INTEGRATING AIM WITH PSM

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The Park, Hyderabad
Process Safety & Risk Management Conference

ACUTECH'S CURRENT OFFICES

- AcuTech's strategy is to develop our presence as a global consulting practice to better serve our client base.
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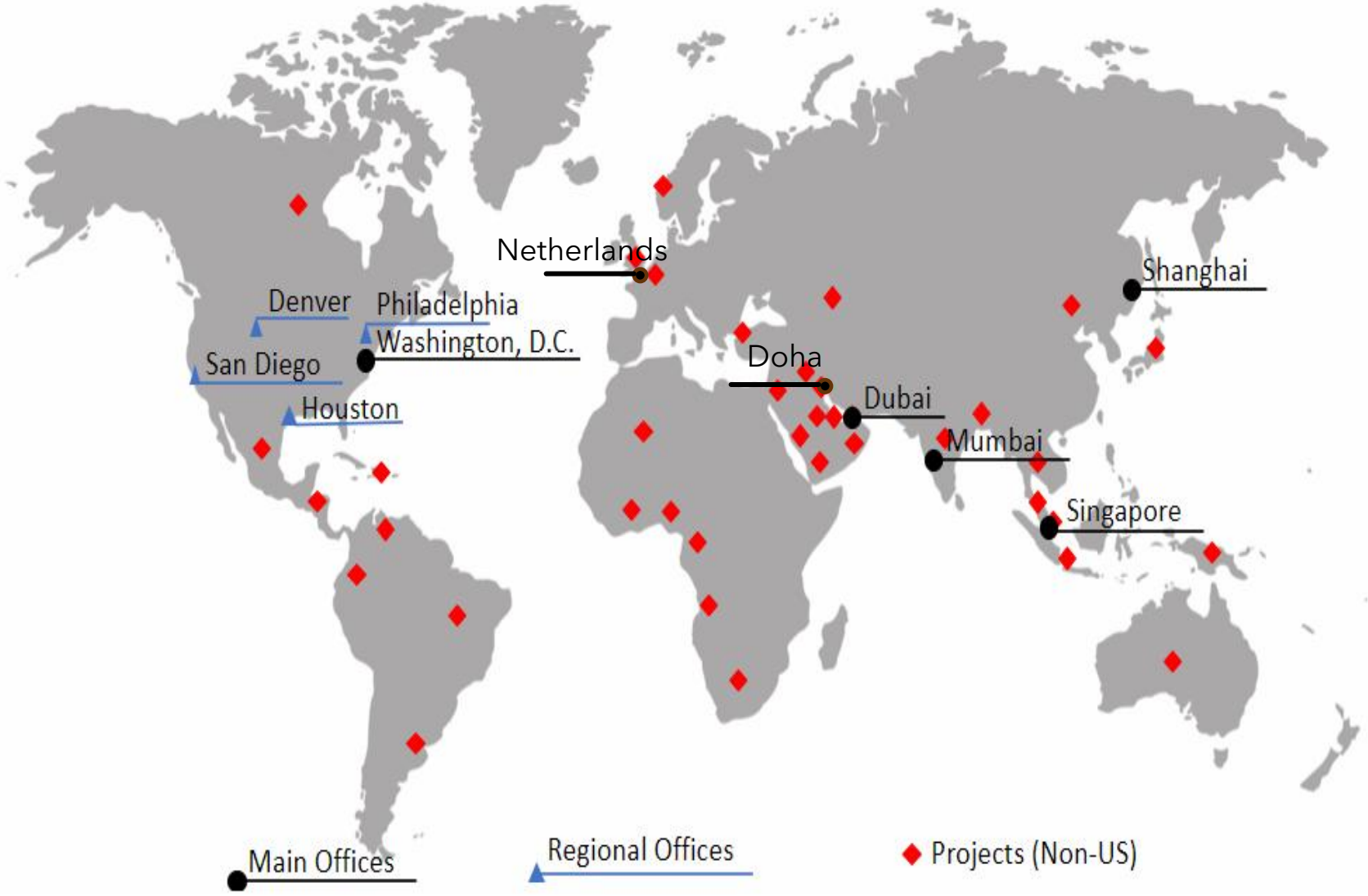
  - Implement our market segmentation strategy
  - Expand services

