

# Transmission ITP

## Communications

PJM State & Member Training Dept.

# Objectives



The student will be able to:

- Identify the various PJM communication protocols and procedures
- State the function and use of the PJM All-Call System

# **PJM Communication Protocols**

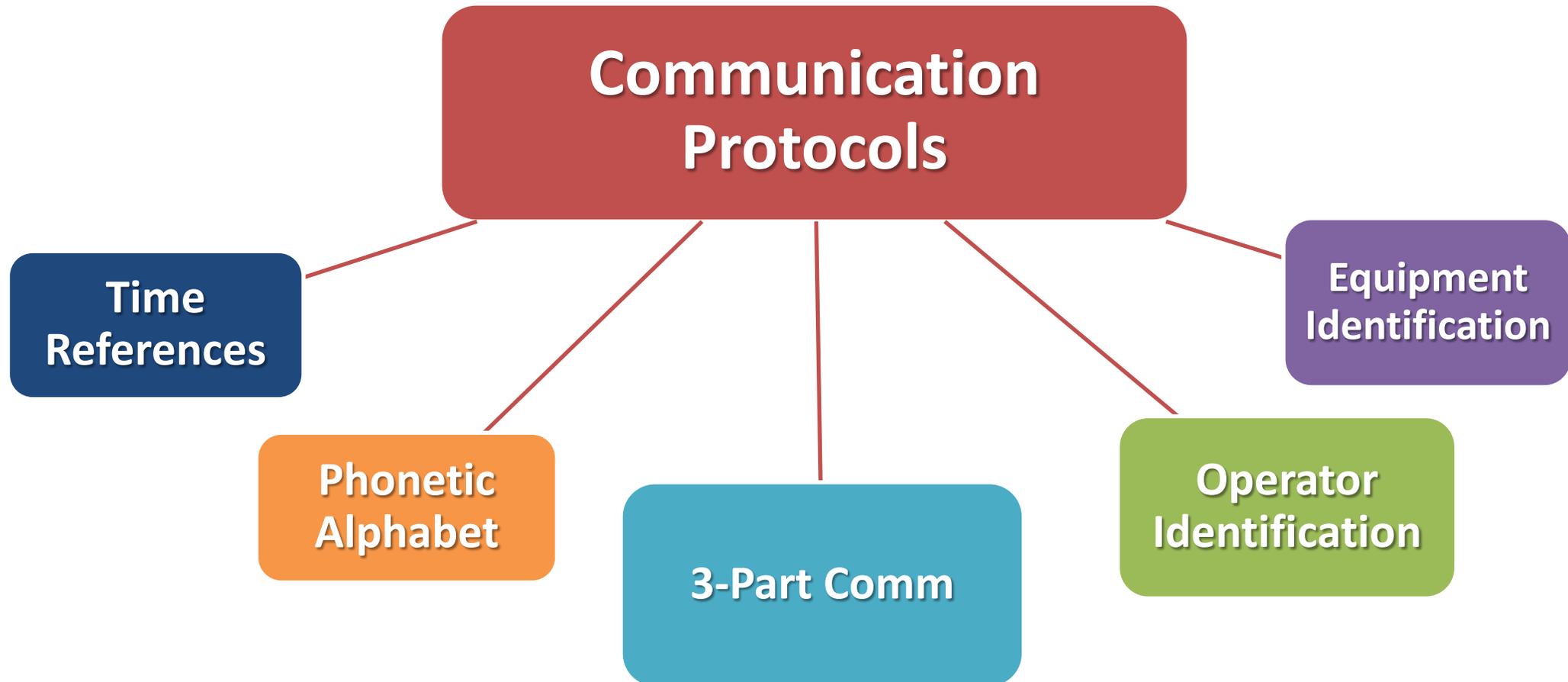
## **3-Part Communication**

# PJM Communication Protocols

- PJM Communication Protocols coincide with NERC Standard COM-002-4\*
- Communication Protocols from PJM Manual 1
- The purpose is to improve communications when issuing and receiving Operating Instructions

\*PJM Manual-1, Section 4.2.4  
COM-002-4 effective 7/16/16

# PJM Communication Protocols



# PJM Communication Protocols

- Communication protocols are based on issuance of an Operating Instruction
- The use of 3-part communication would be required when issuing or receiving an Operating Instruction
- This would apply during both normal and emergency operations

