

Demystifying the Common Misconceptions about Reliability Centered Maintenance

By Nancy Regan

NancyRegan@RCMTrainingOnline.com



Together, Let's Discover...

Brief
overview
of the
RCM
Process

Demystify Four
Common
Misconceptions
about RCM

1. FMEA,
FMECA, and
RCM are
separate
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2. CBM and
RCM are
separate
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3. RCM only
produces a
Proactive
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4. RCM takes
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Poll #1

How familiar are you with RCM? Please take a moment to answer.

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Poll #2

Where are you located? Please take a moment to answer.

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Reliability Centered Maintenance

RCM is a zero-based process used to identify the Failure Management Strategies that are required to ensure an asset meets its missions requirements in its operational environment in the most safe and cost effective manner

RCM Process

1. Functions
2. Functional Failures
3. Failure Modes
4. Failure Effects
5. Failure Consequences
6. Proactive Maintenance and Intervals
7. Default Strategies

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What *specifically* causes a Functional Failure

We manage assets at the Failure Mode level

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Reliability Centered Maintenance

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A story of what would happen if we did nothing to predict, prevent, or manage the Failure Mode.

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Safety
Environmental
Operational
Non-Operational

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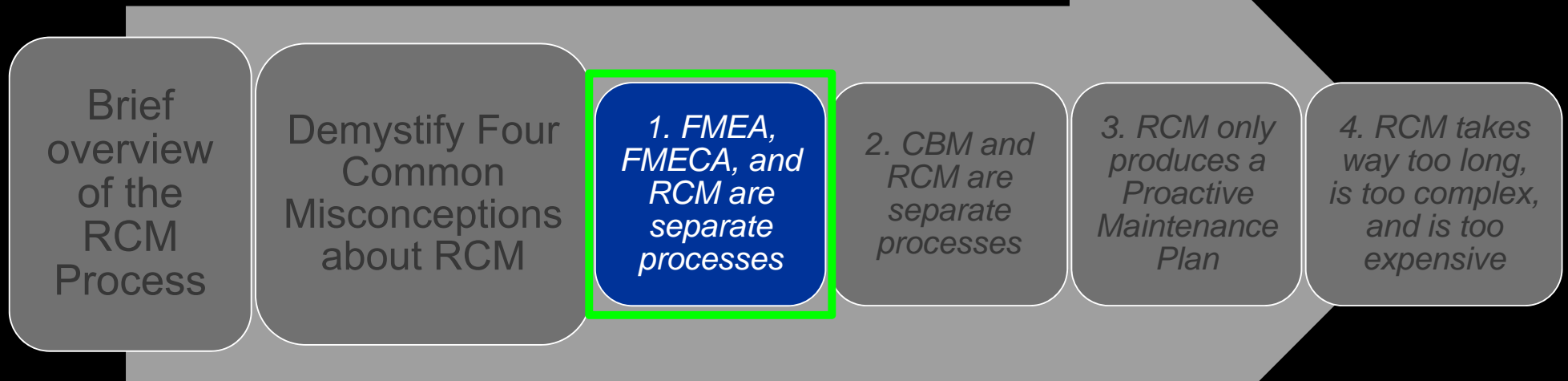
Stay tuned!



Misconception #1: FMEA, FMECA, and RCM are separate processes

FMEA: Failure Modes and Effects Analysis

FMECA: Failure Modes, Effects, and Criticality Analysis



Misconception #1: FMEA, FMECA, and RCM are separate processes

FMEA: Failure Modes and Effects Analysis

FMECA: Failure Modes, Effects, and Criticality Analysis

RCM Process

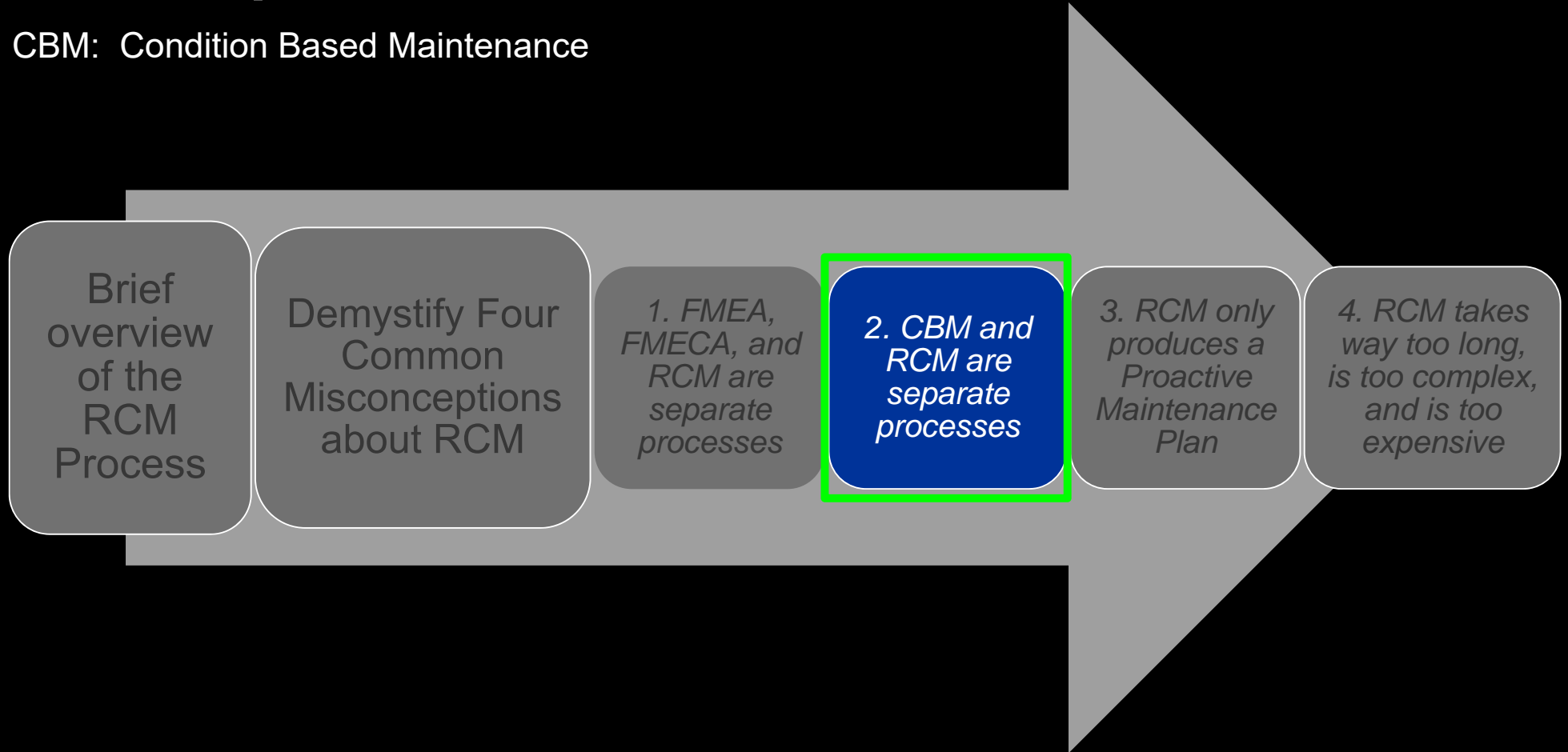
Steps 1-4: FMEA
**Failure Modes and
Effects Analysis**

1. Functions
2. Functional Failures
3. Failure Modes
4. Failure Effects
5. Failure Consequences
6. Proactive Maintenance and Intervals
7. Default Strategies

