

2026 CSHE ANNUAL INSTITUTE

ASHE's Milestone on the Reliability-Centered Maintenance Journey

**SILICON SYSTEMS:
POWERING THE FUTURE OF
HEALTHCARE FACILITIES**

MAY 13 - 15
SANTA CLARA, CA



Presenters



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2025 ASHE Crystal Eagle Award

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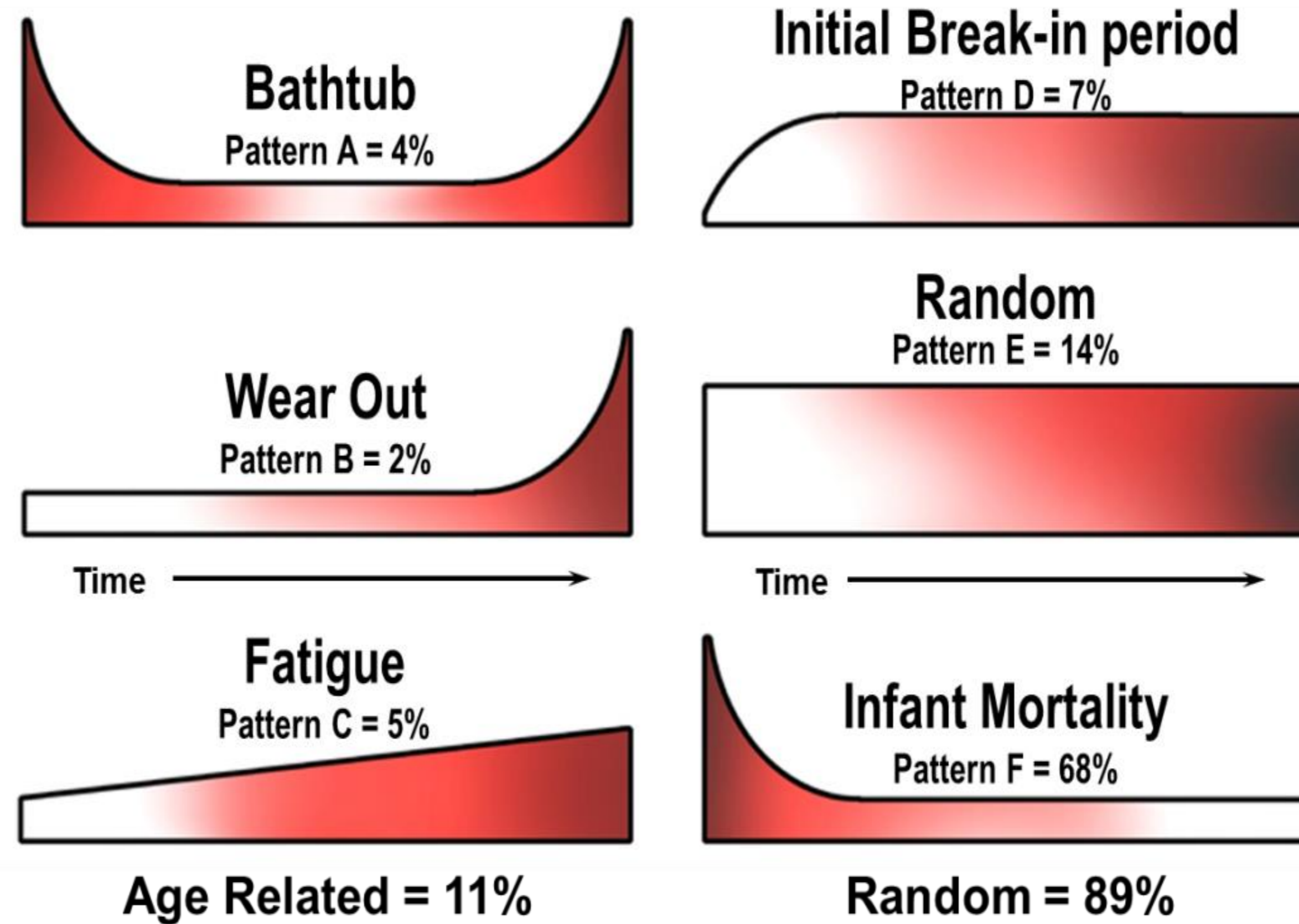


Agenda

- RCM Background
- Milestone 1 – Planning
- Milestone 2 – Preparing
- Milestone 3 – Implementing
- Milestone 4 – Measure & Monitor
- Call to Action



Maintenance and Failure Prevention



Reliability-Centered Maintenance, F. Stanley Nowlan and Howard F. Heap, 1978



What RCM Is NOT

Reliability-Centered Maintenance (RCM)
is NOT maintenance.

