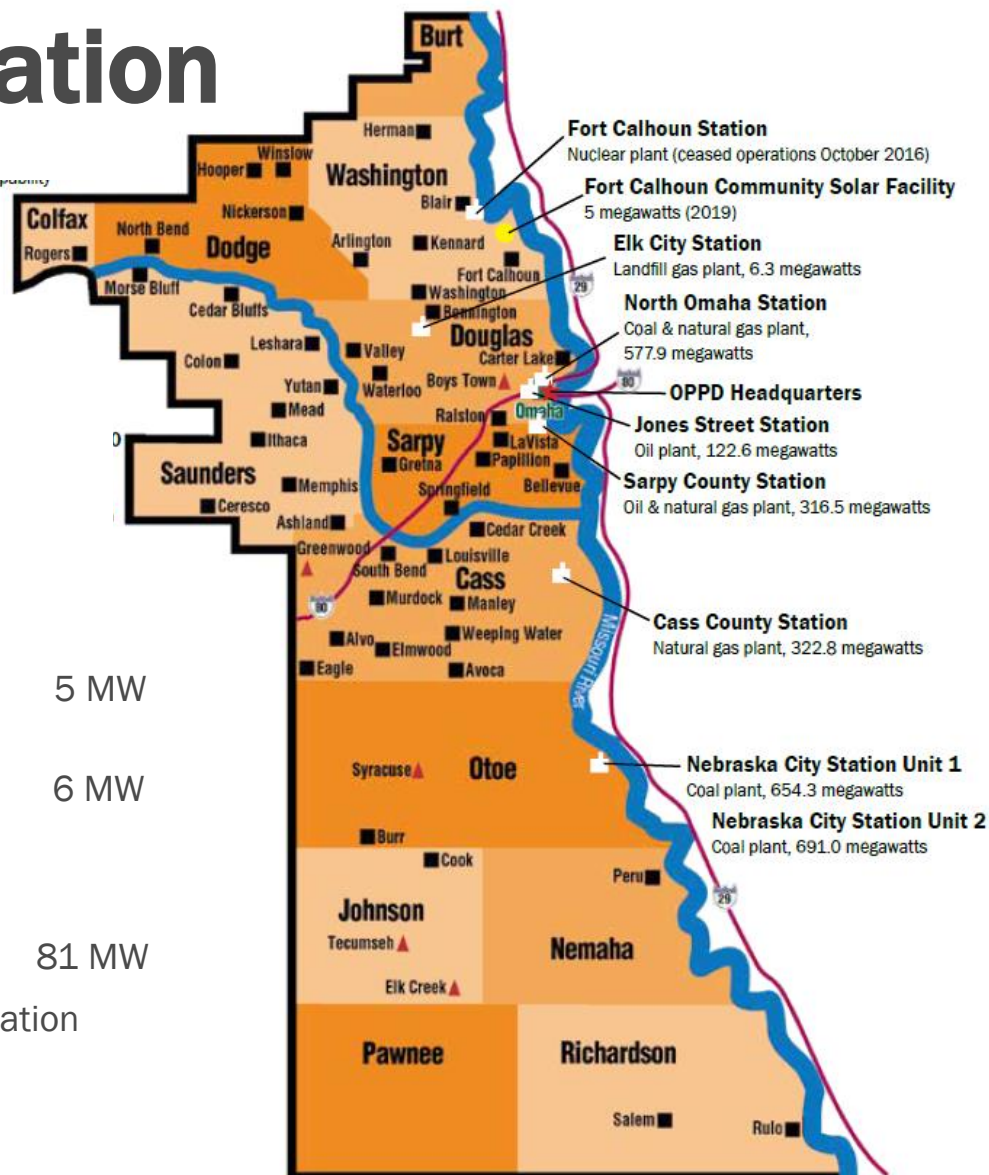
Quick Statistics

Generating Capability (Owned) 2691.5 MW	Summer Peak Load 2,509 MW
Winter Peak Load 1950 MW	Number of electric customers 400,000+
Number of employees 2,050	