Steps 1-5: FMECA
**Failure Modes, Effects,
and Criticality Analysis**

Misconception #2: CBM and RCM are separate processes

CBM: Condition Based Maintenance



Misconception #2: CBM and RCM are separate processes

CBM: Condition Based Maintenance

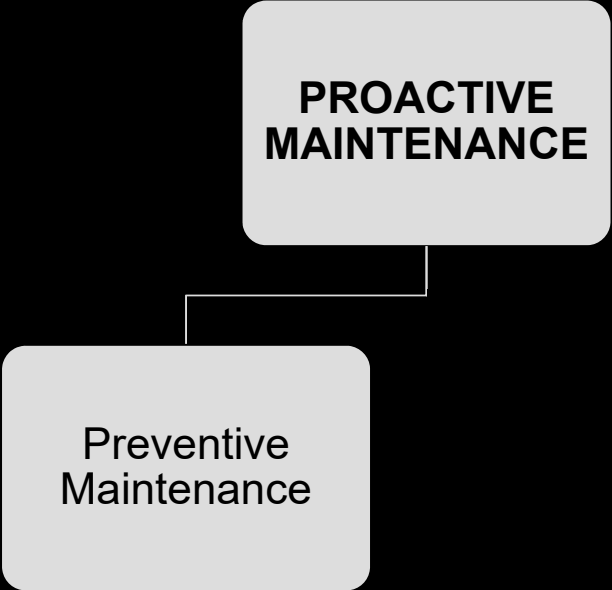
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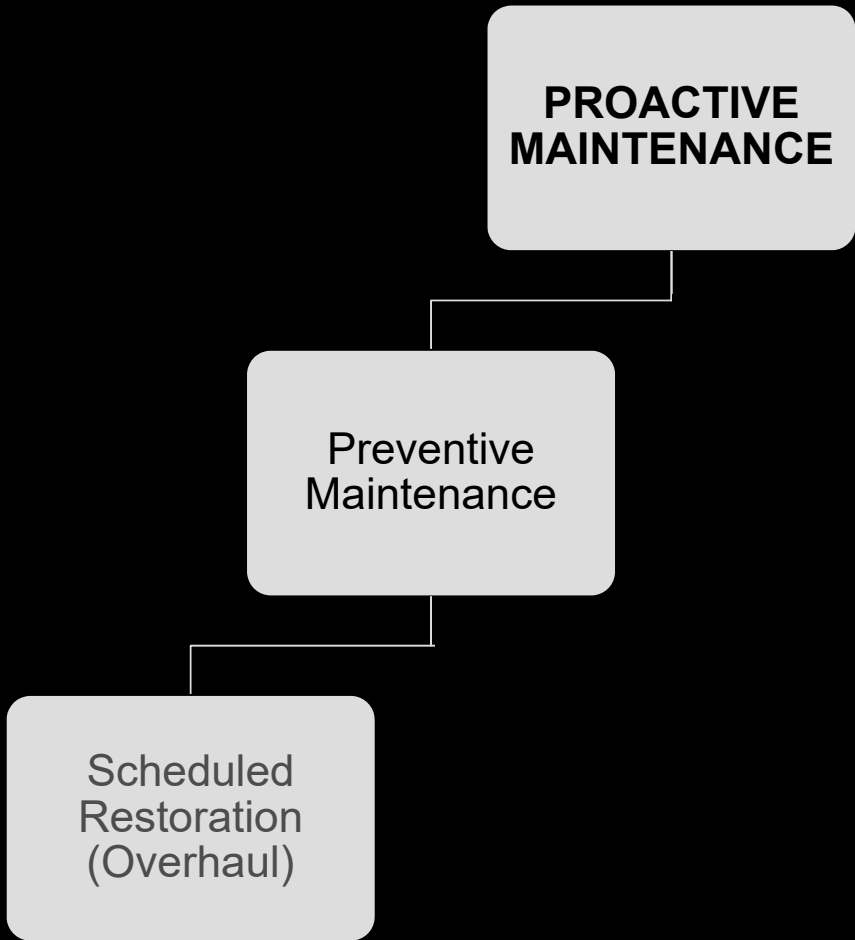
What Constitutes Proactive Maintenance in the Context of RCM?

