

# Lessons Learned – Implementing Effective Process Safety Management Programs in Chemical Startups



Tuesday, July 7, 2026



12:00pm EDT  
9:00am PDT



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# Upcoming Webinars


## Have Facilitation Skills – Will Travel


 Tuesday, August 4, 2026

 12:00pm EDT  
9:00am PDT

# Today's Webinar

## Lessons Learned – Implementing Effective PSM Programs in Chemical Startups

 Tuesday, June 7, 2026

 12:00pm EDT  
9:00am PDT

Hosted by the **Pipeline & Hazardous Materials Safety Administration (PHMSA):**  
Prioritizing Safety – Best Practices:

## Guidelines for Auditing Process Safety Management Systems

 Monday, July 20, 2026

 1:00pm EDT

## Guidelines for Asset Integrity Management

 Wednesday, August 19, 2026

 1:00pm EDT



# About AcuTech

Since 1994, AcuTech has been a global leader in providing best-in-class consulting, training, and software solutions to manage process risk.

With deep expertise in both the management and technical aspects of risk management, AcuTech is uniquely positioned to support clients ranging from the world's largest companies to specialized private companies to trade organizations and government agencies in improving safety, security, environmental, and operational performance.

This extensive experience across industries and in-depth knowledge of the tools and methods available for managing risk, allows our consultants to be responsive and flexible to meet client needs. In addition, they possess strong project management skills, broad technical expertise, and emphasize high-quality, on-time project work to support safer, more efficient, and, ultimately, more profitable operations.

# Lessons Learned – Implementing Effective Process Safety Management Programs in Chemical Startups



Tuesday, July 7, 2026



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# Speaker



**Felicia Miller**

Senior Principal Engineer

Ms. Felicia Miller is a chemical engineer with 30+ years of experience in operations and consulting, specializing in Process Safety Management (PSM). She is a highly skilled PSM professional and accomplished auditor, having led numerous PSM and Risk Management Plan (RMP) audits across diverse industries.

Ms. Miller has directed comprehensive PSM program implementations and driven targeted improvements for key elements such as Process Hazard Analysis (PHA), Management of Change (MOC), Facility Siting, and Mechanical Integrity programs. Her leadership spans all aspects of Environment, Health, and Safety (EHS), including the development and execution of policies, programs, standards, and procedures.

As a recognized authority on Recognized and Generally Accepted Good Engineering Practices (RAGAGEP), Ms. Miller has guided compliance implementation at both site and corporate levels.



**A quick poll...**

**Are you currently working for a chemical startup?**



**A quick poll...**

**Are you currently implementing a PSM program?**



**A quick poll...**

**Have you ever had to implement a PSM program?**

# Agenda

- Context & Stakes for Startups
- Seven Challenges we see Most Often
- Actionable, Right-Sized Solutions
- Key Takeaways & Q&A

The Wonders  
of the  
Ancient  
World








# Why Startups Face Unique PSM Challenges

- Lean teams, rapid change, limited operating history
- Novel chemistries/equipment → uncertain hazards
- Higher regulatory scrutiny + investor expectations

**One serious event can be existential for a startup.**



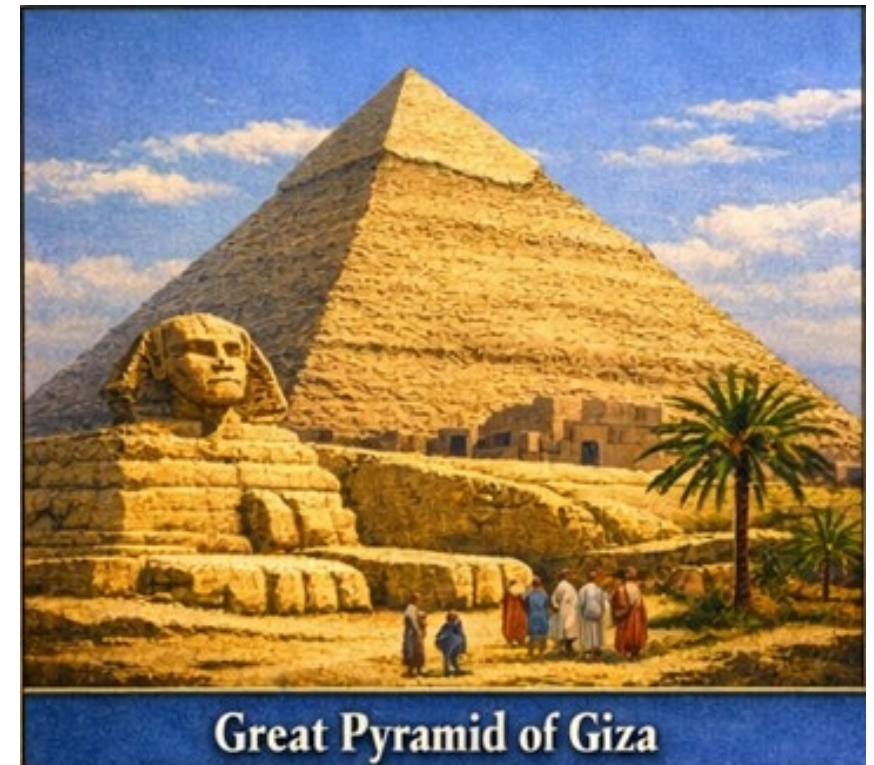
# 7 Challenges Implementing PSM in Startups vs. 7 Wonders of the Ancient World