\*PJM Manual-1, Section 4.2.4

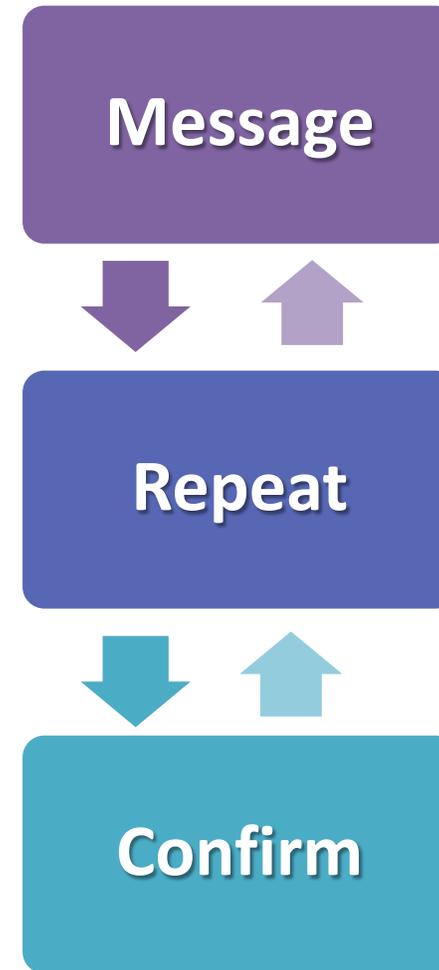
# PJM Communication Protocols

## *Operating Instruction Definition*

- A command by operating personnel responsible for the Real-Time operation of the interconnected Bulk Electric System to change or preserve the state, status, output or input of an Element of the Bulk Electric System or Facility of the Bulk Electric System

# 3-Part Communication

- “Operating Instructions” as defined in M-1 required the use of 3-Part Communication
- Internal audits are performed to verify use of 3-Part Communication
- Best practice:
  - Use of 3-Part Communication for all exchanges



# 3-Part Communication

**Message**



- ✓ Clear & Concise
- ✓ Speak Slowly
- ✓ Re-start communication process when signs of confusion are present

# 3-Part Communication

**Repeat**



- ✓ Ask for clarification if necessary
- ✓ *Understand* information
- ✓ Repeat back information correctly and thoroughly

**Note:** Provider/Sender of information should prompt repeat of information if not done voluntarily

# 3-Part Communication

**Confirm**

- ✓ Repeat message if necessary
- ✓ Correct receiver of information if repeated incorrectly
- ✓ Provide proper confirmation

| Acceptable           | Unacceptable       |
|----------------------|--------------------|
| Yes, that is correct | Yeah, man          |
| Ok, that is correct  | OK                 |
| Correct              | Alright, yeah, bye |

# PJM Communication Protocols

## Operating Instruction Examples\*

Ordering Transmission equipment in or out of service

Load shed instructions

Ordering generation MW/MVAR output changes

Ordering generation online or offline (real-time or in advance)

\*Partial List

# PJM Communication Protocols

## Non-Operating Instruction Examples\*

Confirmation of ratings or power flows

Discussion of operational options

Discussions of generator status availability

\*Partial List

# PJM Communication Protocols

## *Additional Protocols & Requirements*

- Last name should always be used for identification (at a minimum) along with company name
- All-Call Messages will be confirmed based on confirmation of acknowledgement of message
  - Indicated by Operators selecting “2” to acknowledgement the message

# PJM Communication Protocols

## *Additional Protocols & Requirements (con't)*

- Time references should be stated in 24 hour format using time zones when appropriate
- Phonetic alphabetic may be used to clarify information as necessary

# PJM Communication Protocol

## *Equipment & Transmission Line Identification*

- **Transmission Lines** – Terminal to Terminal, Voltage level and line number
- **Other Equipment/Substation** – Station name, equipment number equipment type
- **Generating Station** – Station name, unit number