“We do RCM.”

“We have RCM.”

“We RCM our equipment.”

“We RCM’d one site and copied the rest.”



What Is Reliability-Centered Maintenance?

“The development of this program is towards the control of reliability through an analysis of the factors that affect reliability and provide a system of actions to improve low reliability levels when they exist.”

F. Stanley Nowlan & Howard F. Heap, *Reliability-Centered Maintenance*, 1978, p.4

AD/A066 579

RELIABILITY-CENTERED MAINTENANCE

F.S. Nowlan, et al

United Airlines
San Francisco, California

December 1978

REPRODUCED BY
U.S. DEPARTMENT OF COMMERCE
NATIONAL TECHNICAL
INFORMATION SERVICE
SPRINGFIELD, VA 22161



What Is Reliability-Centered Maintenance?

“Reliability-centered Maintenance: a process used to determine what must be done to ensure that any physical asset continues to do what its users want it to do in its present operating context.”

John Moubray, Reliability-Centered Maintenance, 2nd Edition, 1997

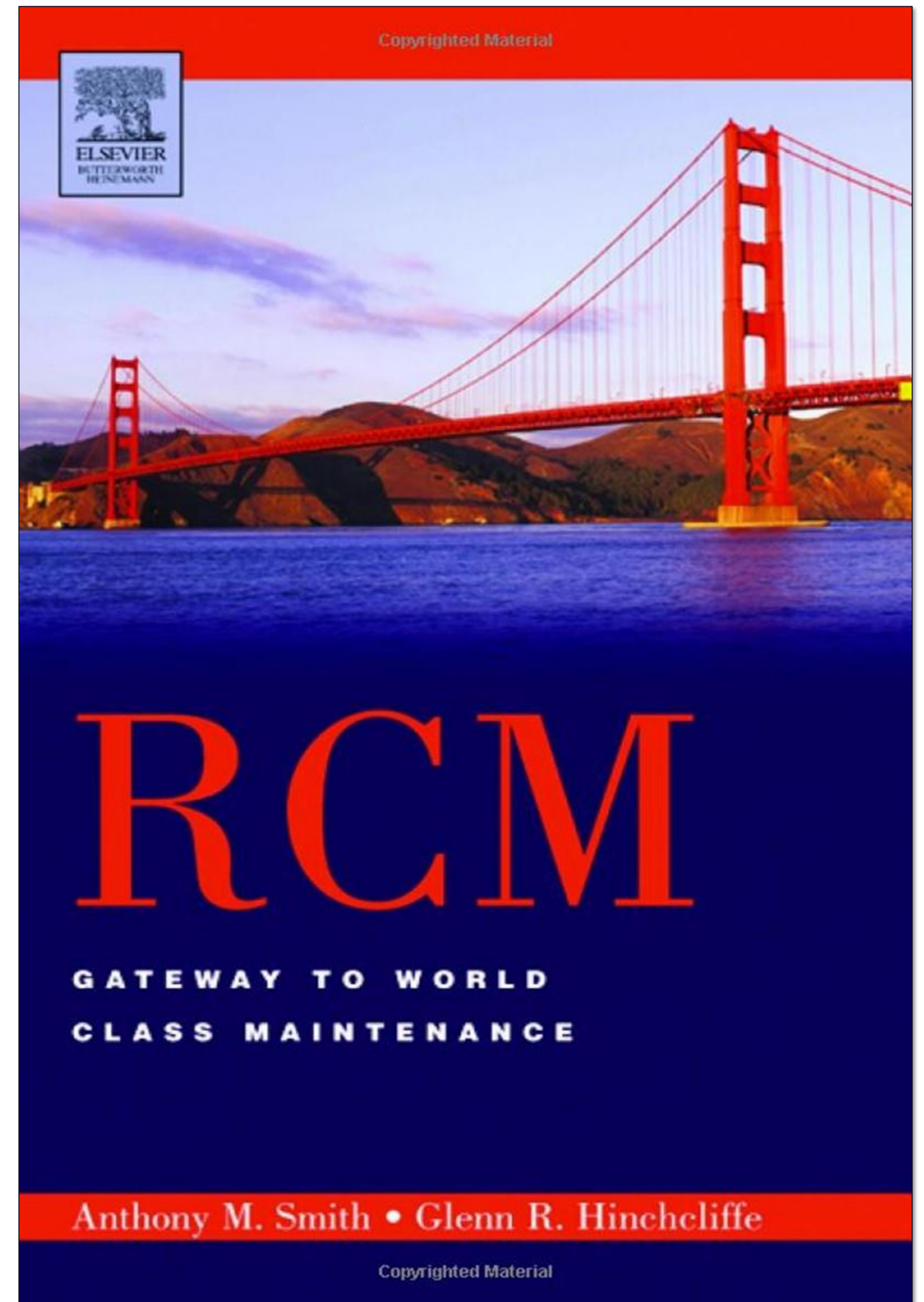


What Is Reliability-Centered Maintenance?

“In summary, then, the RCM methodology is completely described in four unique features:

1. Preserve functions.
2. Identify failure modes that can defeat the functions.
3. Prioritize function need (via failure modes).
4. Select applicable and effective PM (planned maintenance) tasks for the high priority failure modes.”

Anthony (Mac) Smith, RCM: Gateway to World Class Maintenance, 2004



What Is Reliability-Centered Maintenance?

“Reliability-Centered Maintenance (RCM) determines the applicable and effective maintenance for each failure given the operational context of the equipment being assessed. The [analysis] technique can be described as a process to help people determine the best policies for managing the functions of physical assets and for managing the consequences of their failures.”