IT/OT Convergence Analysis (2019)

Future of Digital Utilities

Smart generation with advanced monitoring and controls

Smart transmission and distribution

Advanced inter-connected solutions and self-service

Automation of manual functions and activities

GENERATION	FUTURE GRID	ENHANCEMENTS	UTILITY
• More diverse and decentralized network • Lower capacity • Flexible • Intelligent • Diverse • Responsive • DER Aggregation	• Communications-enabled • Self-healing • Two-way power flow • Greater asset management • Smart City Grids • EV Penetration	• Customer relationship and knowledge • Analytics • Energy management solutions • Diverse contact capabilities	• Digitally-enabled • Fully automated • Predictive analytics • Integrated corporate services • Robotic automation • AI

OPPD

Objective and Goals

Propose IT/OT convergence plan for OPPD (CEO Directive)

Goals

- Centralize and establish single point for enterprise technology functions
- Align technology best practices, decision-making, ownership, and governance – Defined OT
- Preserve role clarity, enhance bench strength and strengthen career paths
- Better position OPPD for future technological change

IT/OT Convergence Approach

✓ Benchmark

✓ Observe best practices

✓ Incorporate best practices

✓ Identify and fill gaps

✓ Minimize impact

✓ Improve overall governance and compliance

✓ Evaluate and address risks

Benchmarking: Peer org template

	Independent	Continuum	Integrated	Notes
Overall convergence	Don't be like them	○─○─○─○─○─○─○	Be like them	
Network convergence	Two or more distinct networks	○─○─○─○─○─○─○	One single network	
People convergence	Report to different leaders	○─○─○─○─○─○─○	Report to a single leader	
Security convergence	Multiple distinct security components	○─○─○─○─○─○─○	Single set of security components	
Governance maturity	Decisions made by separate groups	○─○─○─○─○─○─○	Common decision-making body	
NERC CIP Compliance	Responsibility falls on different teams	○─○─○─○─○─○─○	Responsibility falls on one group	
Vertical integration	Only does one aspect (gen, distro, office)	○─○─○─○─○─○─○	Has all components (gen, distro, office)	
Workforce complexity	All union impacts	○─○─○─○─○─○─○	No union impacts	
Future orientation	Take it as it comes	○─○─○─○─○─○─○	Structured with the future in mind	

How converged are the benchmarked orgs?

No Convergence
- Separate people orgs
- Different cyber security approaches
- No common governance
- Disseminated NERC CIP management

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Electric Utility A

Electric Utility B
Electric Utility C
Electric Utility D

Electric Utility E
Electric Utility F

Electric Utility G

Target

Local Company A

Electric Utility H

Gas Utility A

Electric Utility I

Full Convergence
- Single people organization
- Single cyber security framework
- Common governance
- Clear manager for all NERC CIP requirements

Benchmarking Takeaways

✔ Specialized staff for critical applications – EMS, plant software, etc

✔ Common governance for decisions

✔ Manager focused on NERC CIP implementation and coordination

✔ Network/Security Operations Center

✔ Embedded teams/Business partners

✔ Grid Technologies group to evaluate future technologies

✖ Single team supporting all applications, both OT and IT

✖ Siloed teams with no cross-functional knowledge

✖ Multiple groups that make independent decisions

✖ Loose ties related to security, lacking coordination for protection approach

✖ Too much change, too fast

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Risks and Timeline

RECOMMENDED DECISION

IMPLEMENTATION

Nov 2020 → 2021

Risks of Pursuing

- Individuals may resist change

- Culture of compliance is ingrained within Energy Delivery and not as much in Technology

- Moving teams from one business unit to another may cause operational, compliance and governance challenges

Risks of Not Pursuing

- Keep growing technology teams in various business units

- Not leveraging the full strength of technical staff

- Governance and compliance challenges continue

- Ability to address ever-changing industry trends in compliance and security becomes more difficult in the future

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Benefits of Organizational Convergence