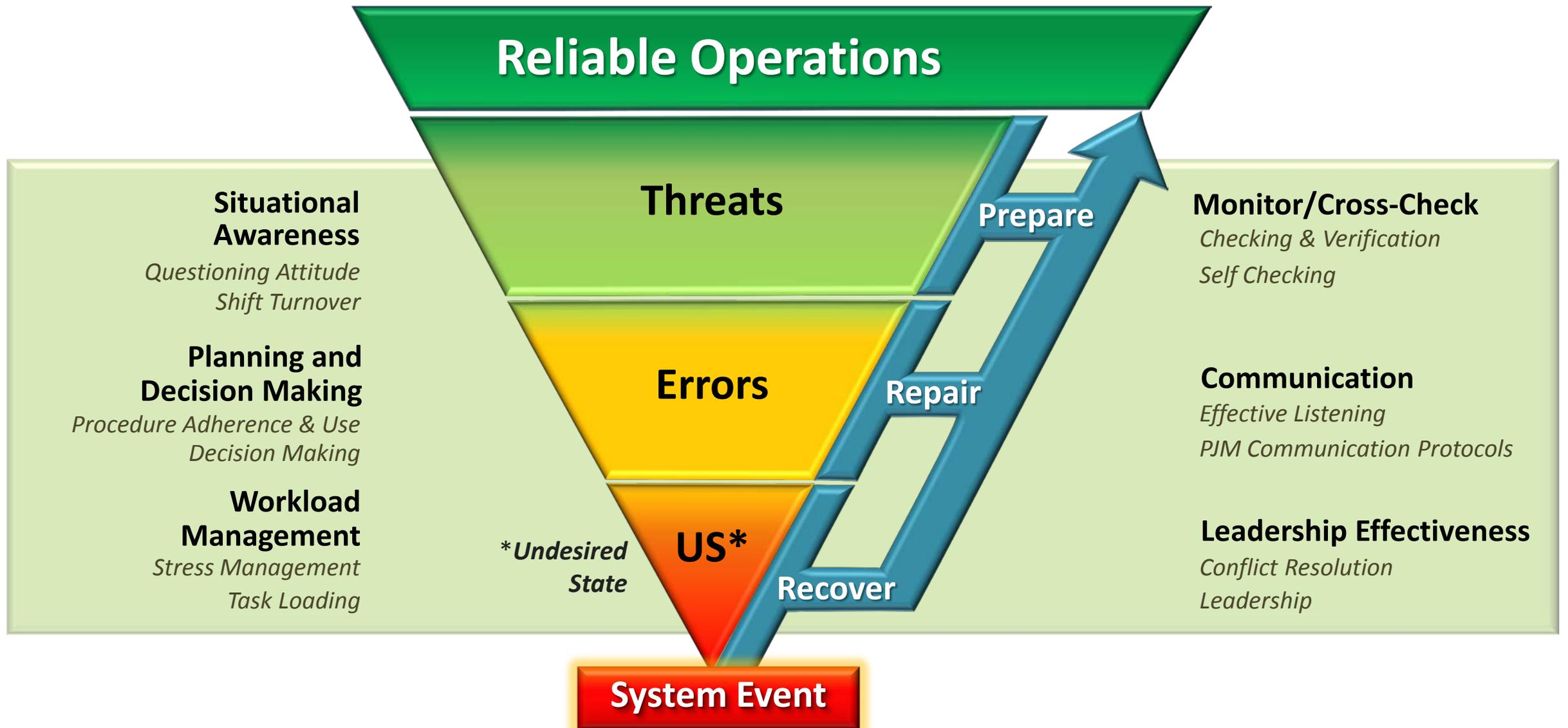
# PJM Operating Instructions

## *What are the requirements of a Member Operator when issued an Operating Instruction?*

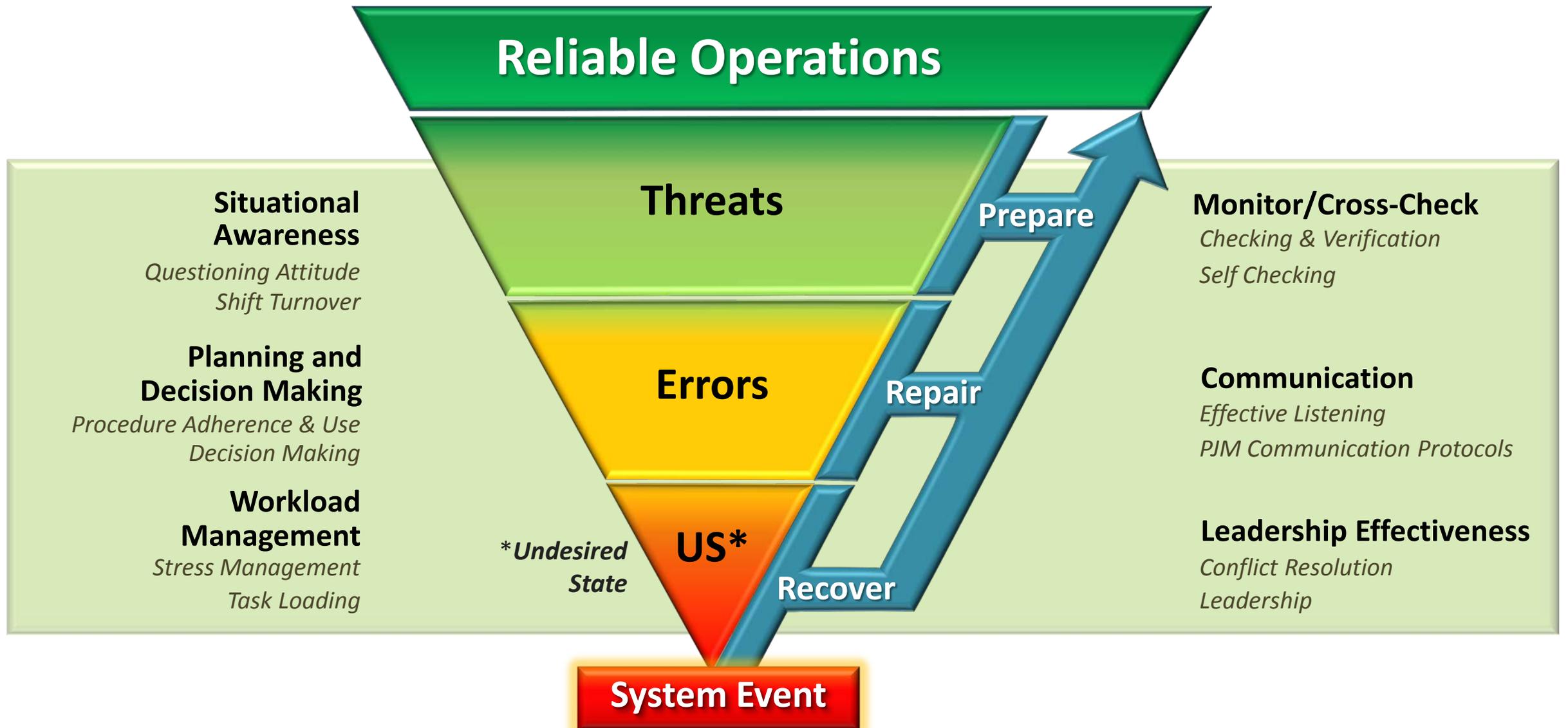
- PJM Members who are unable to comply with an Operating Instruction should communicate this to PJM immediately
- Restrictions based on ***safety, loss of life, or damage to equipment*** would fall into this category
- If a Member Operator is unable to comply with an Operating Instruction, it is important for them to provide their reasoning as soon as possible