**PROACTIVE
MAINTENANCE**

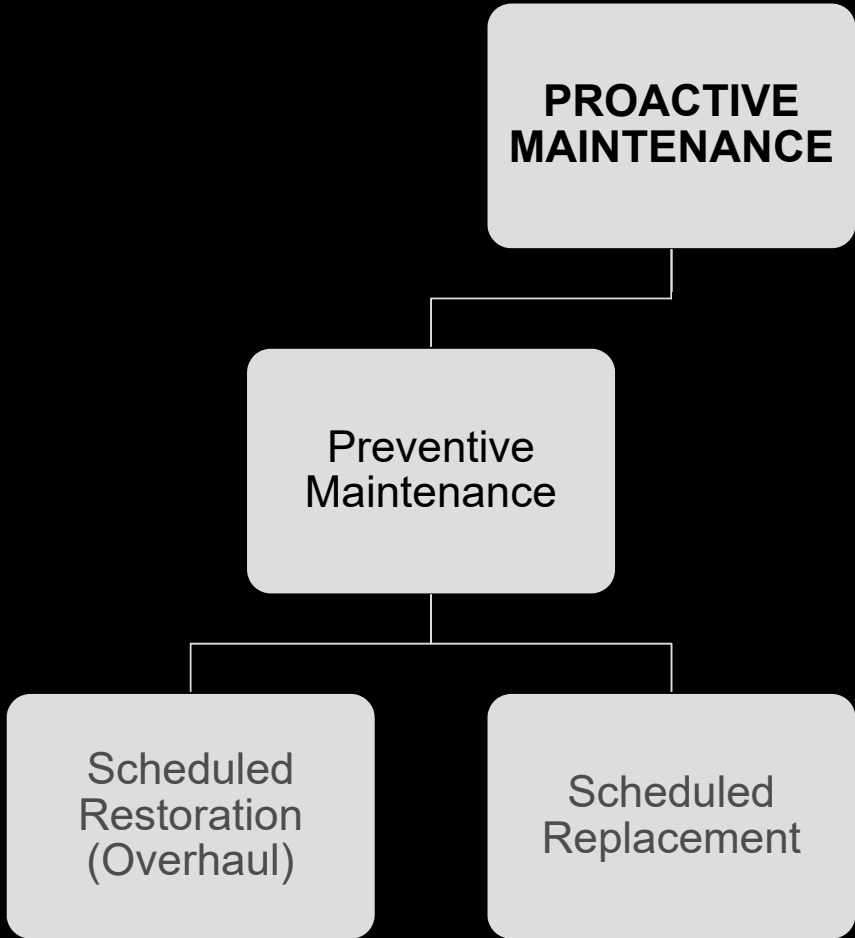
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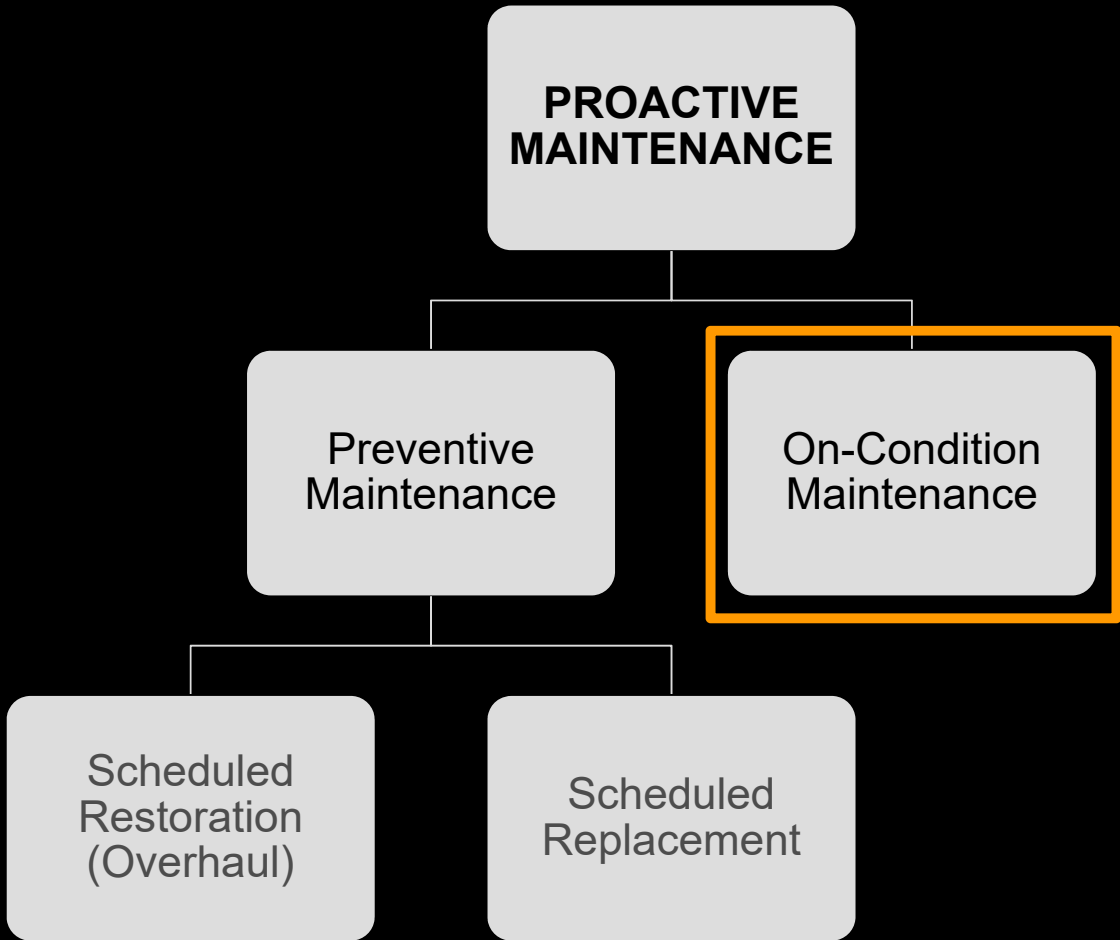
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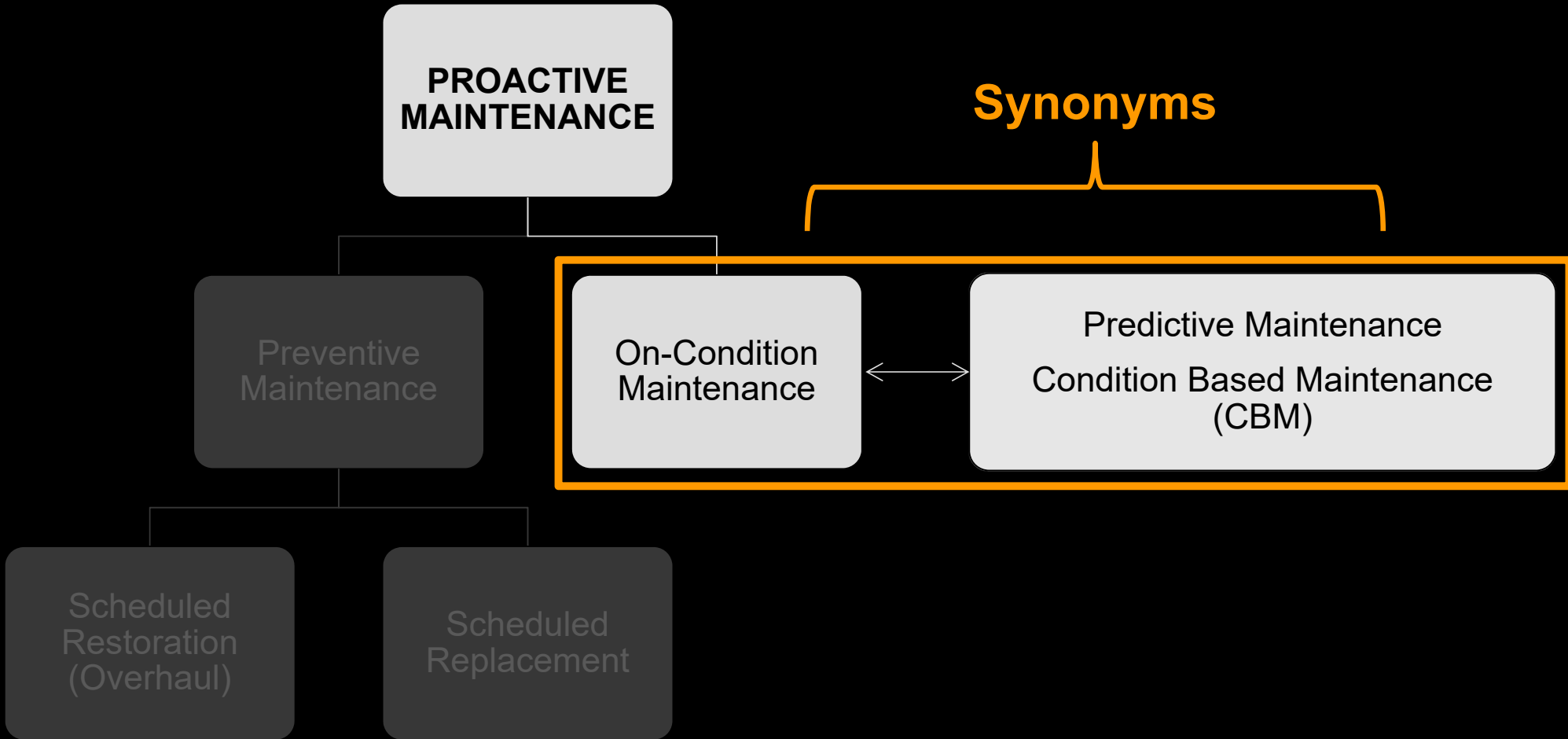
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What Constitutes Proactive Maintenance in the Context of RCM?

**PROACTIVE
MAINTENANCE**

Synonyms

RCM Process

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2. Functional Failures
3. Failure Modes
4. Failure Effects
5. Failure Consequences
6. Proactive Maintenance and Intervals

