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# Telecom Operational Challenges In Power Grid Management

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# Agenda

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**Introduction**

**Operational Challenges**

**Conclusion**

# Introduction

## Why do power companies need to have telecom networks?

The power grids need to be controlled by intelligent systems in order to enhance:

- Efficiency
- Reliability

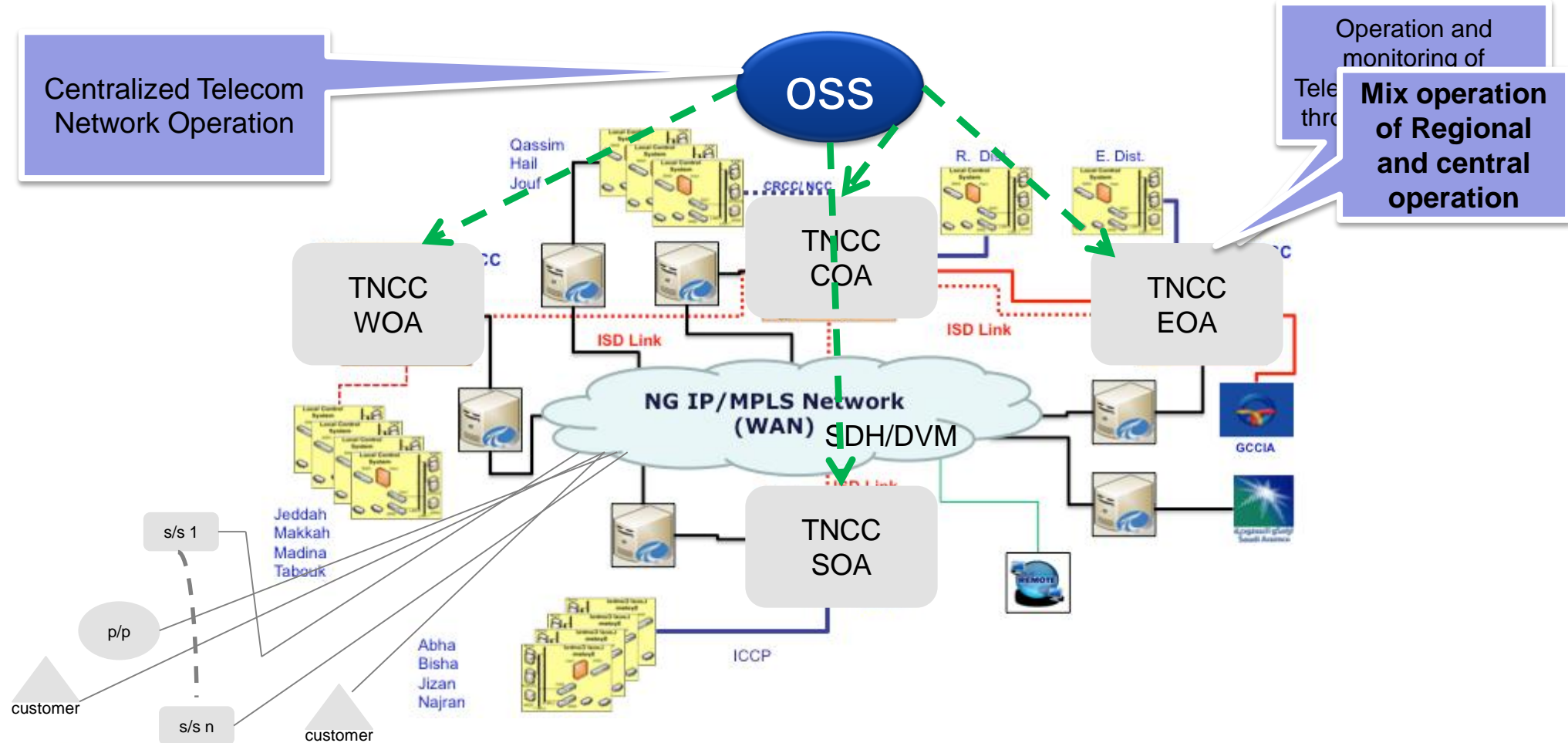
The main purpose of having telecom networks in power grid is the capability of continuous monitor and control the health of the power grid.

National Grid (NG) has a wide Fiber Optics network of above 66K km, deployed in the kingdom that construct an infrastructure for connecting the major cities in all regions.

NG is Transmission Telecom network comprising of nodes from various well-known vendors like Nokia, Coriant, ABB, Huawei, NEC, Alstom etc., is serving its internal and external customers kingdom-wide.