TEAMS

Sets teams up for growth & change
- Substation and distributed devices
- EMS, ADMS, OMS, AMI
- Increased generation capacity

STRATEGY

- Shared learning and better coordinated strategy for OT and traditional IT

SKILLS

- Builds skills and bench strength across specialized OT teams

COMPLIANCE

- Better coordinated compliance approach (CIP PM)

DATA

OT data integration with corporate systems is a must for long-term value
- Asset Management Fault Location
- Outage Communication Advanced Distribution Management

LEADERSHIP

- Dedicated OT Director elevates and highlights the critical nature of OT work
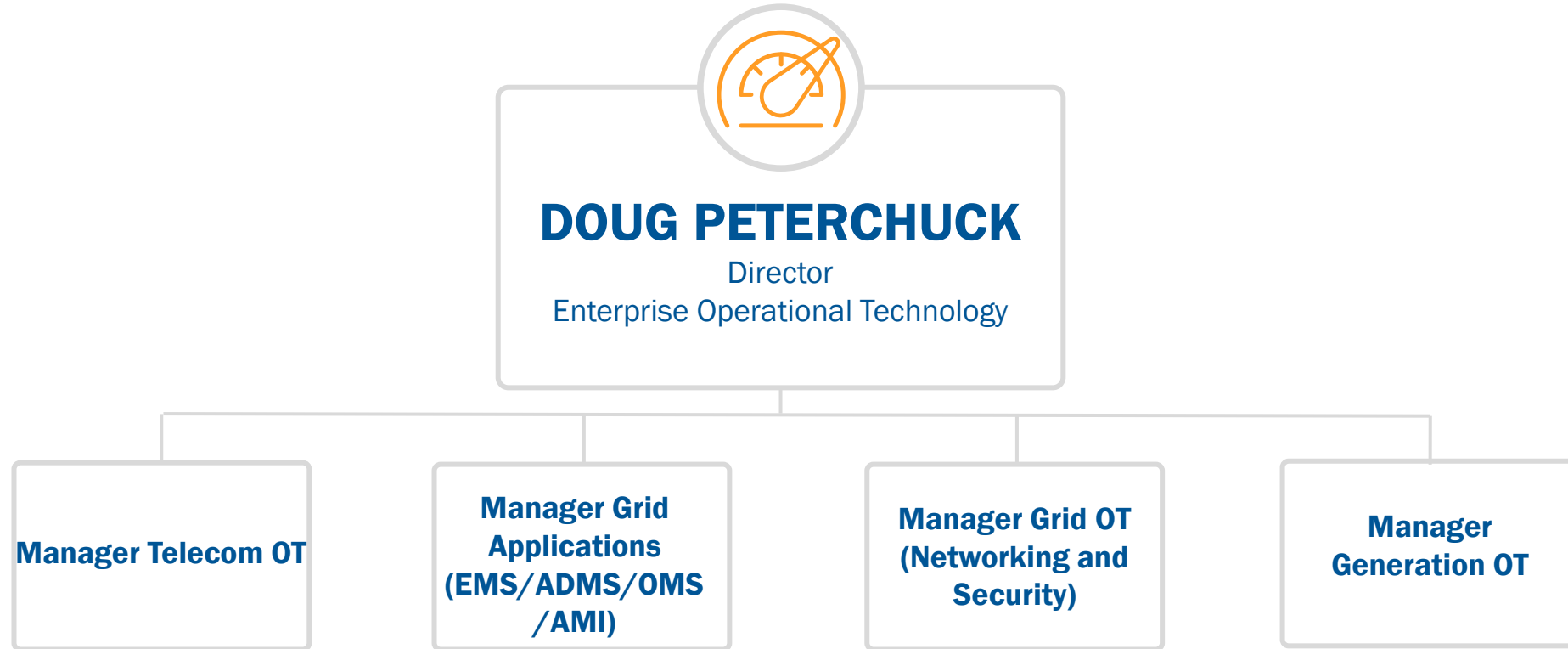
GOVERNANCE