Step 6: Includes CBM
Condition Based Maintenance

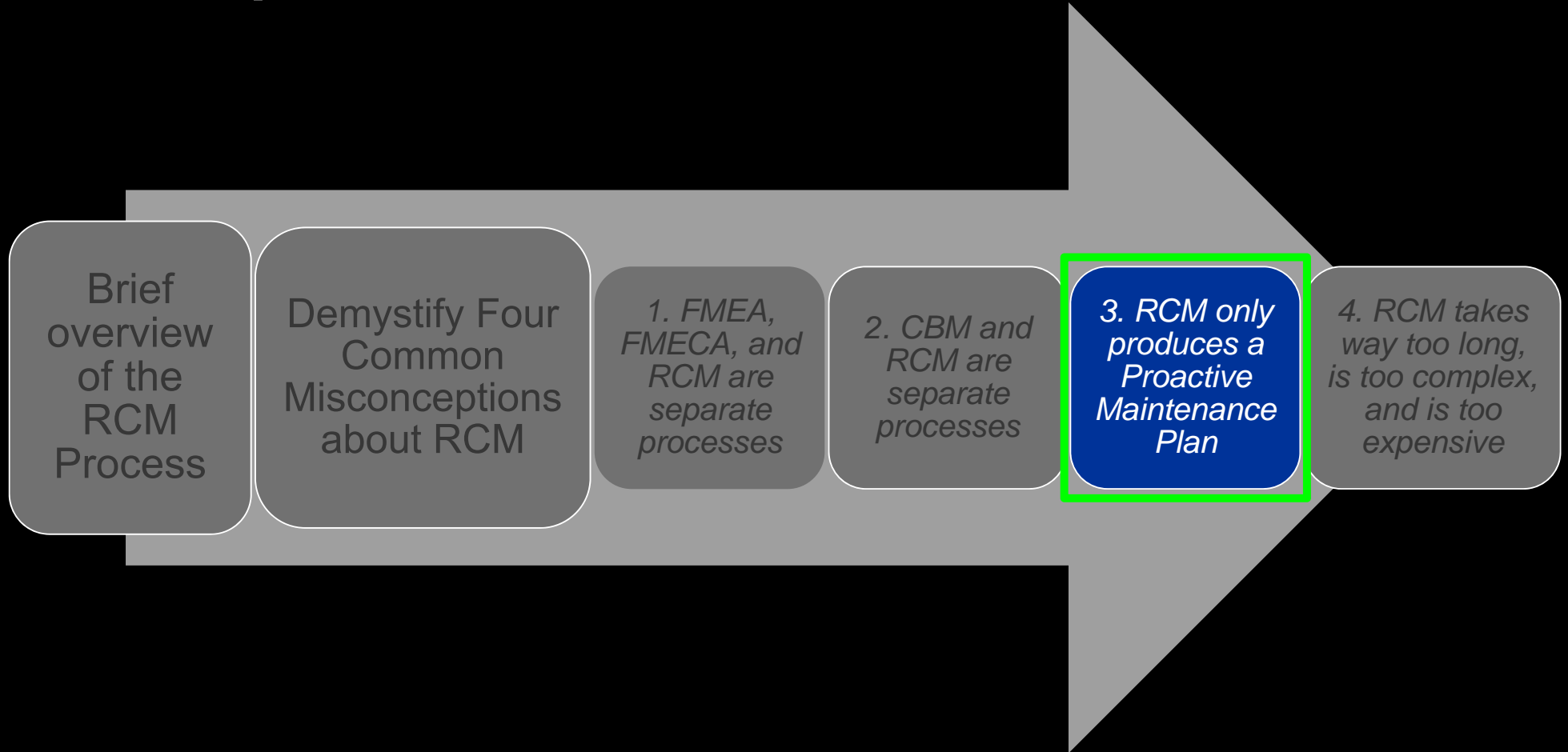
On-Condition
Maintenance



Predictive Maintenance
Condition Based Maintenance
(CBM)

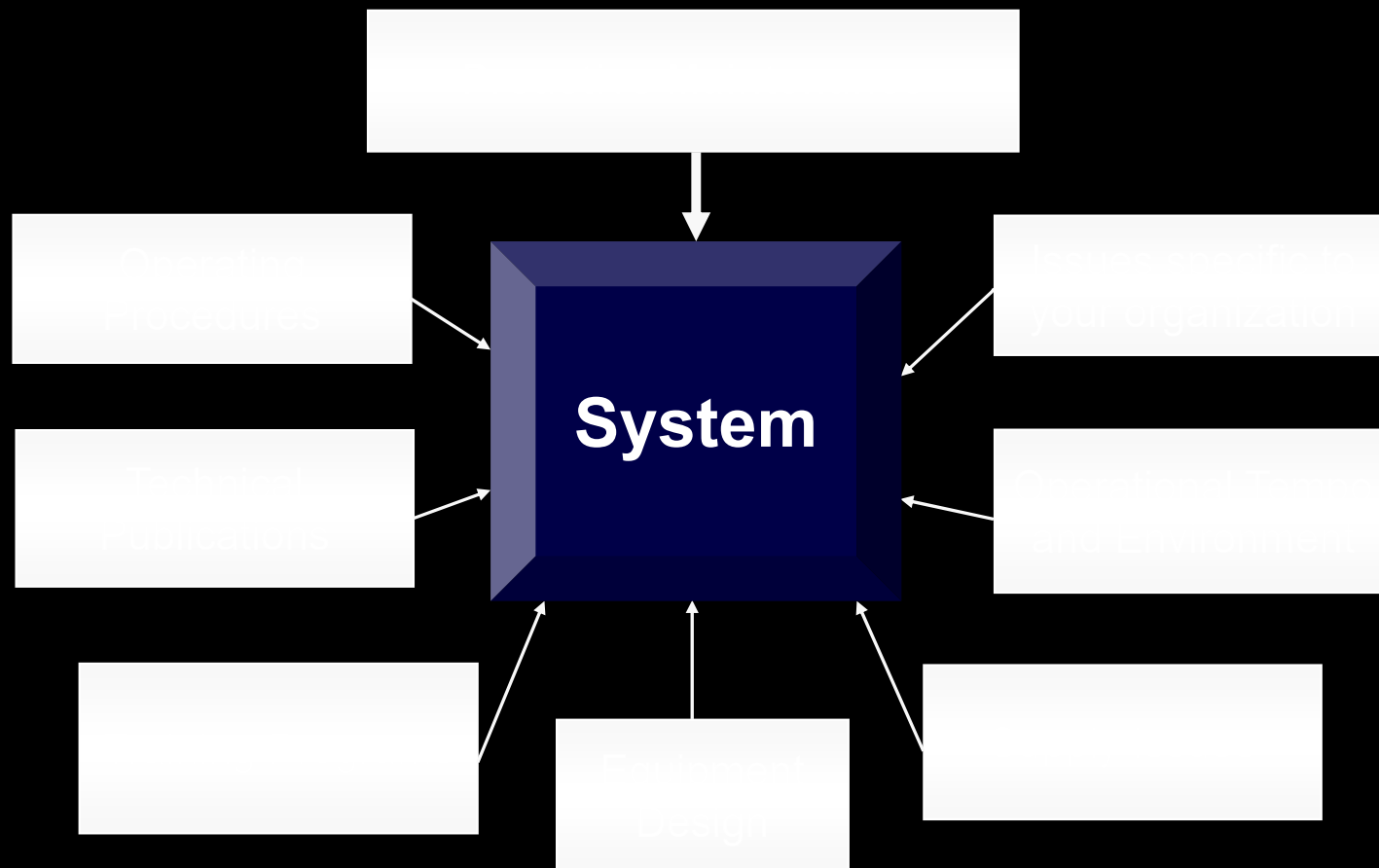
**So if you're doing RCM, you are
already considering
Condition Based Maintenance**

