

# RELIABILITY EXCELLENCE

Your plant's path to greater predictability and profitability

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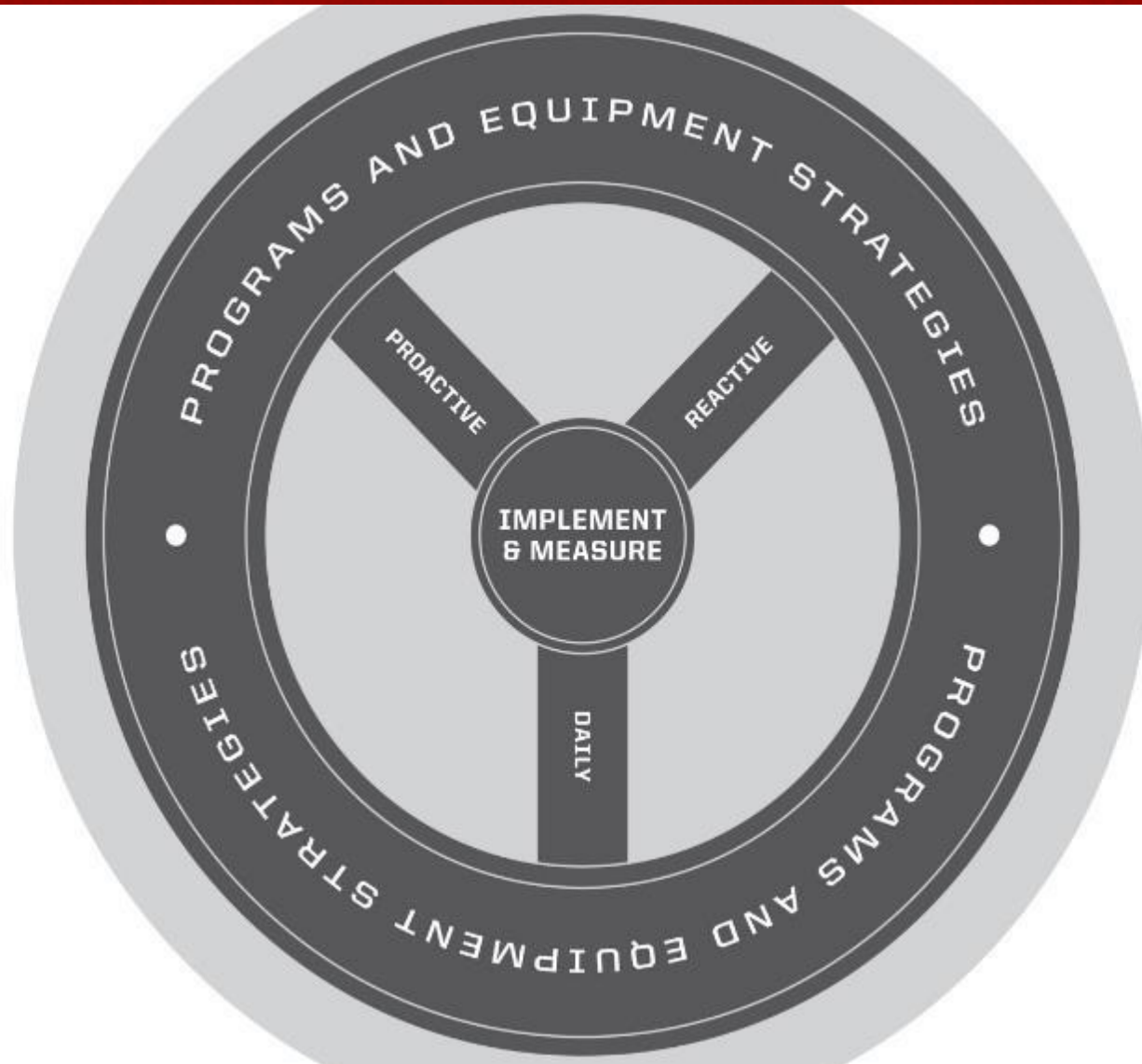
# WHY RELIABILITY?

- Is your plant safe?
  - Why or why not?
- Is your plant environmentally sound?
  - Why or why not?
- Is your plant consistently meeting operating goals?
  - Why or why not?
- A consistent commitment to Reliability is a foundational aspect of the top performing plants around the world.