# PJM CRM-TEM Model

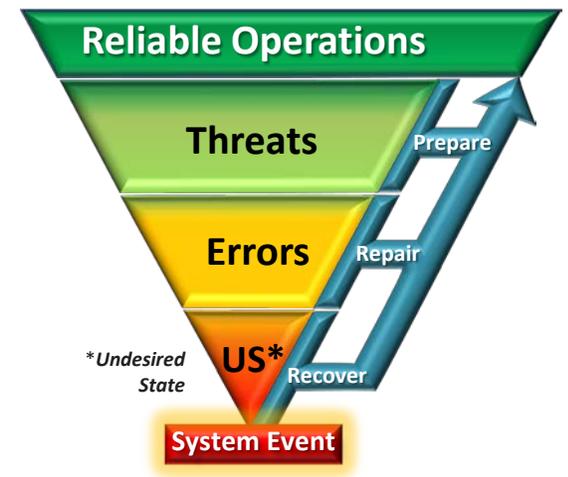
# PJM CRM-TEM Model



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# PJM CRM-TEM Model



## Situational Awareness

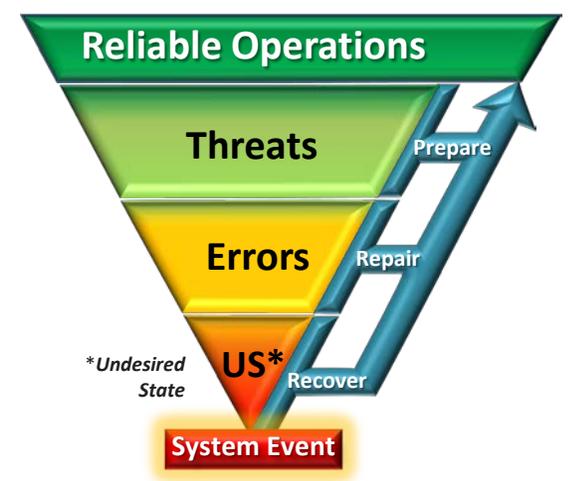
*Questioning Attitude*

*Shift Turnover*

Consistently and correctly assesses the current and anticipated environment; identifies and anticipates threats and errors

- Ask questions
- Stop when unsure
- Avoid situations where you hear “I think” or “I assume”
- Over-communicate
- Write it down
- “What would I want to know”
- Ask questions

# PJM CRM-TEM Model

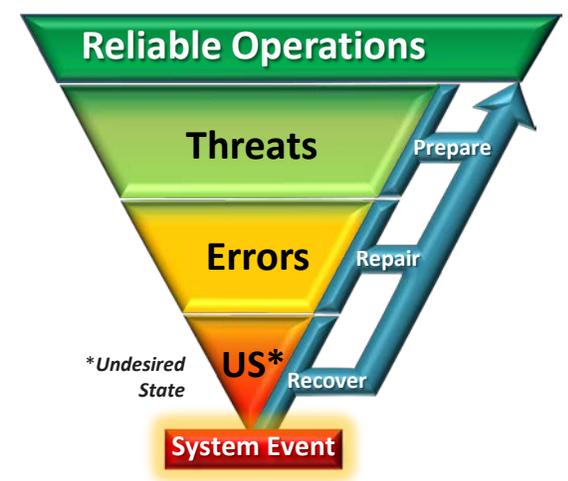


Incorporates relevant information, develops operational strategies and chooses the best course of action consistent with safe, reliable, and efficient operations

- Use current version
- Appropriate for condition
- Follow in sequence
- Identify and correct deficiencies
- Resources
- Gather Recommendations
- Best idea
- State intentions
- “Bottom Lines”
- Resolve Conflicts

**Planning and  
Decision Making**  
*Procedure Adherence & Use  
Decision Making*

# PJM CRM-TEM Model



## Workload Management

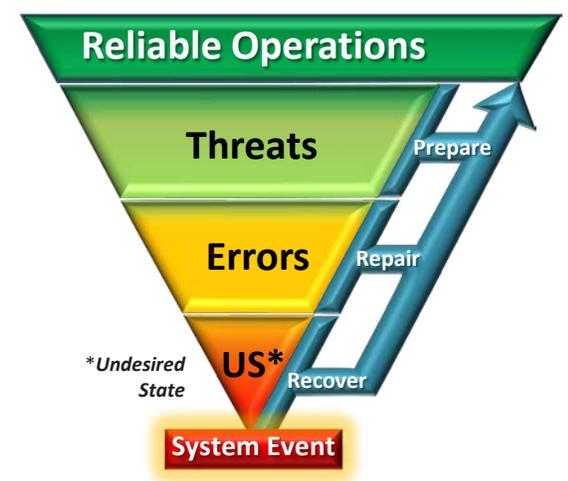
*Stress Management*

*Task Loading*

Effectively manages tasks to optimize overall performance

- Anticipate
- Recognize stress
- Acknowledge confusion & realign
- Communicate calmly
- Avoid if possible
- Anticipate, get help
- Write it down
- Checklists
- Memory Prompts

# PJM CRM-TEM Model



## Monitor/Cross-Check

*Checking & Verification*  
*Self Checking*

Actively verifies systems and other team member actions;  
resolves inconsistency and uncertainty