 <p>Challenge #1: Customization over Replication</p>	 <p>Challenge #2: Insufficient PSI</p>	 <p>Challenge #3: Compressed/Inadequate Safety Reviews</p>	
Great Pyramid of Giza	Hanging Gardens of Babylon	Statue of Zeus at Olympia	
 <p>Challenge #4: Scaling Challenges</p>	 <p>Challenge #5: Employee Participation &amp; Safety Culture</p>	 <p>Challenge #6: Management of Change</p>	 <p>Challenge #7: Incident Investigation</p>
Temple of Artemis at Ephesus	Mausoleum at Halicarnassus	Colossus of Rhodes	Lighthouse of Alexandria

# Challenge #1: Customization over Replication

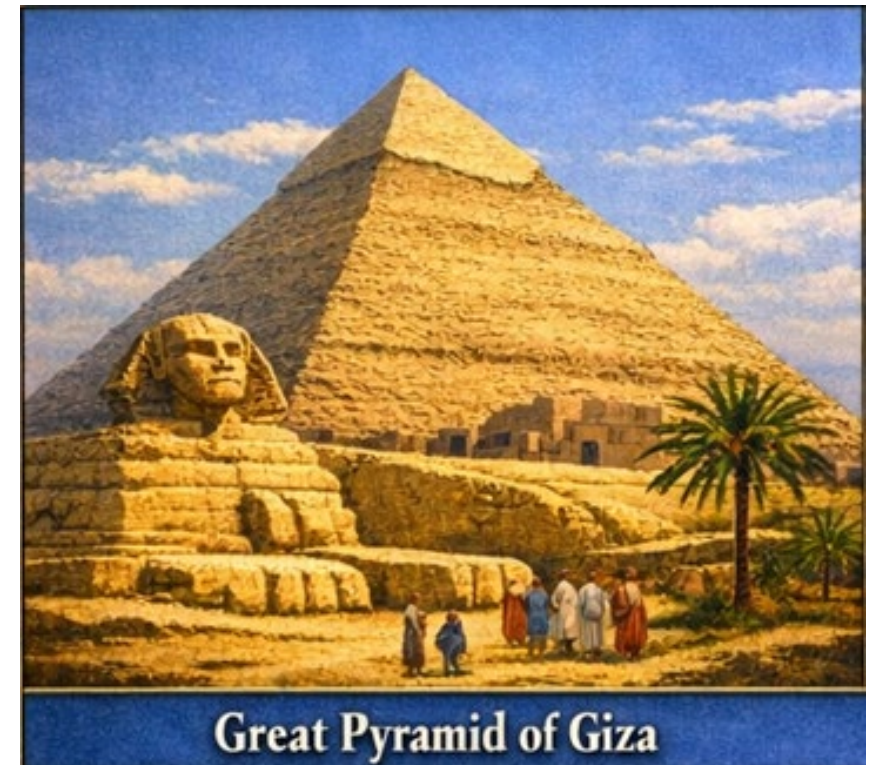
## Legacy PSM Doesn't Fit Startups

- **Mismatch with Startup Structure** - Legacy PSM systems assume large teams and stable organizations — not lean, fast-changing startups.
- **Different Risk Tolerance** - Established companies have broader resilience whereas one significant event can end a startup.
- **Higher Regulatory Scrutiny** - New technologies + no compliance history = more regulator attention and tighter expectations.
- **Consequences of Misalignment** - Copy-paste PSM programs create overdocumentation, blind spots, noncompliance, and weaken safety culture.