Victor Borges, www.dnv.com, 2023



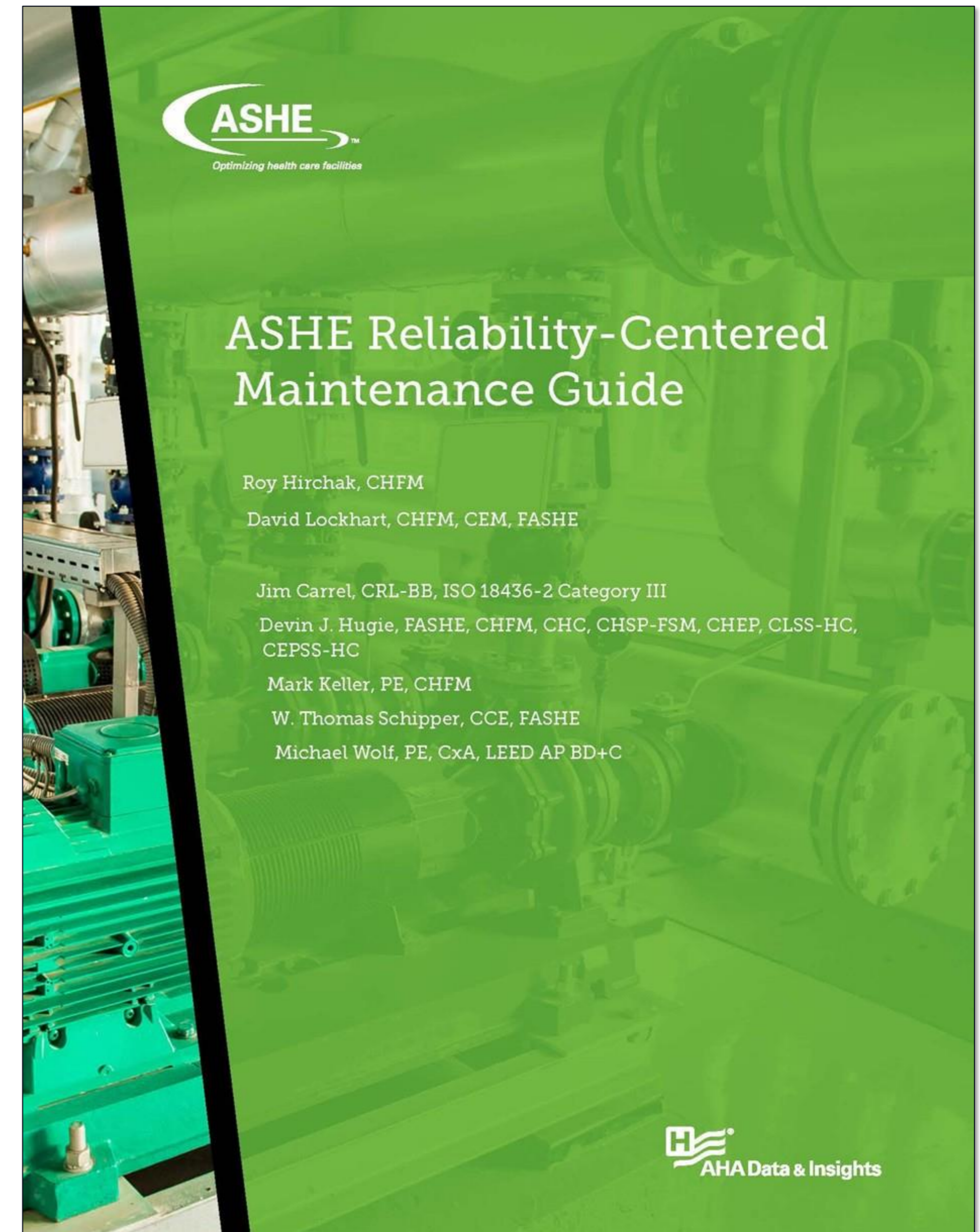
DNV



What Is Reliability-Centered Maintenance?

RCM is a decision-making process that analyzes the structures, systems, and assets (SSA), defines its true design function..., and determines the risk and/or criticality of the SSA to the organization and the operation of the facility."

ASHE Reliability-Centered Maintenance Guide, 2022



What Is Reliability-Centered Maintenance?

NFPA 70B A.8.1.3* “Reliability-centered maintenance shall be permitted,” Reliability-centered maintenance should not jeopardize the objective of 8.1.1. Reliability-centered maintenance is an umbrella strategy and decision-making process that analyzes systems and assets, defines their design function, and determines their risk and/or criticality to the organization and operation of the facility.



What Is Reliability-Centered Maintenance?

1. What are the functions and associated performance standards of the asset in its present operating context?
2. In what ways does it fail to fulfill its functions?
3. What causes each functional failure?
4. What happens when each failure occurs?
5. In what ways does each failure matter?
6. What can be done to [mitigate] or prevent each failure?
7. What should be done if a suitable proactive task cannot be found?

Reliability-centered Maintenance II, 2nd Edition, John Moubray, 1992. p.7)



Why Not Healthcare?

Reliability Qualifications

- Heavily Regulated
- High Quality Standards
- Affordability Requirements



- Regulation changes :
- CMS S&C: 14-07-Hospital Dec. 2013
- Allows for AEM – Alternative Equipment Maintenance



What About Compliance?

“Utility Systems

Building systems that provide support to the environment of care, including electrical distribution and emergency power; vertical and horizontal transport; heating, ventilating, and air conditioning (HVAC); plumbing, boiler, and steam; piped gases; vacuum systems; and communications systems, including data exchange systems.”

CAMH Glossary (January 2024)



What About Compliance?

“Maintenance

There are five types of maintenance – predictive, metered, corrective, interval-based, and reliability-centered.”

CAMH Glossary (January 2024)



What About Compliance?

“Equipment subject to federal or state law or Medicare Conditions of Participation in which inspecting, testing, and maintaining be in accordance with manufacturers’ recommendations, or otherwise establishes more stringent maintenance requirements.”

CAMH Glossary (January 2024)



What About Compliance?

“New operating components with insufficient maintenance history to support the use of alternative maintenance strategies.”

CAMH Glossary (January 2024)

- Records provided by the hospital’s contractors
- Information made public by nationally recognized sources
- Records of the hospital’s experience over time



What About Compliance?