# WHAT IS RELIABILITY?

- Definition: The quality of being trustworthy or consistently performing well
- What does it mean in our plants?
  - The equipment works when we need it to
  - The equipment meets performance expectations
  - People perform and behave as expected

# RELIABILITY MENTAL MODEL

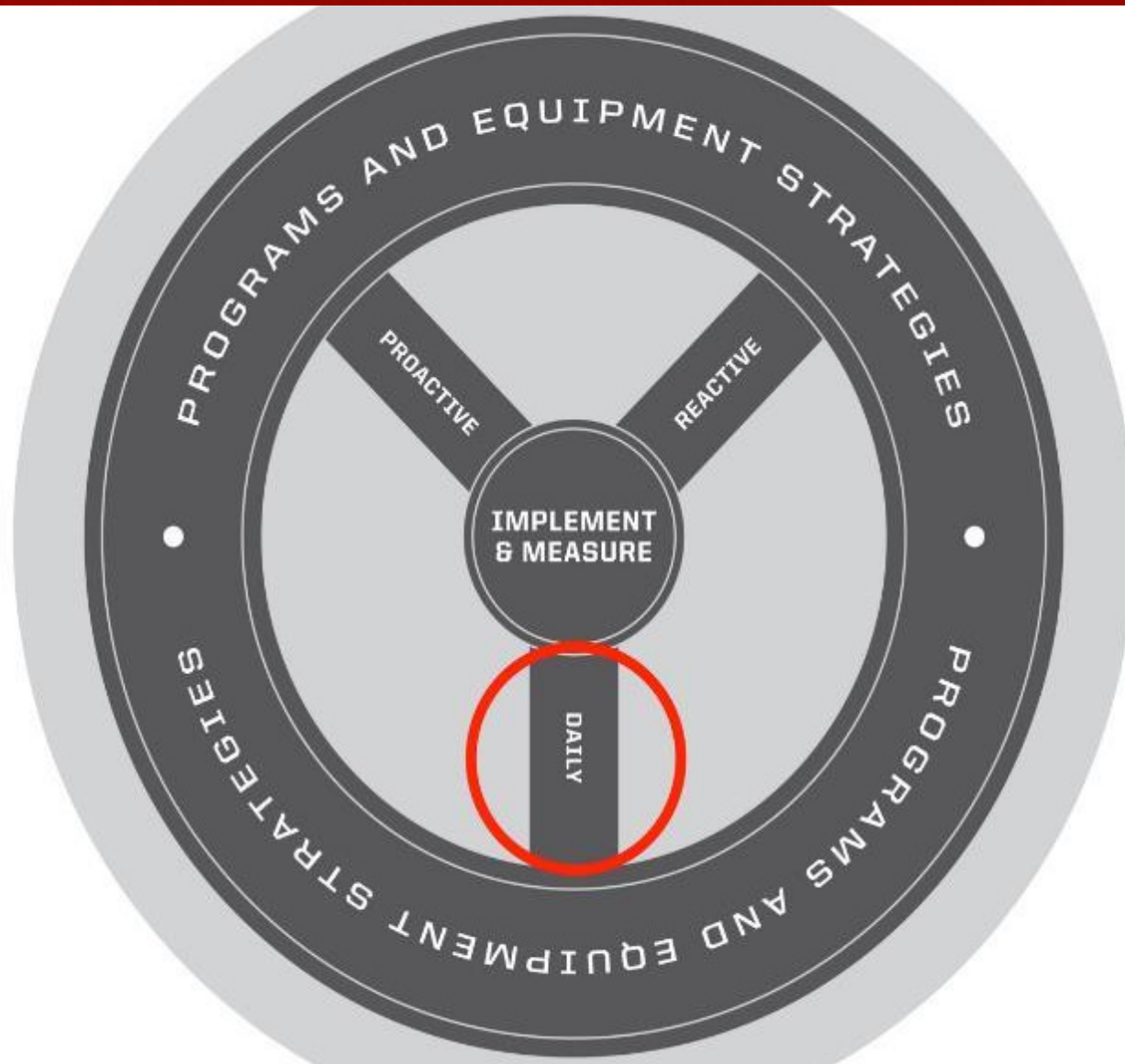