# Solution #1: Scaled, Risk-Based PSM

- Tailored, Risk-Based PSM
- Eliminate Hazards Early
- Use External Expertise Strategically
- Document Assumptions Clearly

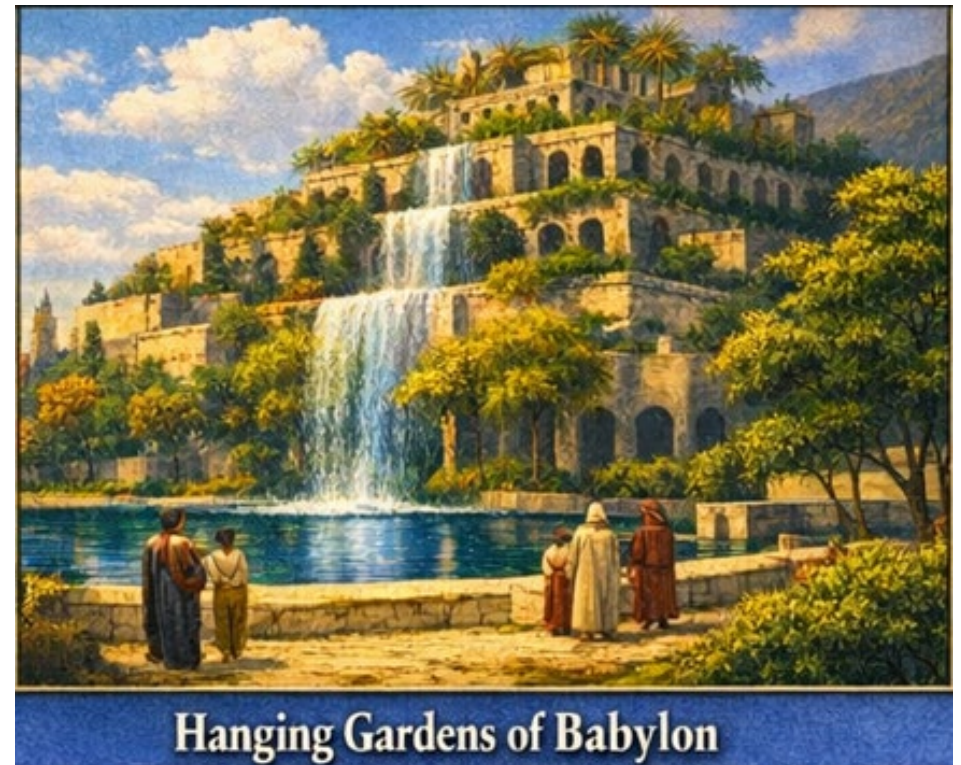


# Challenge #2: Insufficient PSI

## Why it Matters

- Novel chemistry/equipment → real data gaps
- Uncertainty during PHA can miss hazards
- Credibility risks if limits/assumptions aren't explicit

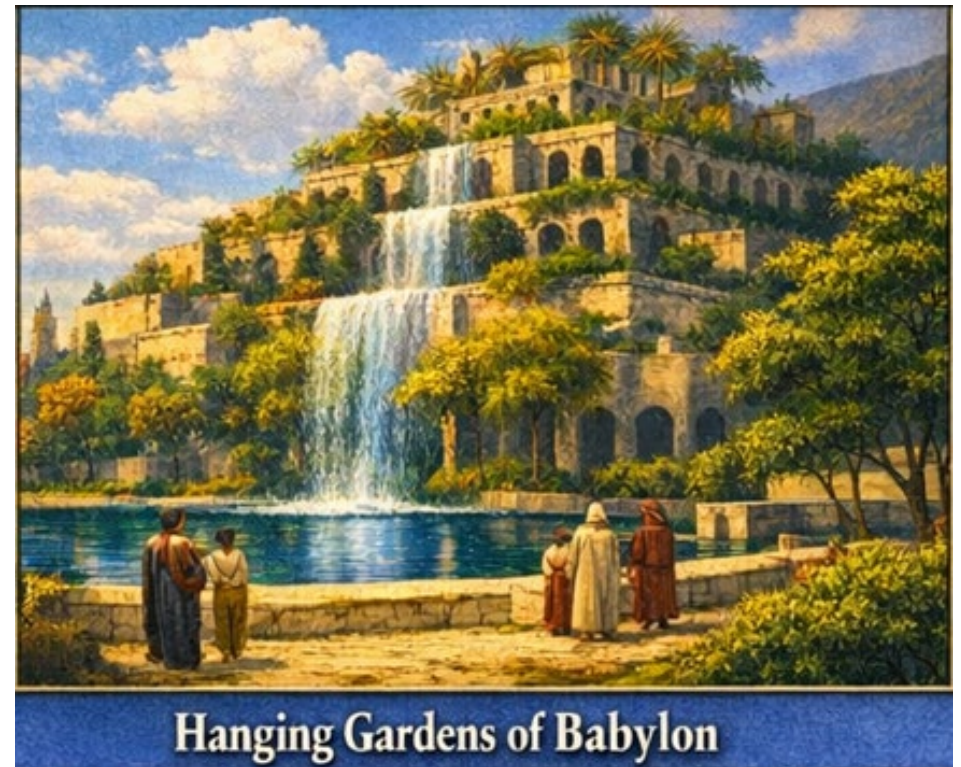
**Boldly go where no one has gone before, but be sure to...**