Risk Assessment

- How the equipment is used.
- Likely consequences of equipment failure (NFPA 99)
- Available redundancy
- Incident history of identical or similar equipment
- Maintenance requirements

CAMH Glossary (January 2024)



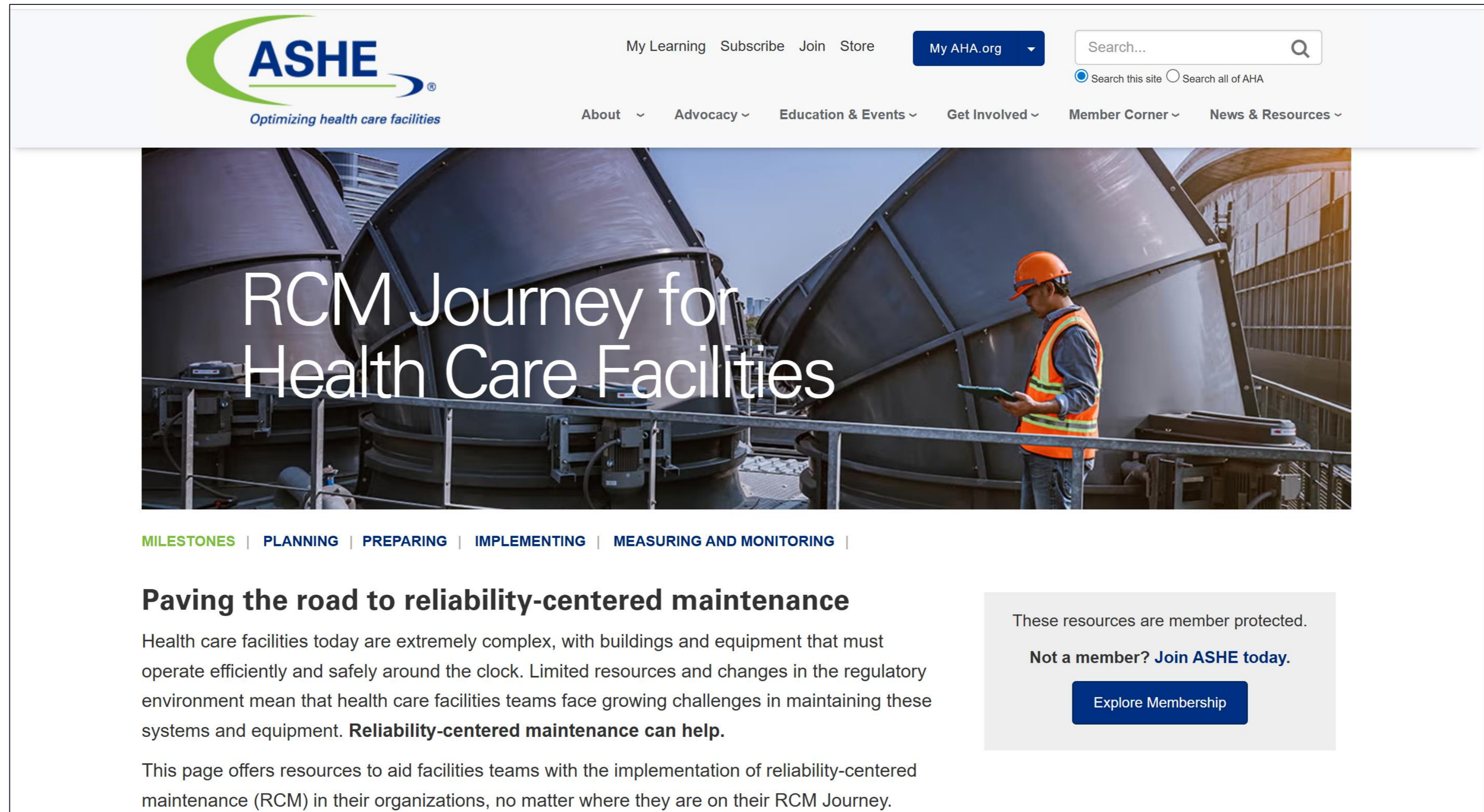
What About Compliance?

“The hospital identifies operating components of utility systems on its inventory that are included in an alternative equipment maintenance program.”