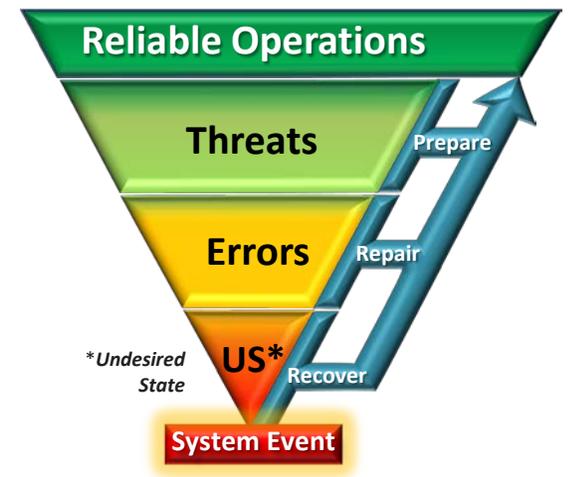
### Peer Check

- Concurrent
- Independent

### STAR

- Stop
- Think
- Act
- Review

# PJM CRM-TEM Model



## Communication

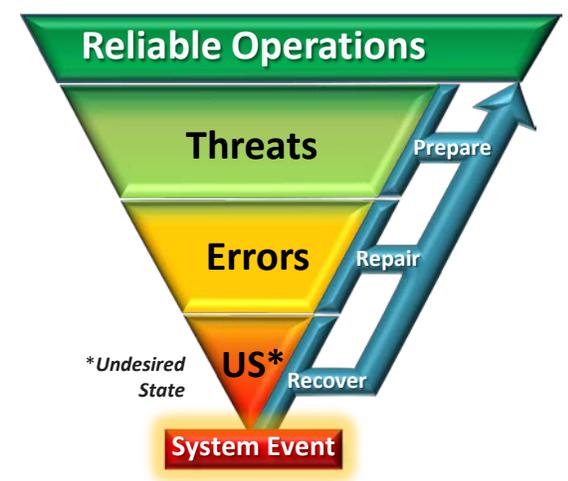
*Effective Listening*

*PJM Communication Protocols*

The exchange of ideas, information, and instructions in a clear and timely manner

- Ready
- Receive
- Review
- Respond
- Remember
- Operating Instruction
- 3 Part Communication