# Solution #2: Balance Speed with Rigor

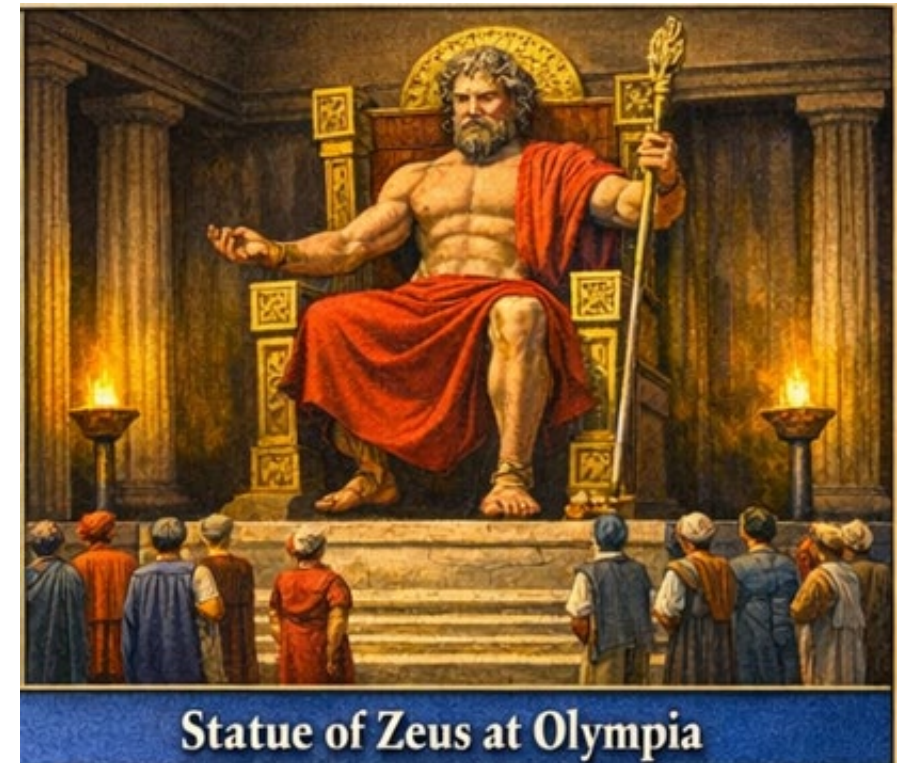
- Leverage Analogous Data
- Engage External Expertise
- Iterative Hazard Reviews
- Pilot Testing and Modeling
- Document Uncertainty Transparently