CAMH Glossary (January 2024)



ASHE's RCM Journey for Healthcare Facilities




The screenshot shows the ASHE website header with the logo "ASHE Optimizing health care facilities" and navigation links: "My Learning", "Subscribe", "Join", "Store", "My AHA.org", and a search bar. Below the header is a large image of a worker in an orange safety vest and hard hat looking at a tablet on a rooftop HVAC unit. The main heading reads "RCM Journey for Health Care Facilities". Below this is a navigation bar with "MILESTONES" (highlighted in green) and "PLANNING | PREPARING | IMPLEMENTING | MEASURING AND MONITORING". The main content area features the sub-heading "Paving the road to reliability-centered maintenance" and a paragraph: "Health care facilities today are extremely complex, with buildings and equipment that must operate efficiently and safely around the clock. Limited resources and changes in the regulatory environment mean that health care facilities teams face growing challenges in maintaining these systems and equipment. **Reliability-centered maintenance can help.**" Below this is another paragraph: "This page offers resources to aid facilities teams with the implementation of reliability-centered maintenance (RCM) in their organizations, no matter where they are on their RCM Journey." To the right, a grey box contains the text "These resources are member protected." and "Not a member? [Join ASHE today.](#)" with a blue "Explore Membership" button.




ASHE's RCM Journey for Healthcare Facilities

Why take the RCM Journey?



ASHE member Mark Mochel explains the benefits of RCM and why, for many health care organizations, the initial investment is worth it.

Your field guide for this trip




The ASHE Reliability-Centered Maintenance Guide is a detailed resource for health care facilities managers starting down the path of RCM implementation. It reviews the basics of RCM and outlines the steps involved in planning and launching a successful RCM program in a health care facility. This guide works hand in hand with the RCM Journey to provide the knowledge and tools needed to navigate through that process.


[Purchase the Guide](#)

Milestones to RCM


Navigate directly to the milestones below to access free resources to start or continue your RCM Journey.




Planning



Preparing



Implementing



Measuring and Monitoring



RCM Journey: Planning



Planning

- Gain Executive Sponsor Buy-In
- Form the RCM Team
- Perform a Risk Assessment



RCM Journey: Planning



Planning

- Coxall, VP Support Services
- Denver Area, Colorado
- Technical Activities Governance Committee
- Certified Reliability Leaders
- Less is More



Children's Hospital Colorado



RCM Journey: Preparing



Preparing

- In-House vs. Outsourced RCM Facilitator
- Collect and Analyze Data
- Pareto Charts
- Decisions – CMMS Work Types, Nomenclature



RCM Journey: Preparing

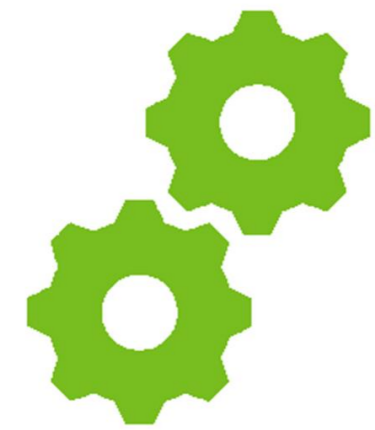


Planning

- Copus, Exec. Dr. of FMO
- St. Louis, Missouri
- RCM Facilitator
- 3-Year WO History Analysis
- Pareto Analysis & Charts
- CMMS Work Types



RCM Journey: Implementing

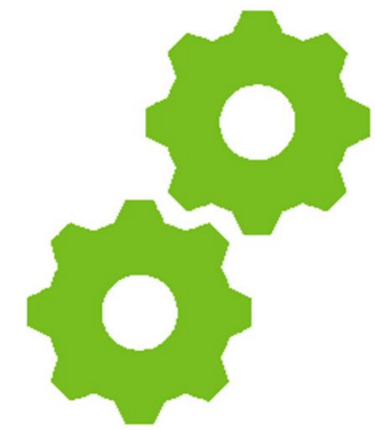


Implementing

- Pilot RCM Analysis
- Outline the Process
- Report Findings



RCM Journey: Implementing



Implementing

- Mark Dease, Exec. Dir., Systems Facilities Engineering
- Richland Memorial, Columbia SC (Pilot)
- CMMS Access & Analysis
- Asset Condition Management
- Phased Approach (I-V)



RCM Journey: Measure & Monitor



Measure & Monitor

- Successes & Setbacks
- Document Value vis KPI Achievement
- Demonstrate ROI
- Continuous Improvement (PM the PMs)



RCM Journey: Measure & Monitor



Measure & Monitor

- Kevin Mannle, VP, Fac. Ops, & Eng.
- NYP Columbia Irving MC
- KPI Dashboard
- Weekly RCM Progress Report
- On-Going ROI Tracking