# EXAMPLE COMPRESSOR TRAIN



# DAILY RELIABILITY



# DAILY RELIABILITY

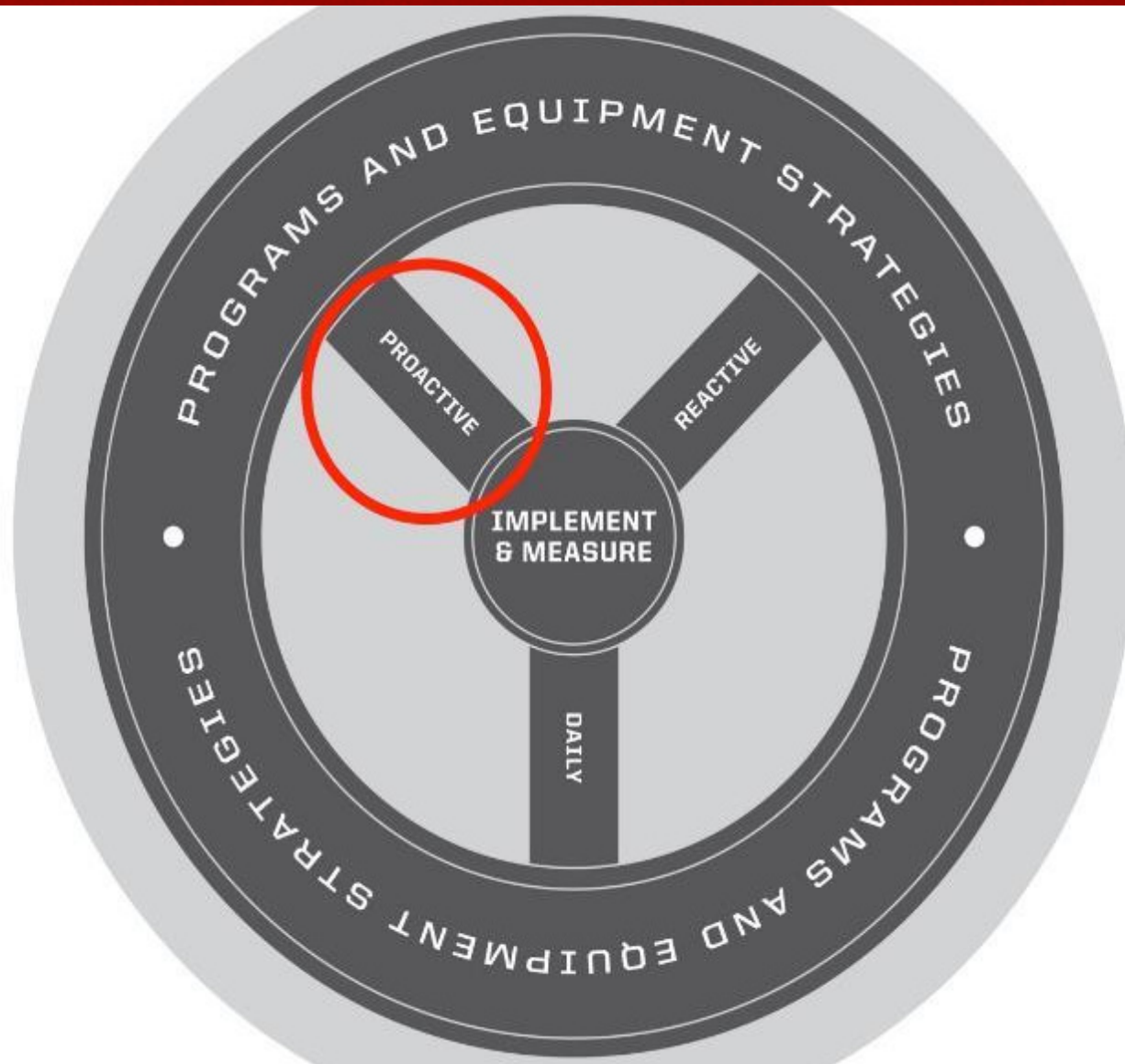
- What makes up Daily Reliability?
  - Things we do every day...
    - Equipment Rounds
    - Following procedures
    - Work execution (corrective & preventative maintenance)
    - Operating within design limits
    - Response to issues (communication and action)
    - Application of knowledge into action