**Forge ahead safely, because recklessness is not innovation—it's a liability.**



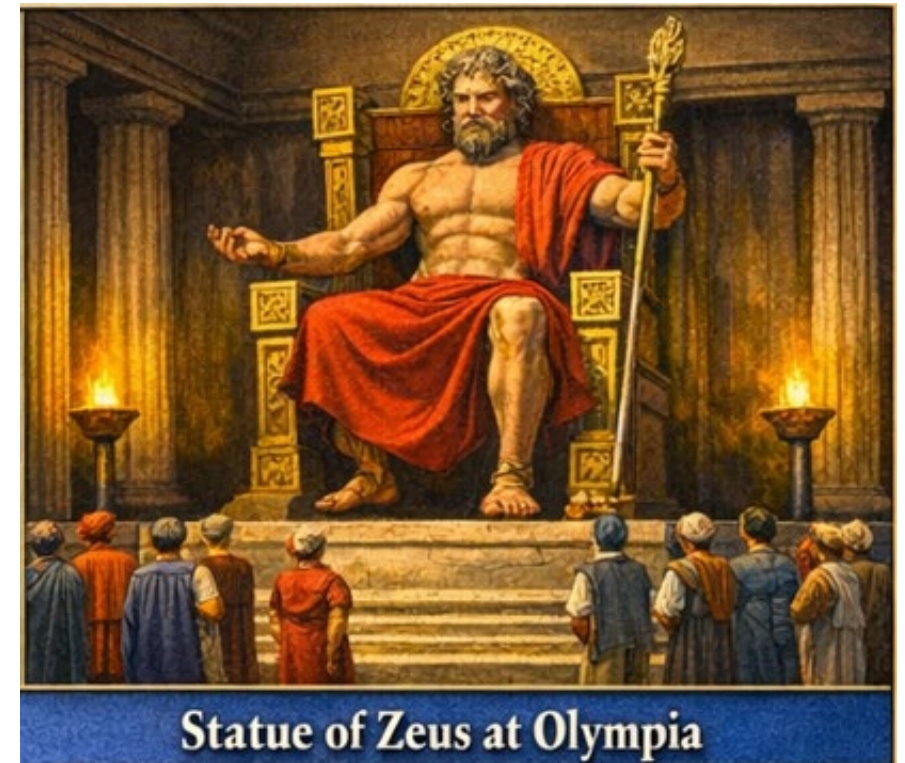
# Challenge #3: Inadequate/Compressed Safety Reviews

- Short-cut PHAs to 'hit milestones'
- Assume packaged units are already reviewed
- Rushed sessions miss integration/site hazards



# Solution #3: Early, Frequent, Right-Sized Reviews

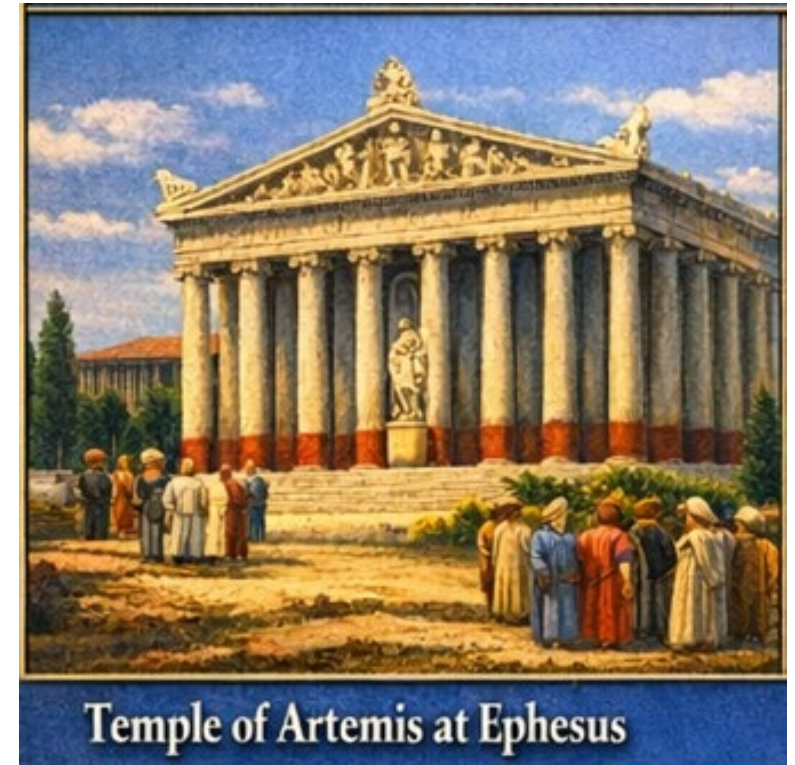
- Tiered reviews at key scale milestones
- Integrate with agile iterations
- Avoid oversimplification; document assumptions & actions