Misconception #3: RCM only produces a Proactive Maintenance Plan

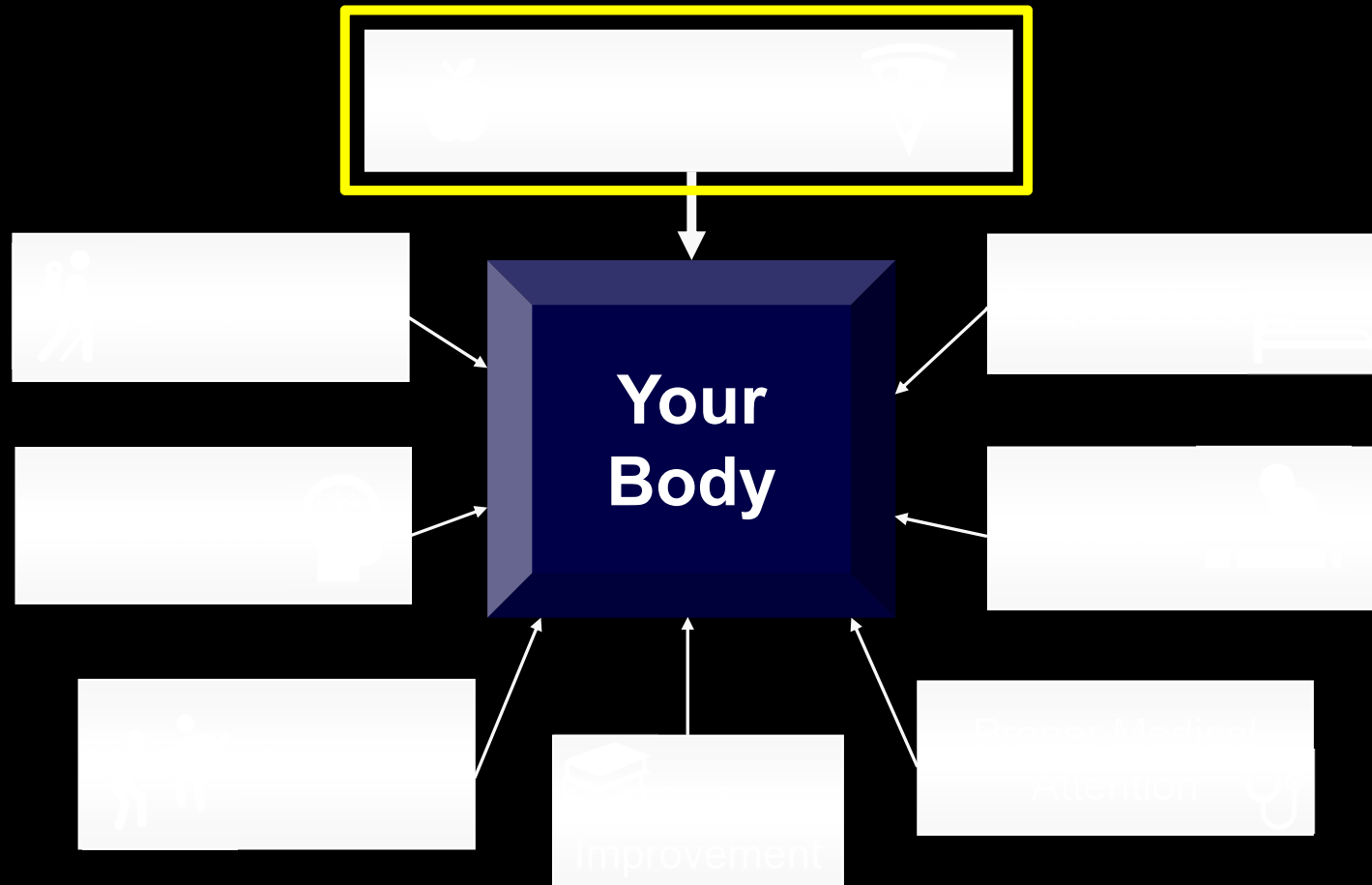


RCM is NOT just about maintenance!