# COMPRESSOR TRAIN DAILY





# PROACTIVE RELIABILITY



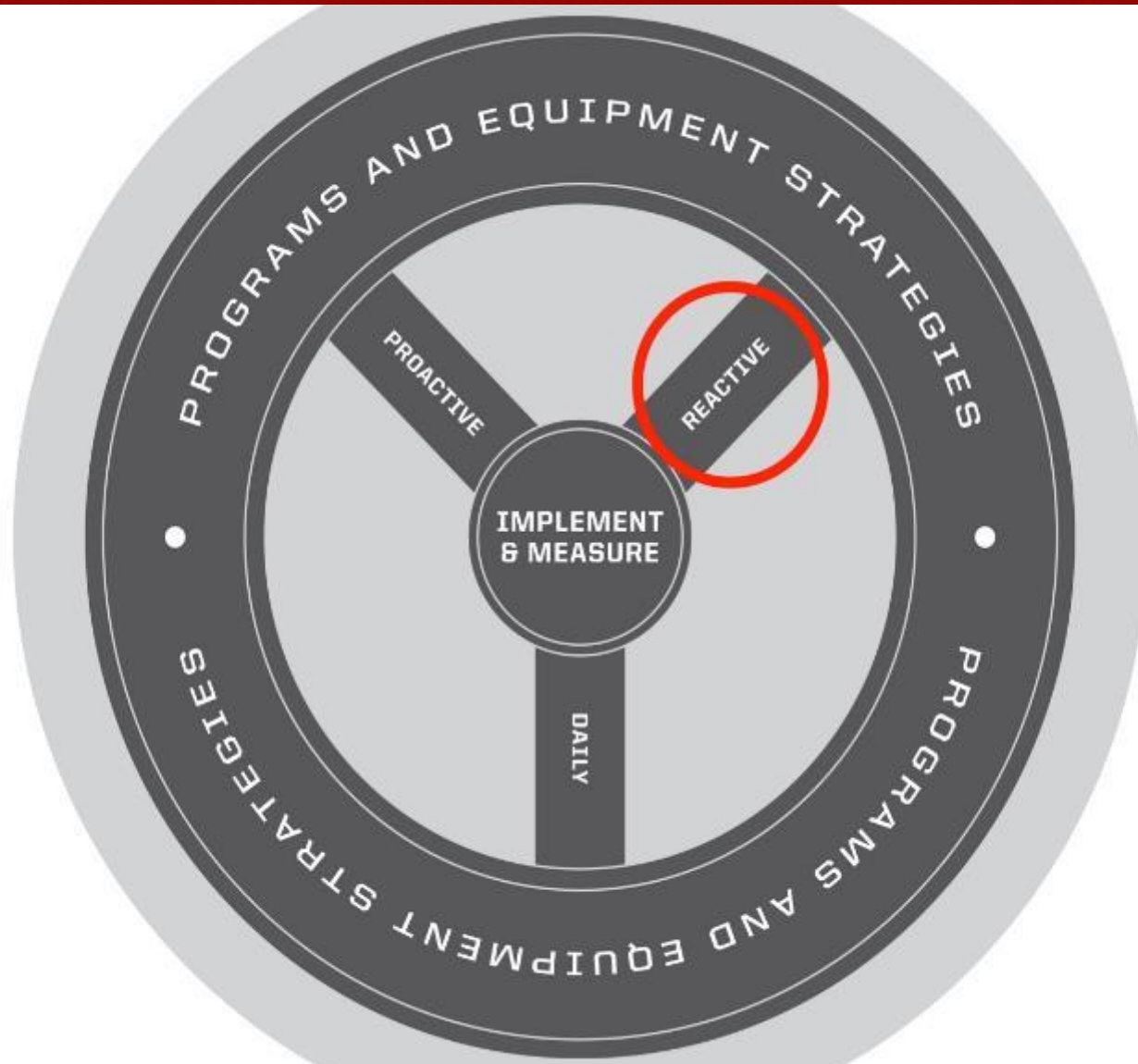
# PROACTIVE RELIABILITY

- What is Proactive Reliability?
- Things we do to anticipate failures in an attempt to prevent them or minimize their impact...
  - Failure Modes Cause Analysis (FMCA)
  - Process Hazard Analysis (PHA)
  - Condition Based Monitoring (CBM)
  - Project development
  - Equipment performance trends