# Challenge #4: Scaling Challenges

## What Changes at Scale

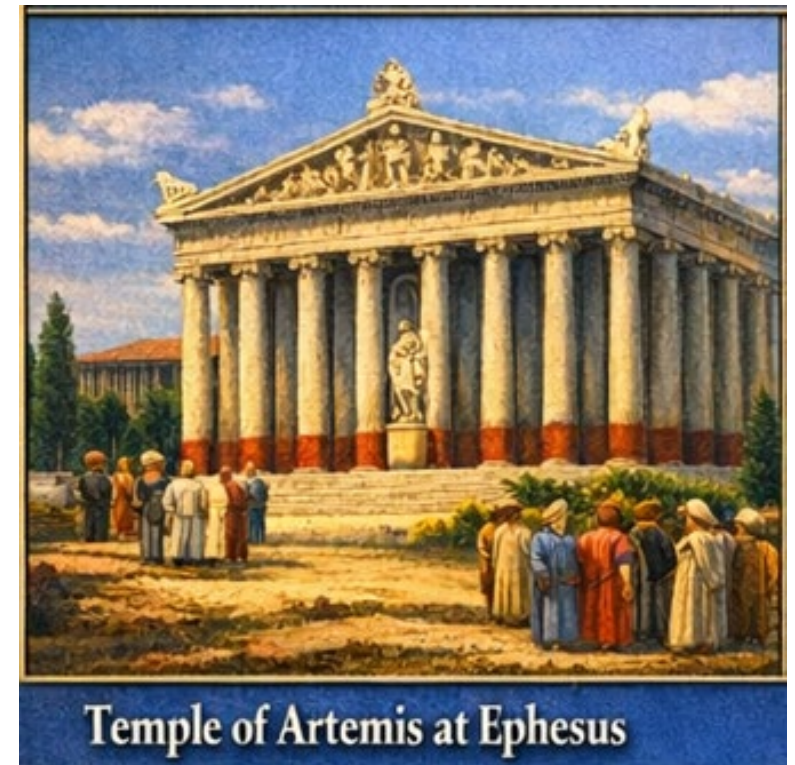
- Heat removal
- Mixing regimes
- Control lag appears
- Process mode shifts
- Mechanical realities emerge
- Relief behavior changes (e.g., foaming, two-phase flow, faster gas generation)
- Equipment  $\neq$  glassware



# Solution #4: Plan Flexibility & Stepwise Learning

- Design in ports, bypasses, clean-out access, safe access ports
- Set safe limits early; verify at each scale
- Plan manual/degraded modes; train and drill
- Scale in stages with learn → pause → adjust between scales

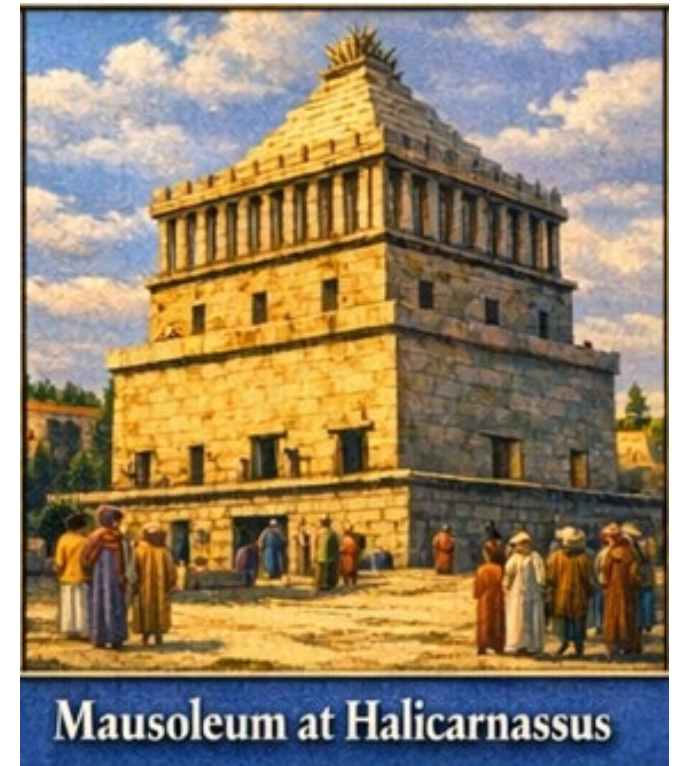
**Yesterday's success does not guarantee tomorrow's safety.**



# Challenge #5: Employee Participation & Safety Culture

- Obligations start Day 1—even with small teams
- Frontline input catches weak signals early
- Early habits become culture—good or bad