# Introduction

Power Network Control centers, substations, Power Plants and customers are communicating on Telecom Cloud comprise of WAN, SDH DVM and now DWDM technology



# Operational Challenges

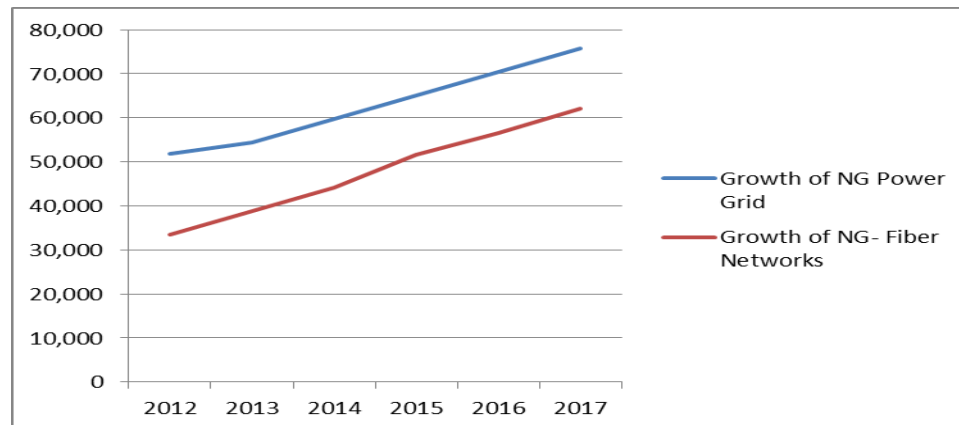
The operating environment for telecom network is turning increasingly complex. Telecom Networks operational challenges appear as power companies move towards deploying a complex network infrastructure:

## 1. Growth of Power Grids:

Power grid projects are following the expansion of the government strategic development plan to all vital sectors in Saudi Arabia.

Saudi Arabia-National Grid is fully aware of the kingdom's infrastructure advancement and has continuous plans to cover that public demands

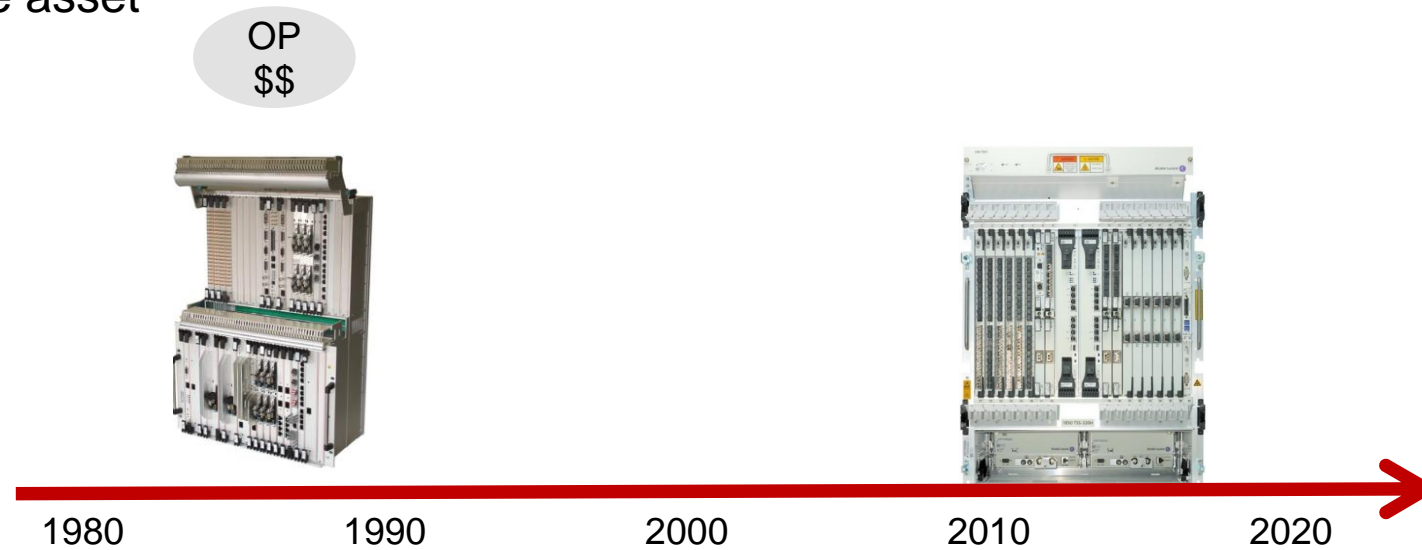
National Grid is expanding it's grid by around 7% every year, to meet the upcoming demand for power.



# Operational Challenges

Expansions in the telecom network are demanding planning and deployment of additional technologies from time to time.

the challenge appear to reduce the cost of operation and network sources optimization. Cost optimization of bits/\$ is crucial factor considering deployment of Telecom asset and operate these asset



# Operational Challenges

## 2. Different Operation Models To Use in A Converging Environment

### **Purely Centralize Operation of whole Telecom Network**

This approach has advantage of visibility, monitoring and control of all telecom asset and services for one location one NOC

- Control on operation cost
- Failure Risk associated with this option.