- New governance model and org change promotes decision making and best practices

Organizational Moves (2021)

Enterprise Operational Technology

DOUG PETERCHUCK
Director
Enterprise Operational Technology

Manager Telecom OT

Manager Grid Applications (EMS/ADMS/OMS /AMI)

Manager Grid OT (Networking and Security)

Manager Generation OT

Enterprise Operational Technology

Grid Control Systems| Generation Control Systems | Critical Telecommunications | EOT Lifecycle Management

GRID OT & OT APPLICATIONS

ENGINEERING

OPERATIONS

T&D Control System Environments
- Application Support of Energy Management System (EMS)
- Utility Engineering Work Order Support and Field Support
- EMS Lifecycle Management
- Networking out to Substations
- NERC CIP Compliance associated with a High Impact System (EMS)
- Outage Management System (OMS)/Distribution Management System (DMS) Ownership
- AMI Headend Application

GENERATION OT

ENGINEERING

OPERATIONS

Plant Control Systems
- Design and Support of Plant related control systems
- Generation Distributed Control Systems (DCS) and Operator workstations
- Lifecycle Management of Routable Industrial Control Systems and HMI
- Operational Data Historians
- Emissions Monitoring Systems

TELECOMMUNICATIONS

ENGINEERING

OPERATIONS

Telecom Systems
- Fiber Environments and Infrastructure Design, Lifecycle Management and Support
- Microwave Communications and Infrastructure Design, Lifecycle Management and Support
- Handheld Radio (Motorola) Infrastructure Design, Lifecycle Management and Support
- AMI Field Area Network
- 28 Tower Sites

Enterprise Operational Technology

Grid Control Systems| Generation Control Systems | Critical Telecommunications | EOT Lifecycle Management

PROTECT

Keeping employees safe at work
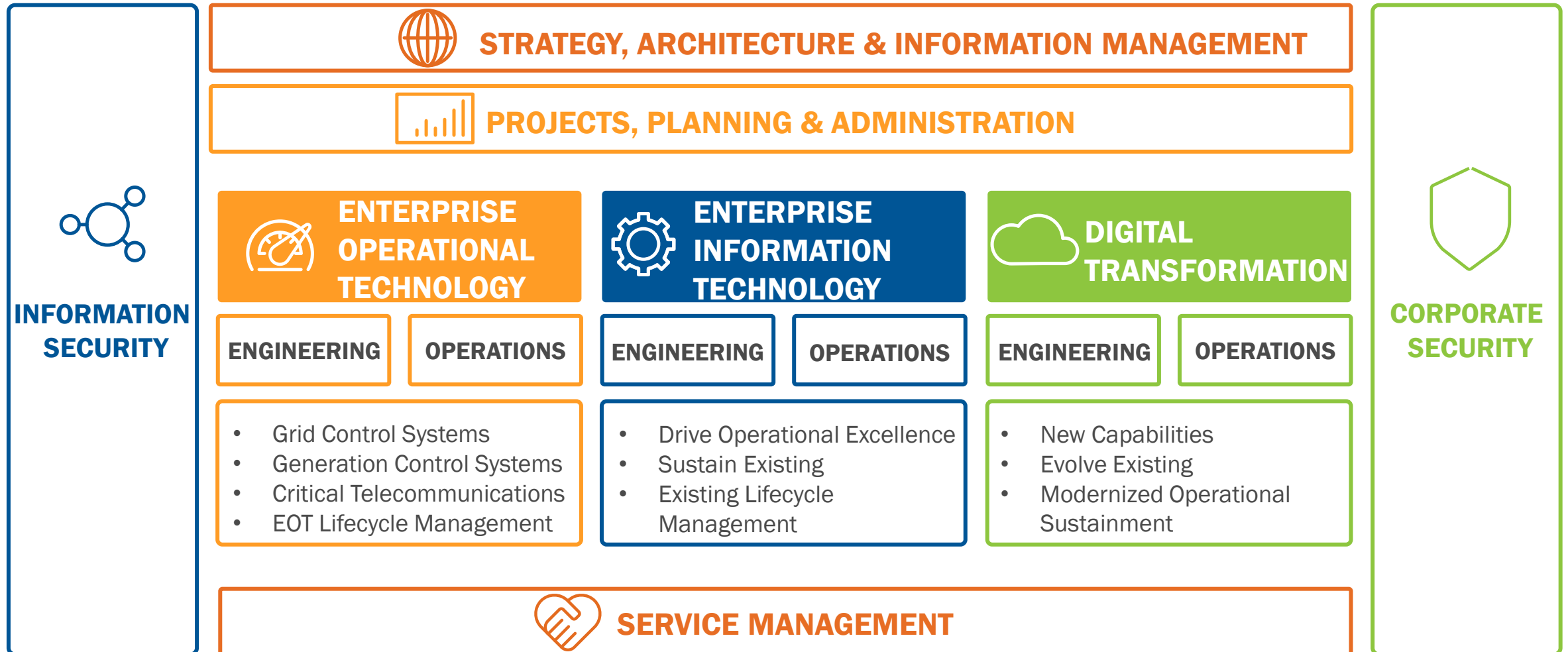
COMPLIANT