# PJM CRM-TEM Model



## Leadership Effectiveness

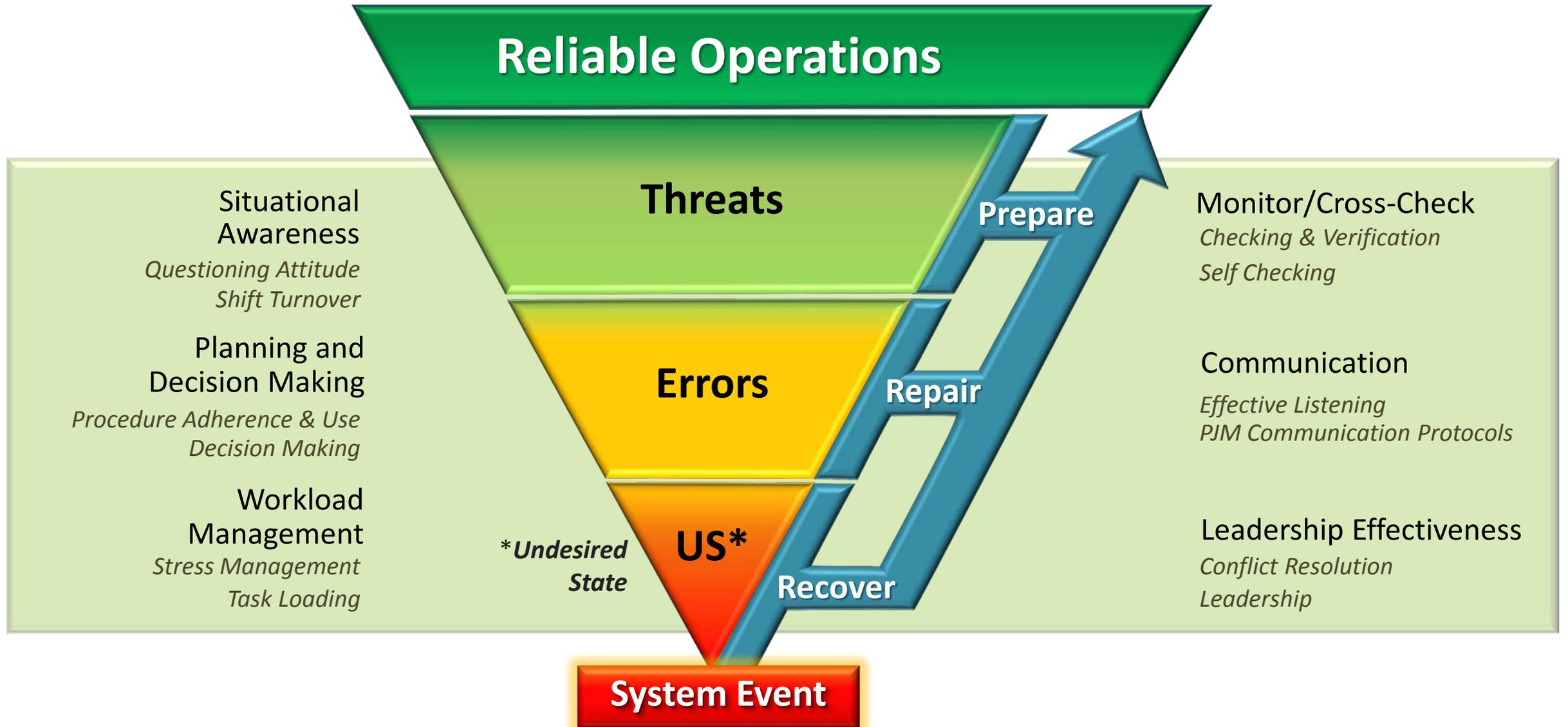
*Conflict Resolution*

*Leadership*

Effectively exercises responsibilities in a manner that promotes teamwork, professionalism, and mentoring

- Define Issue
- Communicate
- Use Open Tone
- Respect Expertise
- Assign Clear Roles
- Plan & Anticipate

# PJM CRM-TEM Model



# Communications Review

## *“You Be The Auditor”*

1. Review Transcripts for Actual Operator Calls
2. Audit the calls individually
3. Answer assigned questions and discuss audit results in groups
4. Debrief