**For startup companies, safety culture is not inherited; it is created in real time from day one.**



# Solution #5: Lean, Agile Participation

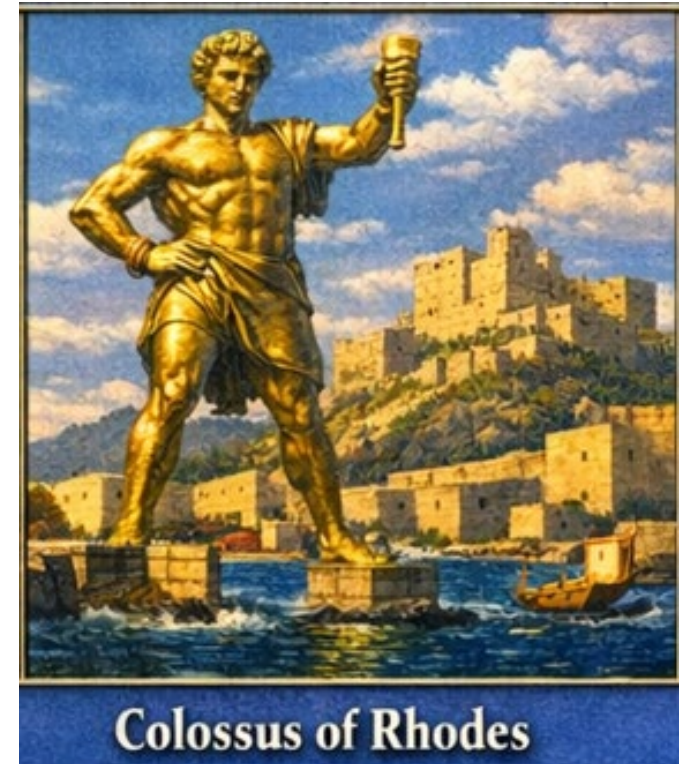
- One-page plan; growth triggers pre-defined
- Frontline in PHA/MOC/incidents (use temporary stand-ins early)
- Simple reporting with visible feedback (**truth in action**)
- Lightweight evidence dossier for regulators/investors



# Challenge #6: Management of Change

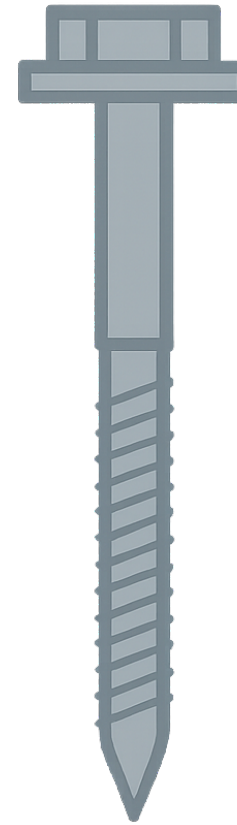
## Managing Change when Nothing is Static

- Unrecognized changes are the main risk
- Project scope vs. operational MOC must be distinct
- Over-processing stalls; under-processing risks catastrophe



# Solution #6: Simplify & Clarify MOC

- Triage by hazard:  
full / targeted / RIK
- Publish boundary:  
project change vs. operational MOC
- Train what is / isn't MOC with  
concrete examples