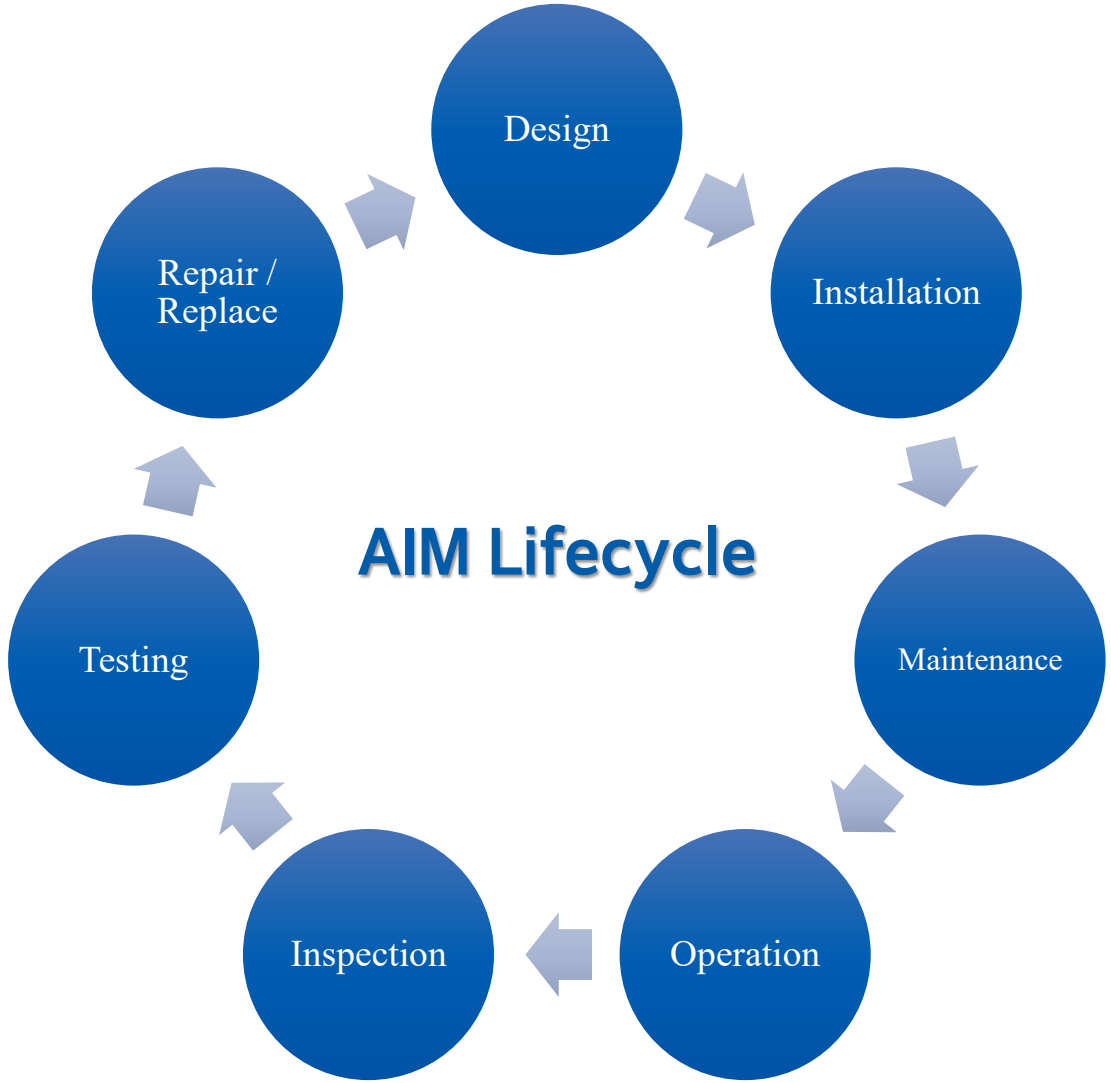


What is Asset Integrity?

Asset integrity (AIM) is the management of equipment and systems to ensure they are *designed*, *installed*, *maintained*, and *operated* safely and properly.

"Safely" generally means preventing the **Loss of Primary Containment (LoPC)**

AIM programs reduce risk of LoPC through rigorous documentation of processes and procedures, inspection, testing and preventative maintenance (ITPM) activities, and critical engineering data.