### **Mix operation of Regional and central operation.**

This approach is costly compare of purely centralize approach due to multiple NOC centers and manpower duplicity.

- More reliability.
- Distributing work of rerouting traffic during emergency. I
- two levels of monitoring ensure safer operation.

### **Purely regional (NOC) Operation in silos**

This approach is mild in economic terms but costlier than purely centralize approach. However it is not as safe as mix operation. But safer control due to smaller section of network is controlled by more operators.



# Operational Challenges

## 3. Power Grid Security and Cyber Attacks Risks

The increase of potential threats and attacks to power grid is jeopardize the reliability of the telecom network infrastructure. As that risk rise, securing the utilities telecom networks becomes one of the most critical challenges to ensure the stability of communication network.

points to be considered:

- The Importance of Security Awareness.
- Certain precautions in operation practices are essential like vendor remote access support, disabling USB, DVD functions, etc.
- Segregation between Operational Technology (OT) and Information Technology (IT).
- Security Solutions:
  - Security operation center (SOC) is needed for the modern smart grid.
  - End Point protection is best practice to ensure safety of grid and telecom asset.



# Operational Challenges

## 4. Capacity and Inventory of Bandwidth are Critical Resources.

With the rapid expansion and growth of NG sa telecommunications services comes the need for an accurate effective method of service fulfillments, asset management, capacity planning, Design a& Engineering, work-flow management and provisioning.

The challenge appears when trying to create a Master Integrated Telecom Database Management system (MITDMS).

This MITDMS is a state of the art technology based Database and Service Planning and analytic platform.

This centralized unified Data Base Management System (physical & logical for networks, services & resources) to satisfy planning, Engineering, designing & assigning requirement and information discovered and un-discovered both of entire network.

The state of the art Database & Service Planning platform will assist for managing, improving existing discovered database along with manual un-discovered data.

# Operational Challenges

## 5. Planned / Unplanned Outages and Force Majeure Cases.

To have the outages in the telecom network is one of the challenging items that is not only making the operation and maintenance activities hard but also have a distinct impact on the customers (Internal/External).

Mainly the reason behind such cutover can be categorized in three main categories.

- **Planned outage:** activities are carried out for many unavoidable reasons like new node insertion, cable replacement, cable rerouting, Nodes migration, Mandatory upgrades etc
- **Unplanned Outages:** is the term that mostly refers to the cutover executed that were not planned in advance and the affected stakeholders were not in the picture for any such unforeseen cutover
- **Force Majeure:** "force majeure" generally includes "risks beyond the reasonable control of a party, incurred not as a product or result of the negligence of the afflicted party. the challenge here for a telecom network operation is to clearly define the cases that will be treated as force majeure. SLA should mentioned these cases.

# Operational Challenges

## 6. Return On Investments (ROI) In Utility Telecom Networks

**The challenge is to reduce the operational costs and increase ROI.**

Selecting proper business model and customize platform like using B/OSS (Business-Operation Support system) will help to optimize operation cost.

Monetizing the spare of the network capacity resulting an increased ROI.

# Operational Challenges

## 7. Phasing out and Evolution of Technologies

Technologies Development is a non stoppable process. Always there will be need to get the latest features of the software and the equipment itself.

On one hand it surely brings advanced approach of the system control but on the other hand opens a door of multiple challenges to the user

Following challenges must be encountered whenever there is an evolution in technology,

- Compatibility of the old nodes with new software
- Service migration activities from old to new tools
- Interface match or Interface mismatch
- Level of manageability for the phased out devices
- Upgrade works required on software and hardware level
- Data migration from old version to new version

# Operational Challenges

## 8. Quality Assurance

Delivers the appropriate Quality of Service (QoS) to each customer, according to the needs of customer.

Testing for telecom asset before putting in operation requires a discrete approach that answers specific needs.

Testing and Quality Assurance Services for Telecoms asset has to be end-to-end testing solutions for:

- Core systems such as operations, business support and test frameworks
- Applications and devices
- High-tech network and embedded systems

# Operational Challenges

Managed Testing Services delivers significant benefits to the business including:

- **Significantly reduced total cost of testing:** balanced outsourcing can yield substantial savings
- **Measurable quality improvements:** It will prove prevention of Majority of high-severity defects and improve time to put in operation.
- **Skills transfer:** embedding capabilities into organization and ensuring quality across multiple vendor environments

## Conclusion

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The challenges of rising global energy demands, need for operational cost reduction, improve performance and quality of the services provided are driving the need to deliver reliable, secure, and competitive telecom services.

Through wise investment and planning, selecting best operation model, National Grid (SA) can achieve its business objectives and increasing their ROI.



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# Thank You