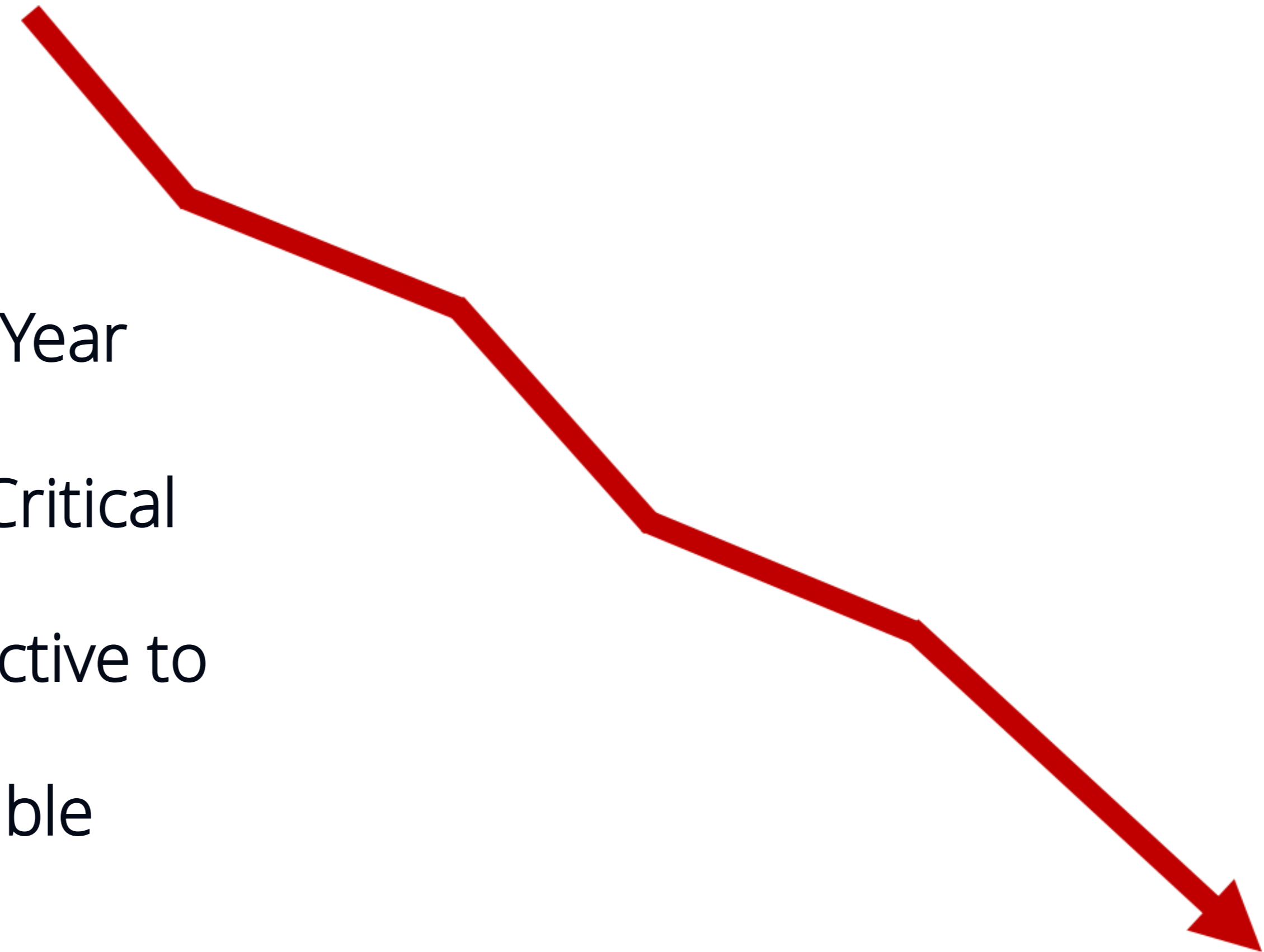
 **NewYork-Presbyterian**



RCM Journey ROI

Return on Investment

- Repurposed % Total Man-Hours/Year
- Reduced Outsourced PM Costs
- Eliminated Reduction of Annual Critical Utility Failures
- Cultural Paradigm Shift from Reactive to Proactive
- 100% Documented and Defendable Regulatory Compliance



Questions?



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