Staying secure and compliant

DEPENDABLE

System dependability and reliability to ensure energy production

Technology & Security

INFORMATION SECURITY

STRATEGY, ARCHITECTURE & INFORMATION MANAGEMENT

PROJECTS, PLANNING & ADMINISTRATION

ENTERPRISE OPERATIONAL TECHNOLOGY	ENTERPRISE INFORMATION TECHNOLOGY	DIGITAL TRANSFORMATION
ENGINEERING / OPERATIONS	ENGINEERING / OPERATIONS	ENGINEERING / OPERATIONS
• Grid Control Systems • Generation Control Systems • Critical Telecommunications • EOT Lifecycle Management	• Drive Operational Excellence • Sustain Existing • Existing Lifecycle Management	• New Capabilities • Evolve Existing • Modernized Operational Sustainment

SERVICE MANAGEMENT

CORPORATE SECURITY
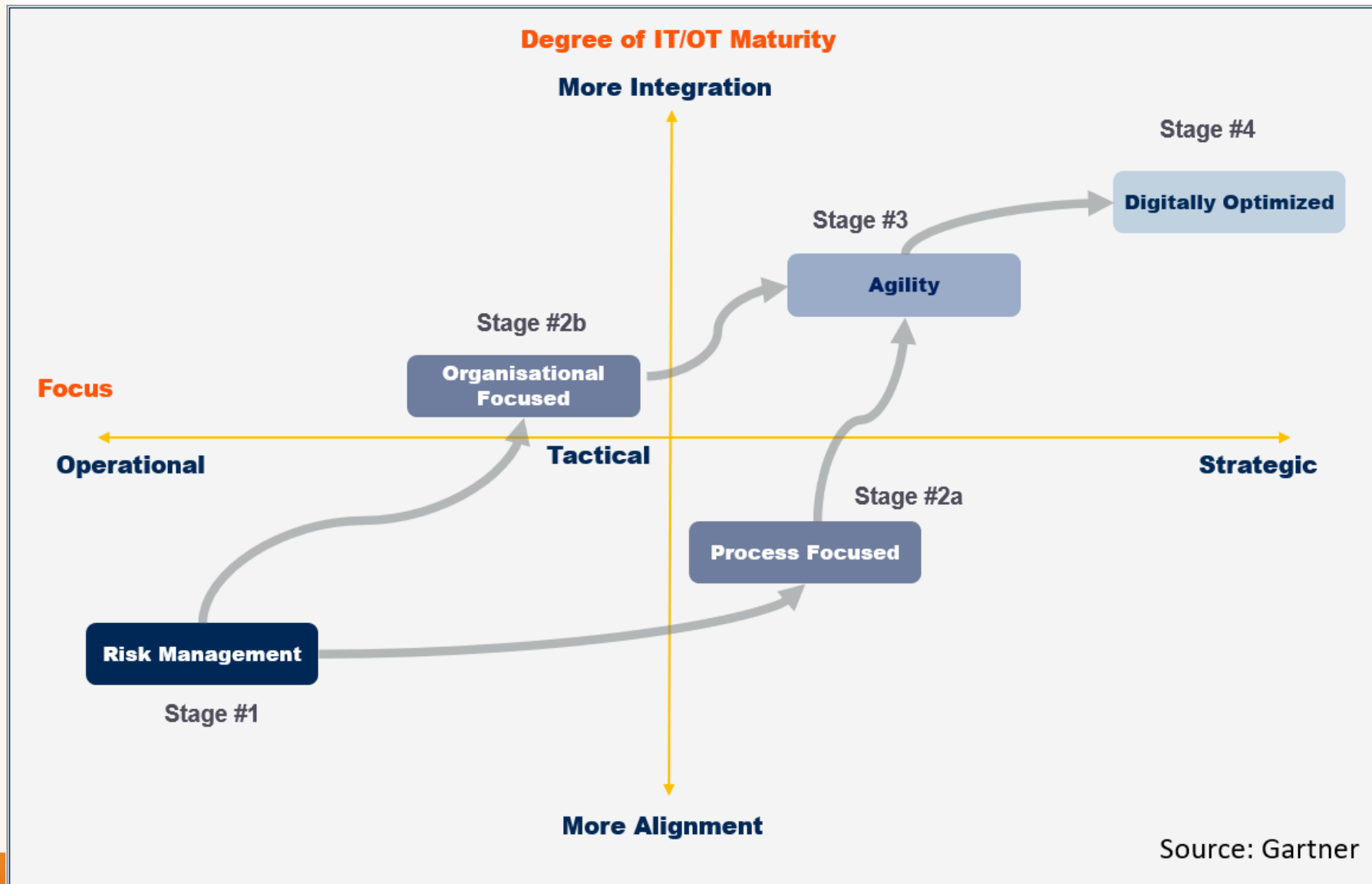
Convergence Maturity as of Today

Completed Convergence Efforts as of Today

- Participates in consistent budgeting, resource planning, project initiation kit and solution sizing

- Align on position descriptions

- Utilizes business unit Project Management Office

- Participates in business unit Asset Management Program (AMP)

- Embedded within the IT Service Management (ITSM) Priority Incident Response Plan

- Initiates of applicable ITSM Priority Incidents and assigned applications to ITSM Priorities

- Submits significant changes to business unit change advisory board from Grid OT and Telecom OT

- Identifies OT domains under IT ownership have migrated to OT ownership alignment with network monitoring, event logging and security tools