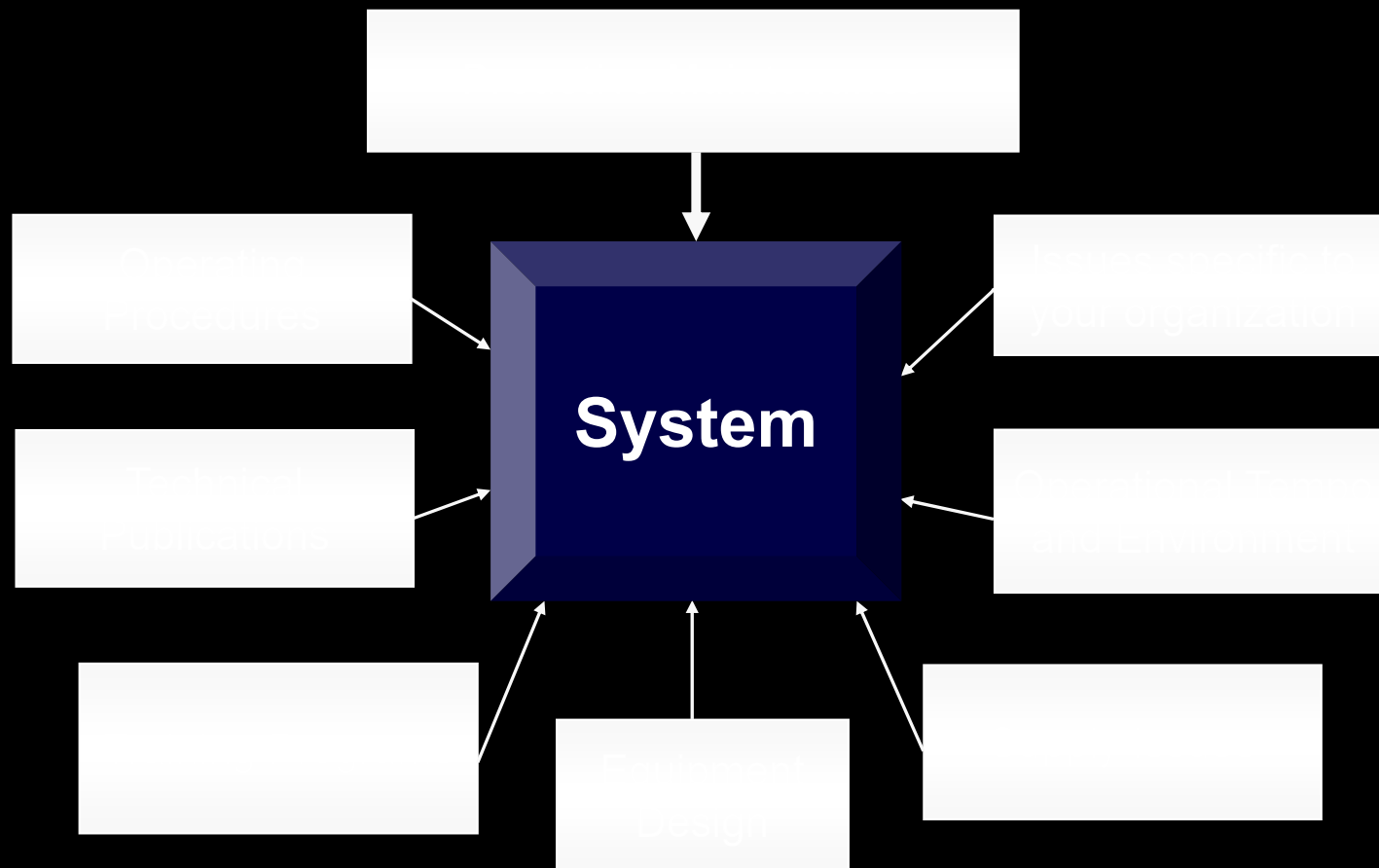
Elements That Influence a System



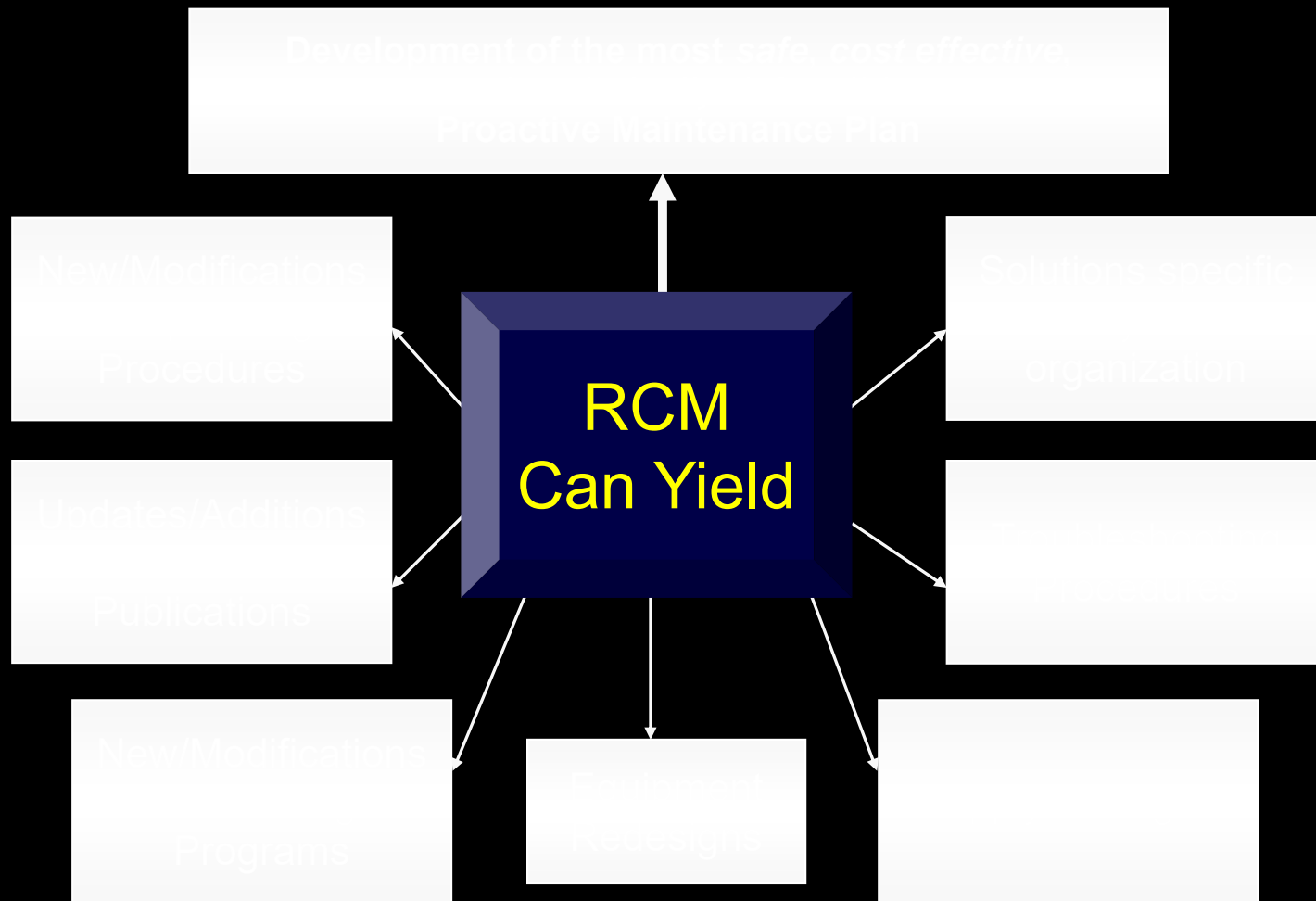
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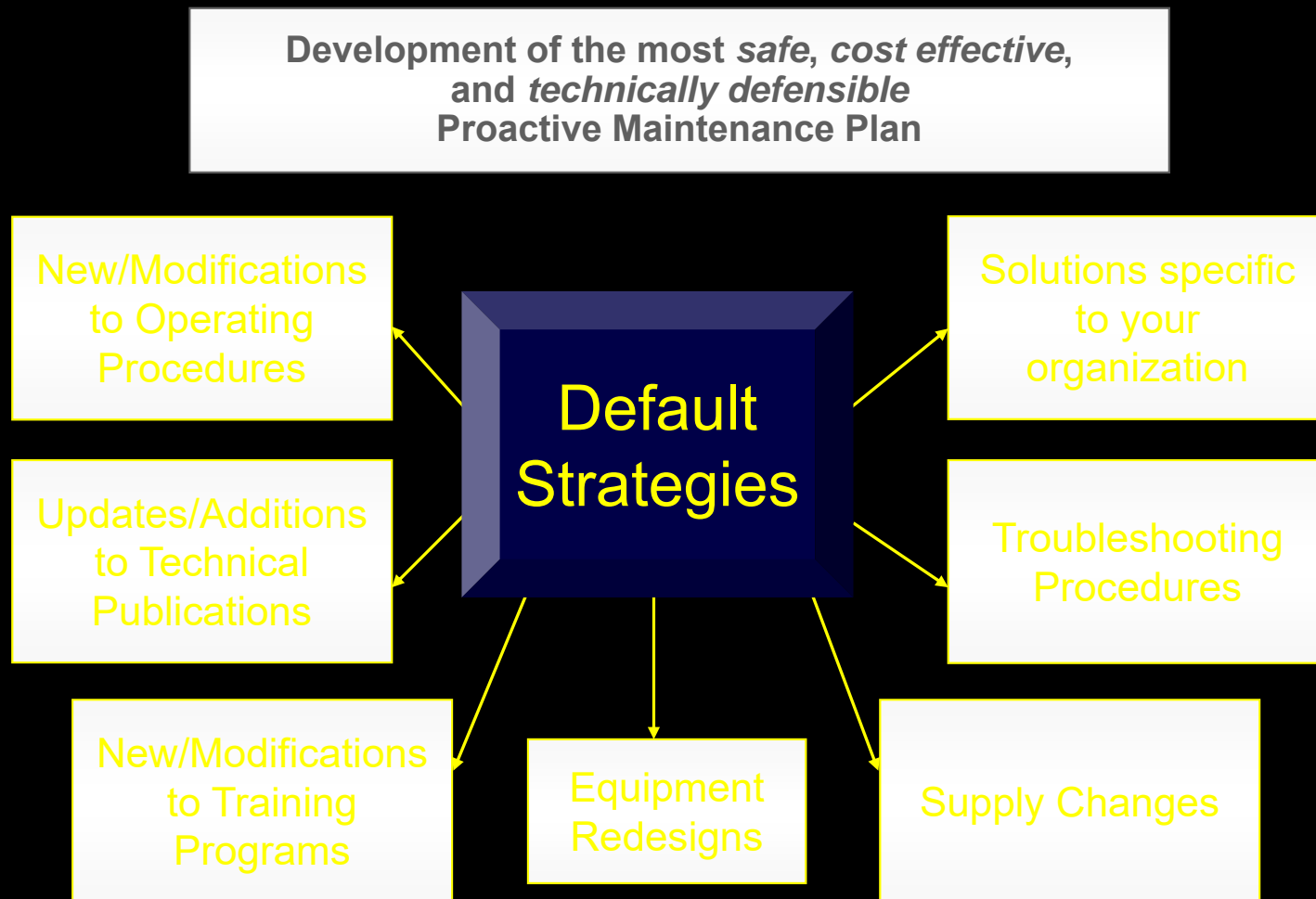
Elements That Influence a System