# Communications Review

## Debrief Questions

1. How would you rate the use of 3-Part Communication?  
(Consider NERC and PJM Manual 1 requirements)
2. What communication practices used in this call could be improved? How?
3. Were there any communication practices which your group members interpreted differently/scored differently?
4. What CRM-TEM skills were utilized or could have been utilized during this call?

# Summary

## Review of PJM Communication Protocols

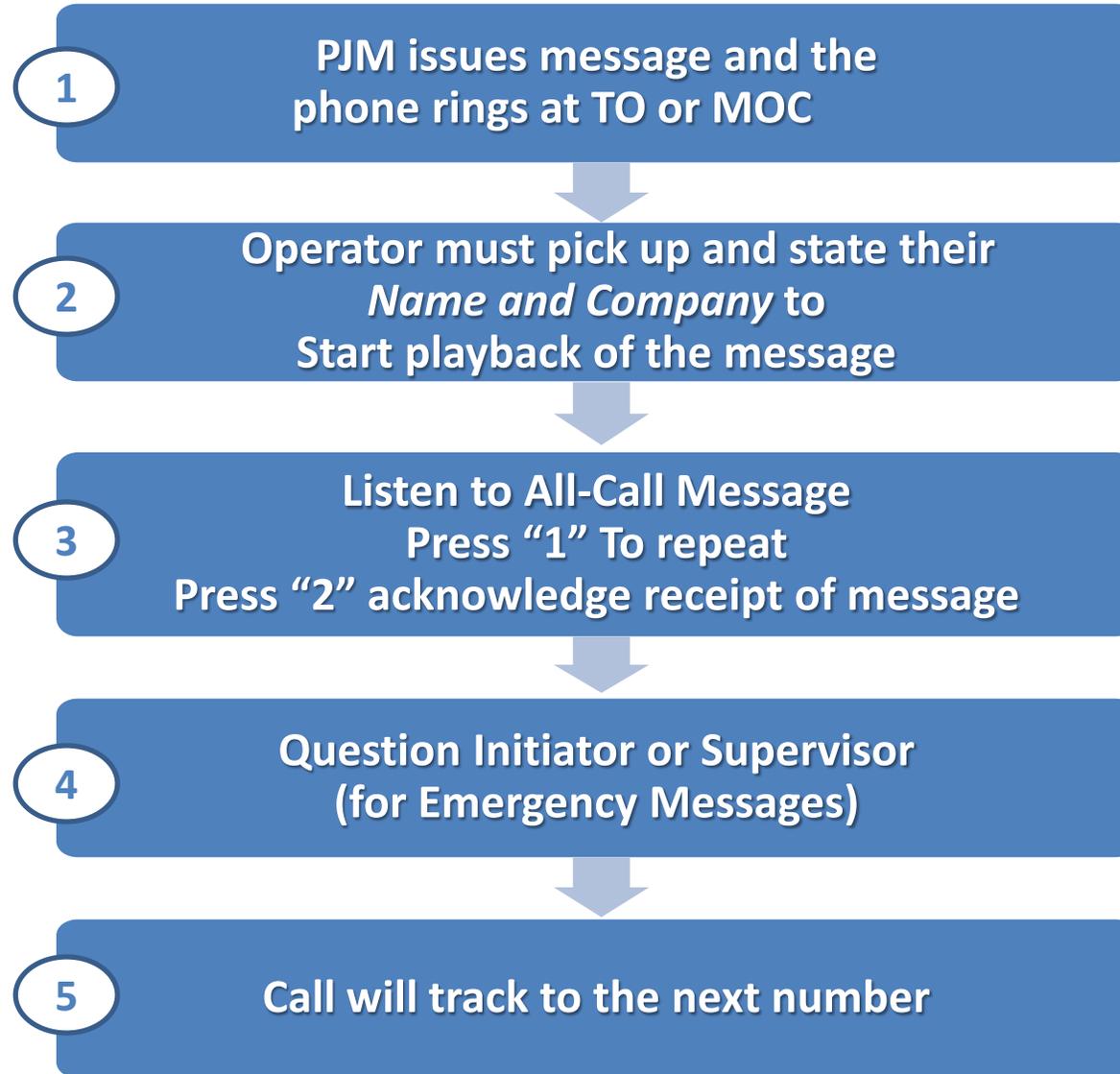
- Definition of Operating Instruction
- Requirements for use of Communications Protocols
- Review of 3-Part Communication Steps
- Application of PJM CRM-TEM Model