# COMPRESSOR TRAIN PROACTIVE



# REACTIVE RELIABILITY





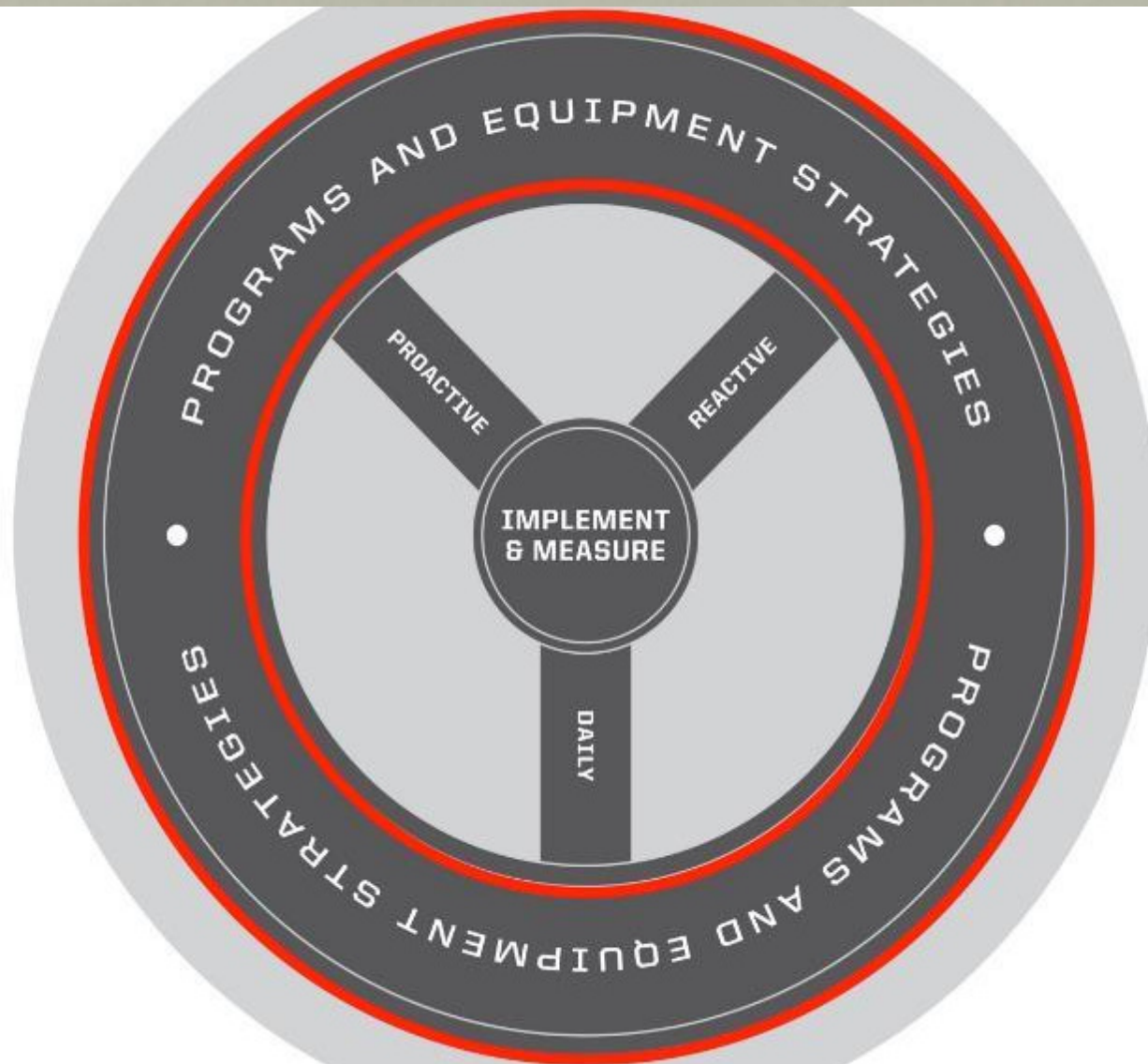
# REACTIVE RELIABILITY

- What is Reactive Reliability?
  - Things we do to understand what went wrong and how we improve...
    - Failure/Incident Analysis
    - Lessons Learned
    - Post Issue/Incident Action Items