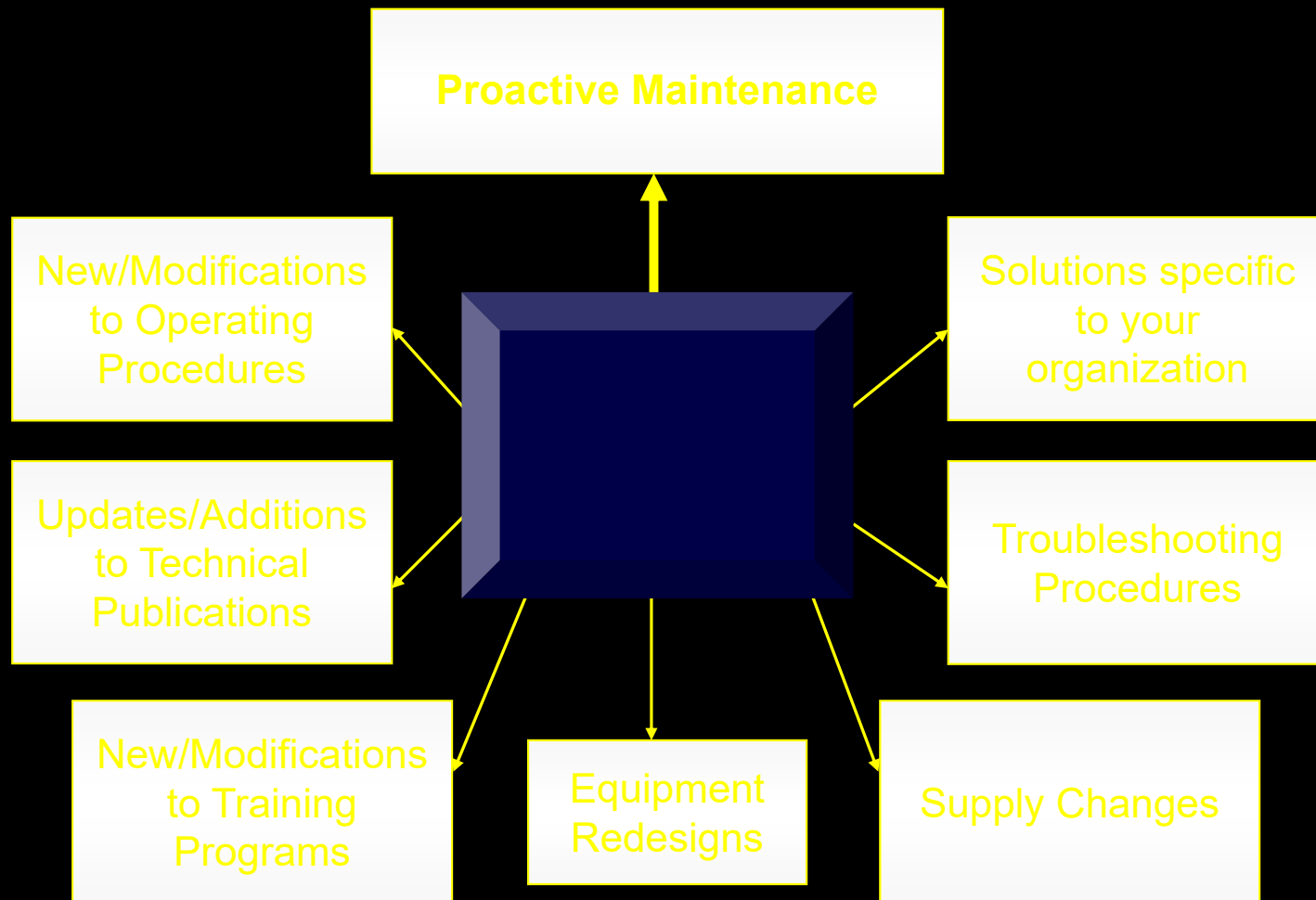
Potential Products of an RCM Analysis



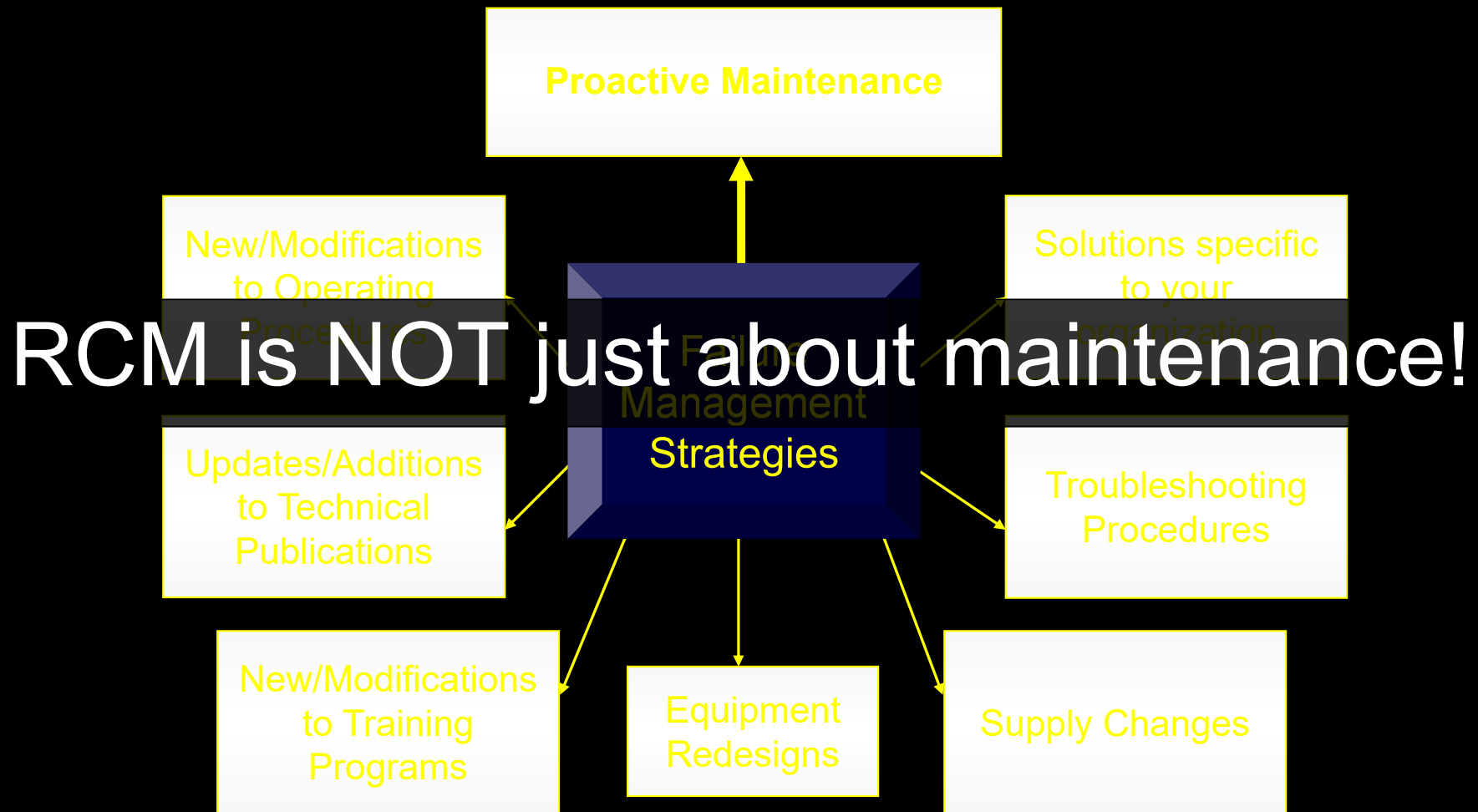
Potential Products of an RCM Analysis



Potential Products of an RCM Analysis



Potential Products of an RCM Analysis



Misconception #4: RCM takes way too long, is too complex, and is too expensive

1. RCM not carried out properly due to lack of proper training

→ Failure Modes written at *way too low a level*

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Failure Modes Often Written at Way Too Low Level

GOAL: Proactive Maintenance Plan

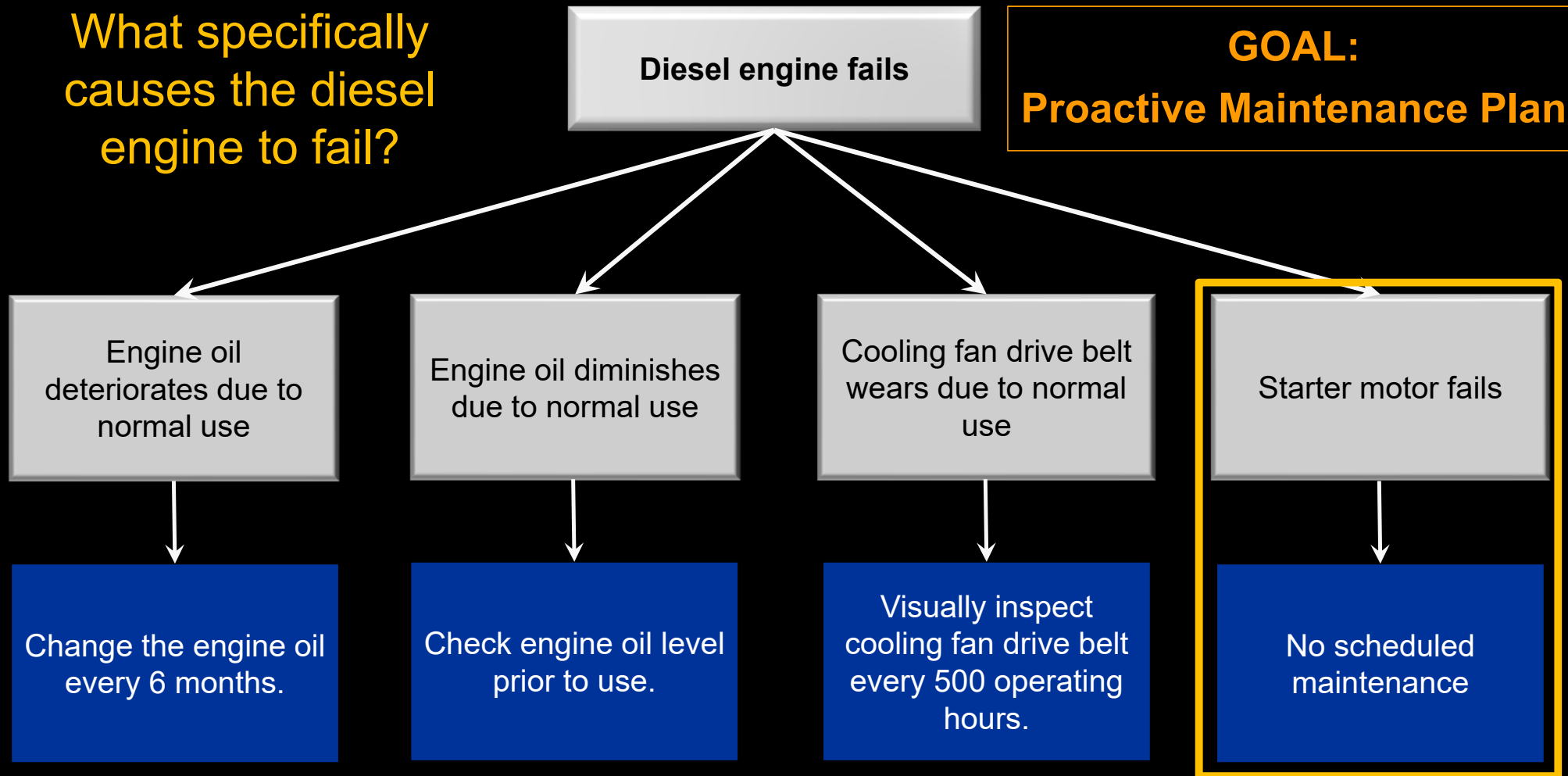
Destination:
Failure Management Strategies
Proactive Maintenance
and
Default Strategies