# PJM All-Call Process

# PJM All-Call Process

- The PJM All-Call process is a one-way communication system used to send messages to member companies
- PJM All-Call messages are issued during both normal and emergency conditions
- PJM Member Control Centers are required to have a dedicated line for the primary All-Call number

# Receiving PJM All-Call Messages



# Message Categories

**There are 3 categories for All-Call Messages:**

- Operational
- Informational
- Emergency Procedures

# Message Categories

| <b>Operational Messages</b>                 |  |
|---|--|
| <b>General Information</b>                  | Generation Dispatcher, Power Dispatcher, Master Coordinator or Shift Supervisor depending on message |
| <b>General Dispatch</b>                     | Generation Dispatcher  |
| <b>Instantaneous Reserve Checks</b>         | Generation Dispatcher  |
| <b>Off-cost Operations</b>                  | Power Dispatcher   |
| <b>Geo-Magnetic Disturbance Information</b> | Generation Dispatcher  |
| <b>Time Correction Information</b>          | Power Dispatcher/Gen Dispatcher  |
| <b>500 kV and Above Switching</b>           | Power Dispatcher   |
| <b>Regulation Information</b>               | Master Coordinator   |

# Message Categories

| Informational Messages |                    |
|------------------------|--------------------|
| Scheduling Information | Master Coordinator |

# Message Categories

| <b>Emergency Messages</b>                      |  |
|--|--|
| <b>Emergency Alerts, Warnings, and Actions</b> | Generation Dispatcher, Power Dispatcher, Master Coordinator or Shift Supervisor depending on message |
| <b>Minimum Generation Information</b>          | Master Coordinator or Generation Dispatcher  |
| <b>Synchronized Reserve Activations</b>        | Generation Dispatcher  |
| <b>Supplementary Status Report</b>             | Master Coordinator   |

# Contact Information:

**PJM Client Management & Services**

**Telephone: (610) 666-8980**

**Toll Free Telephone: (866) 400-8980**

**Website: [www.pjm.com](http://www.pjm.com)**



The Member Community is PJM's self-service portal for members to search for answers to their questions or to track and/or open cases with Client Management & Services

# Resources and References

- PJM. (2017). PJM Manual 1: Control Center & Data Exchange Requirements (rev 35). Retrieved from <http://pjm.com/~media/documents/manuals/m01.ashx>