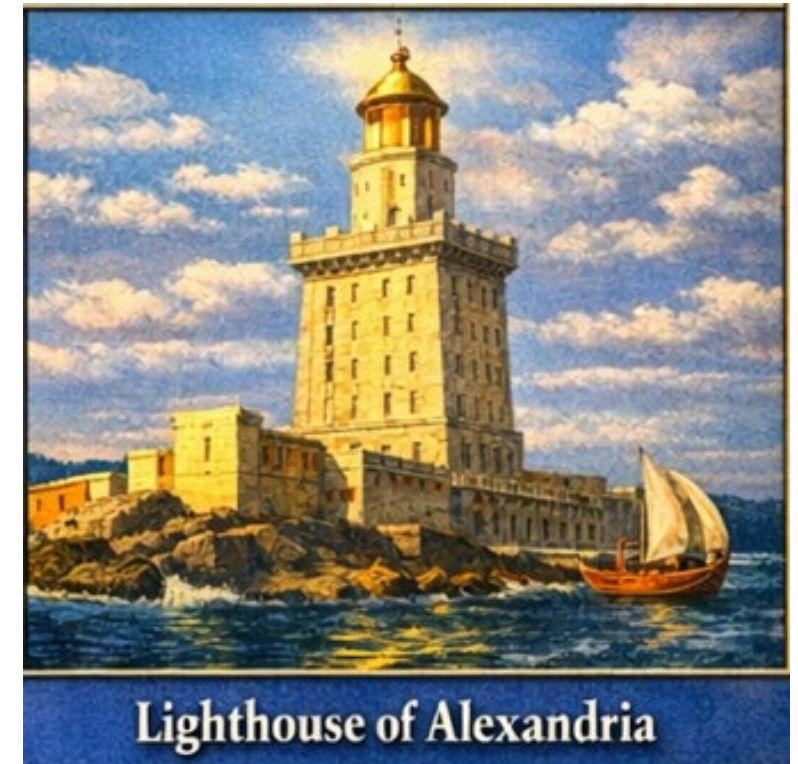
**MOC IS THE  
ANCHOR BOLT  
— IT DOESN'T  
STOP THE  
EARTHQUAKE,  
BUT IT KEEPS  
THE STRUCTURE  
STANDING**

# Challenge #7: Incident Investigation

## Right-Sizing

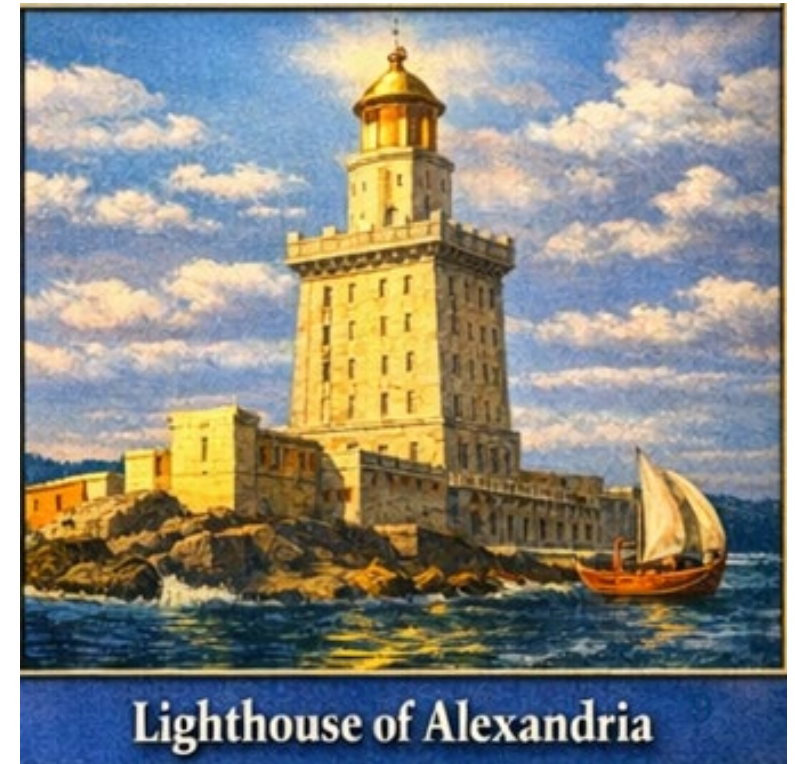
- Lean orgs can't deep-dive everything
- Near misses show early drift—capture them
- Clear tiers prevent over/under-reaction

**A lighthouse only helps if the light is on — and right-sized investigations keep that light shining.**



# Solution #7: Tiered Investigations

- Tier 1: quick fix for minor/obvious causes
- Tier 2: short-form + simple RCA for moderate/repeat
- Tier 3: full RCA + cross-functional team; bring external SMEs as needed
- Define triggers; communicate lessons fast



**A lighthouse guides by shining only what you need — enough to warn you and focused enough to help you steer clear.**

# Key Takeaways

- Scale PSM to hazards & organizational maturity
- Treat PHAs/PSI as living; design in flexibility
- Engineer participation & culture early
- Keep MOC & investigations light but disciplined

**Startups thrive when their safety systems evolve at the same pace as the company grows. Build it brick by brick, layer by layer, wonder by wonder.**

# Q&A

## What questions do you have for Felicia?



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# Thank you!

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## Webinar 1 Recording Now Available

Confined Explosion  
Hazards in Enclosed  
Process Buildings:  
A Recognized Risk with  
Limited Guidance



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