Failure Mode

A properly written Failure Mode puts you on the right road and sends you in the right direction.

How detailed should Failure Modes be written?

What specifically causes the diesel engine to fail?



How detailed should Failure Modes be written?

Starter
motor fails

```
graph TD; A[Starter motor fails] --> B[Electrical connections loosen]; A --> C[Armature insulation breaks down]; A --> D[Solenoid fails]; A --> E[Brushes wear];
```

GOAL:
Proactive Maintenance Plan

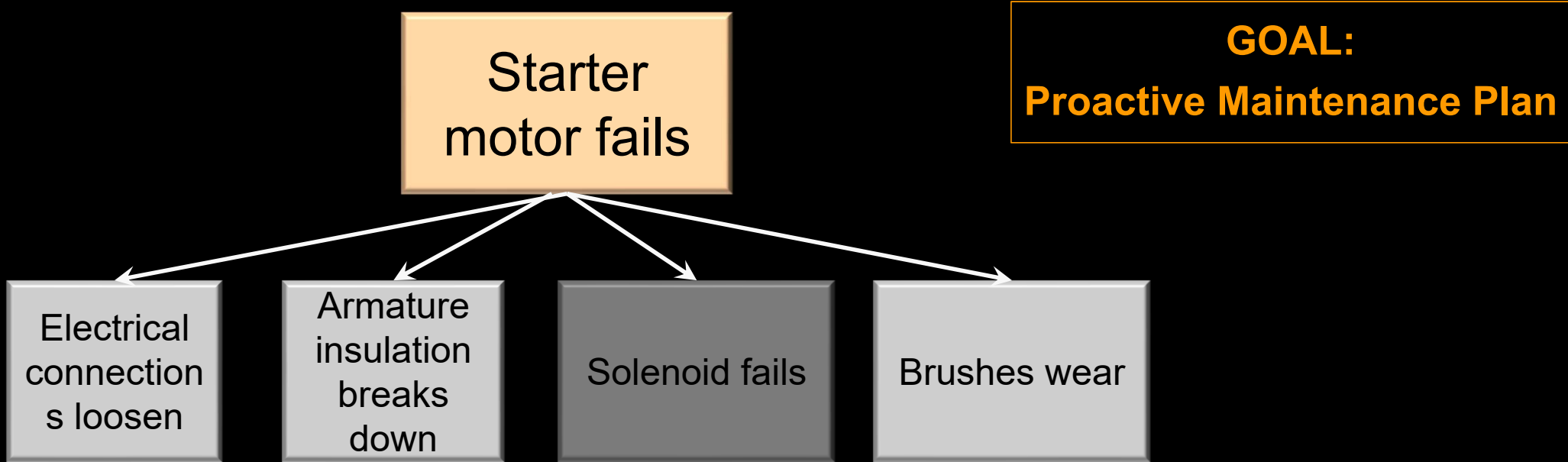
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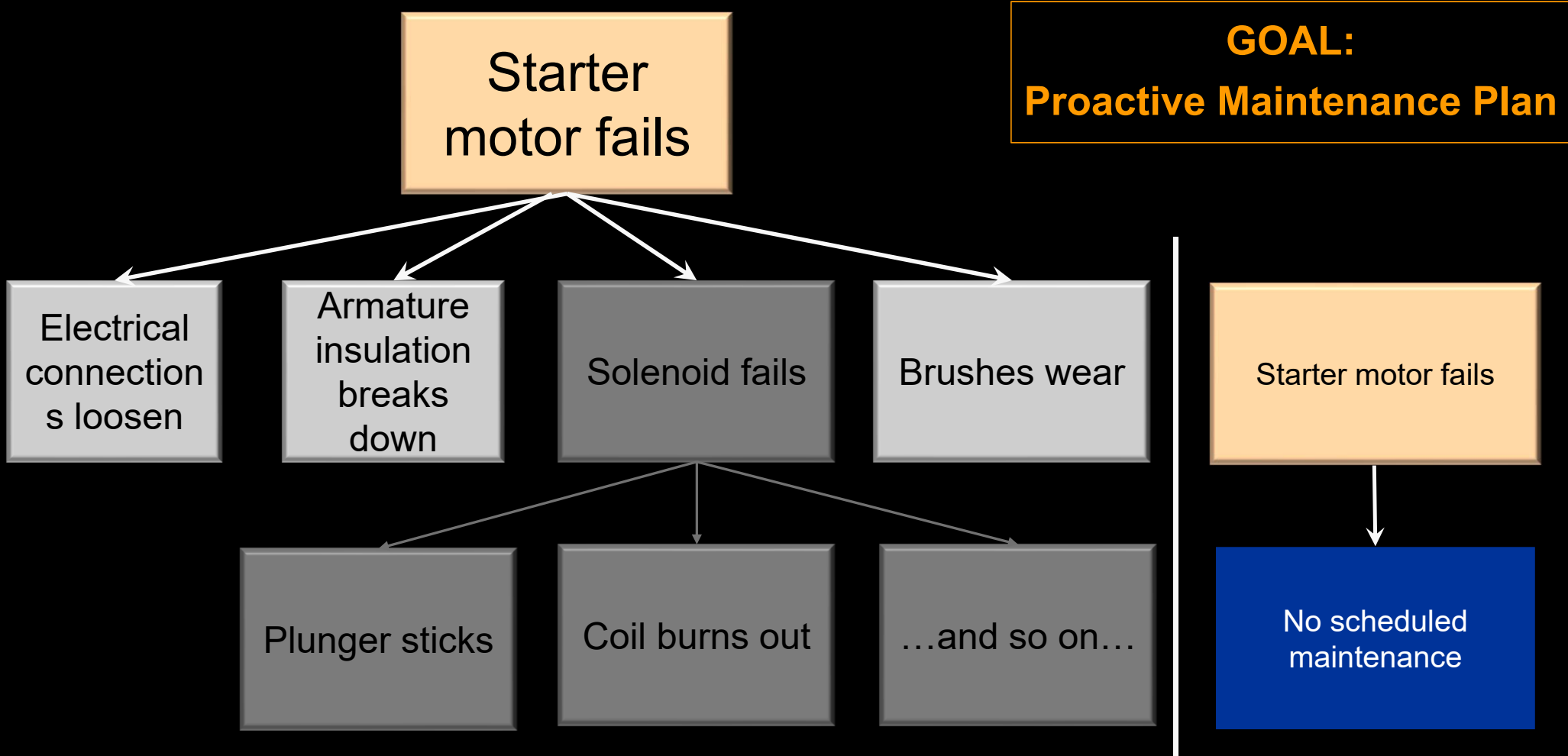
Solenoid fails

Brushes wear

How detailed should Failure Modes be written?



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THANK YOU!

Video on most important Reliability Fundamental

GO TO: www.RCMTrainingOnline.com/ASQ/fundamental

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