# COMPRESSOR TRAIN REACTIVE



# PROGRAMS AND STRATEGY



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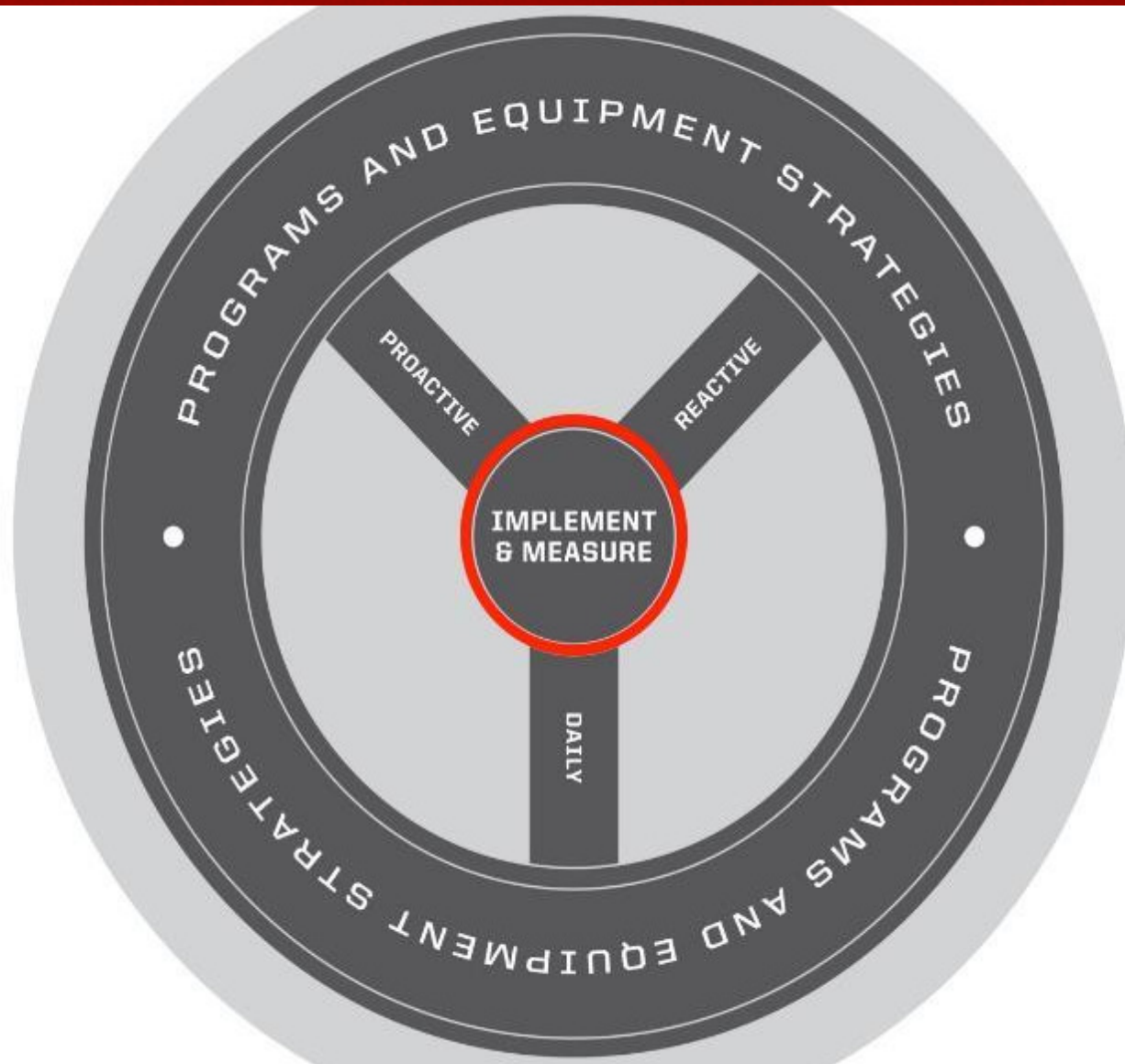
- What are Programs and Equipment Strategies?
- Programs and Equipment Strategies provide the framework for long term success by defining the “spokes” of reliability
  - For a piece of equipment or process system, the program/strategy(ies) defines daily, proactive, and reactive tasks
  - Sets the organizational perspective (urgency/criticality) for task completion and condition evaluation



# COMPRESSOR TRAIN PROGRAMS & STRATEGY



# IMPLEMENT & MEASURE



# IMPLEMENT & MEASURE

- The hub of the Reliability Excellence concept...but why?
  - The best analysis efforts fall short if they are not **implemented** into the business.
    - Plans on paper do not improve reliability
    - Tasks and action do...
  - The only way to know if you're making a difference is to **measure** your results
    - Misaligned commitment to the perceived important tasks waste dollars, efforts, and time

# COMPRESSOR TRAIN IMPLEMENT & MEASURE





# RELIABILITY JUSTIFICATION

- We have a great idea...but “management” won’t buy in.
  - All businesses work on economics
    - Once a business reaches an acceptable safety and environmental compliance level...economics rule
    - If you want your project or idea to be funded, then you must show the value to the organization
      - Future dollars saved
      - Future dollars to be earned

# RELIABILITY JUSTIFICATION

- Risk = Consequence \* Likelihood
- The consequences are often easier to reach
- The likelihood is where a deeper challenge lies
  - Will the equipment make it?
- Define the opportunity 3 different ways:
  - Risk adjusted dollars
  - Internal Rate of Return (IRR)
  - Net Present Value (NPV)