- Aligned with CIO and enterprise priorities
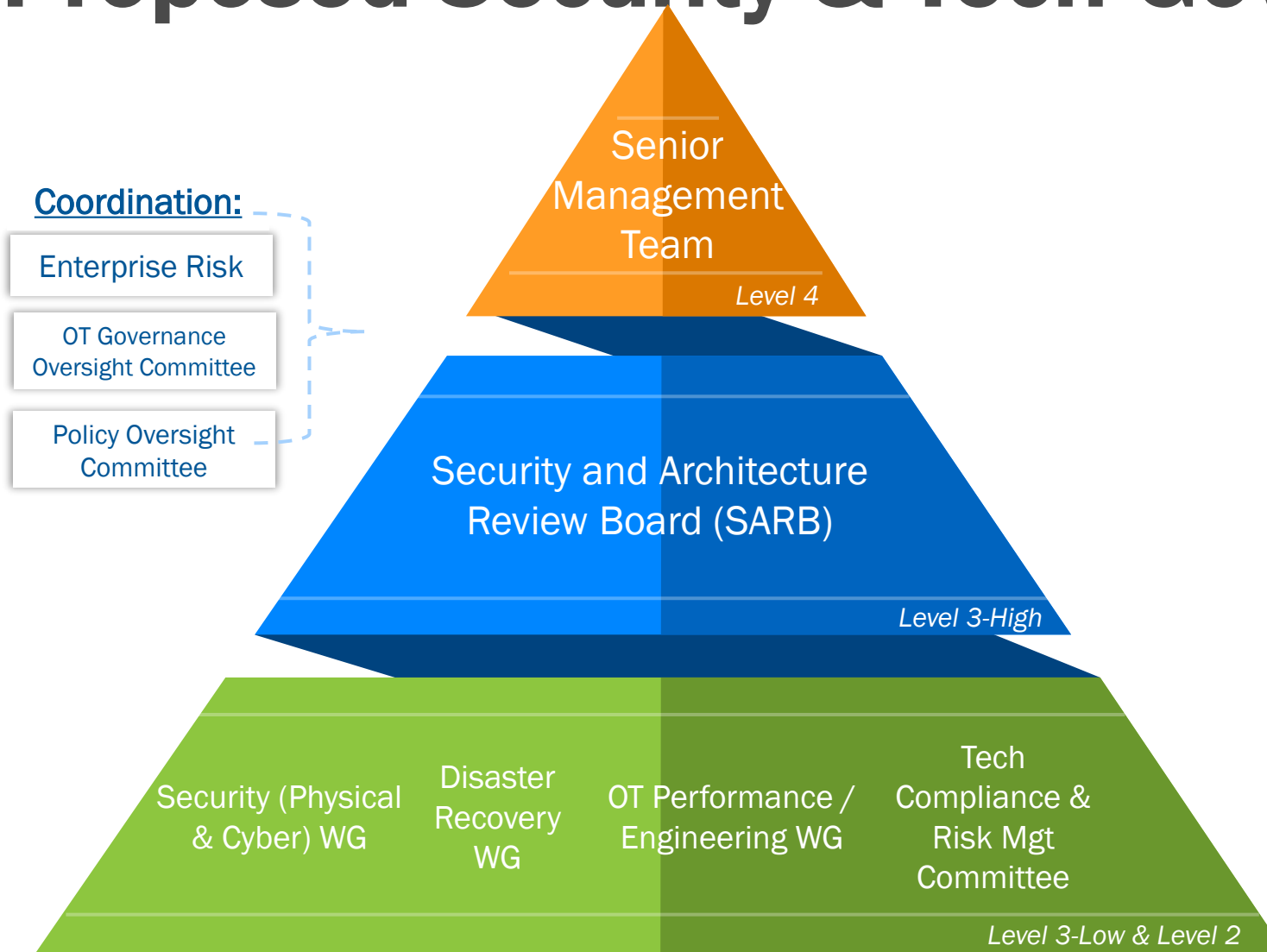
Challenging Convergence Areas

- Generation and Grid OT departments use SigmaFlow to manage and log all changes within OT environments (CIP related)

- Service Level Agreements with T&D Operations and Generation Operations remain, which require direct calls to OT support personnel regarding identified system/application challenges identified by the System Operators

- Handing off OT related operational/day-to-day responsibilities to ITSM

- OT domains (i.e. hardware, networking, DMZs) continue to be segmented from corporate environments and managed via dedicated departments

- OT and IT Traffic within our Fiber MPLS platform

IT/OT Security and Architecture Governance

Proposed Security & Tech Governance Structure

Coordination:

- Enterprise Risk
- OT Governance Oversight Committee
- Policy Oversight Committee

Senior Management Team
Level 4

Security and Architecture Review Board (SARB)
Level 3-High

Security (Physical & Cyber) WG

Disaster Recovery WG

OT Performance / Engineering WG

Tech Compliance & Risk Mgt Committee

Level 3-Low & Level 2

- SARB focus: Security and Architecture Risk Management

- SARB approves policies, reviews enterprise risks, provide guidance to working groups (WGs)

- WGs develop policies, procedures, designs, solutions, review activities

Questions?