Asset Integrity & Performance

Objective: Risk Management

Reliability

Objective: Availability

Mechanical Integrity

Objective: OSHA PSM Compliance

Legacy Programs

Scope: Fixed Pressure Equipment
Content: How to perform an MI activity

Mandatory (minimum requirement)

- Compliance for PSM-Covered Equipment

ITPM Equipment Types

- Fixed Equipment
- Machinery
- Electrical
- Instrumentation
- SIS & IPL
- Secondary Protection
- 3rd Party

Discretionary

- Utilization

Programs

- ITPM – Special Emphasis Programs
- Reliability Centered Maintenance
- Criticality (SCE)
- Critical Spares Management
- Condition Monitoring
- Damage Mechanisms
- NDT Inspections
- FMEA
- Operator Surveillance
- IOW's
- RAM Models
- RCFA
- QC & Vendor Assessments
- Data Analysis & Performance Metrics
- Safety & Compliance

Discretionary

- Risk Management
- Efficiency
- Effectiveness
- Evergreening
- Continuous Improvement

Programs

- Asset Management
- Life Cycle Costs
- RBI – Fixed Equip
- Predicative & Prescriptive Maintenance
- Advanced Analytics
- TAR Planning & Execution
- Project Execution
- Training & Skill Development
- Digitalization & Transformation

Why Integration of AIM with PSM ?

AIM

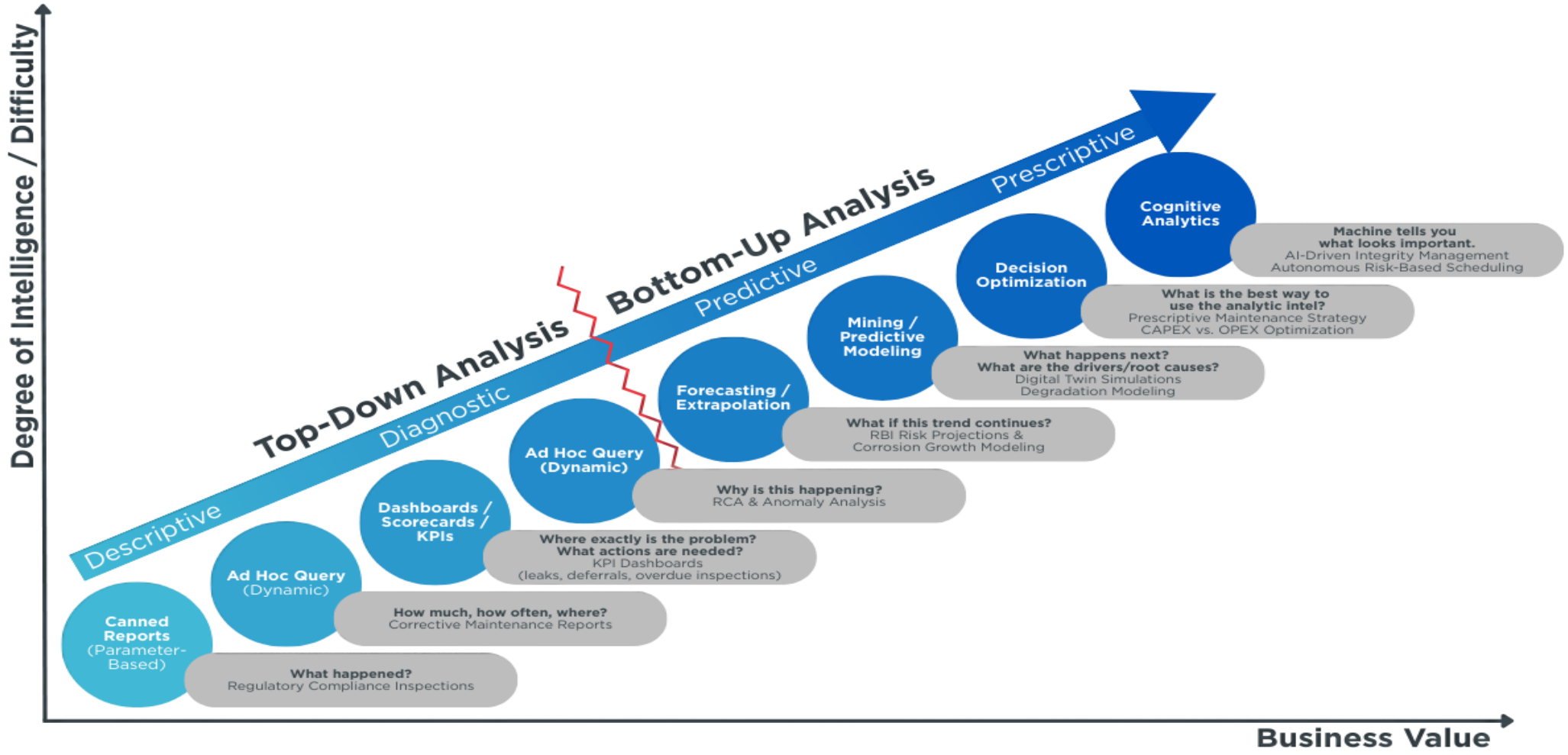
Ensures critical equipment remains safe and reliable throughout its lifecycle.

PSM

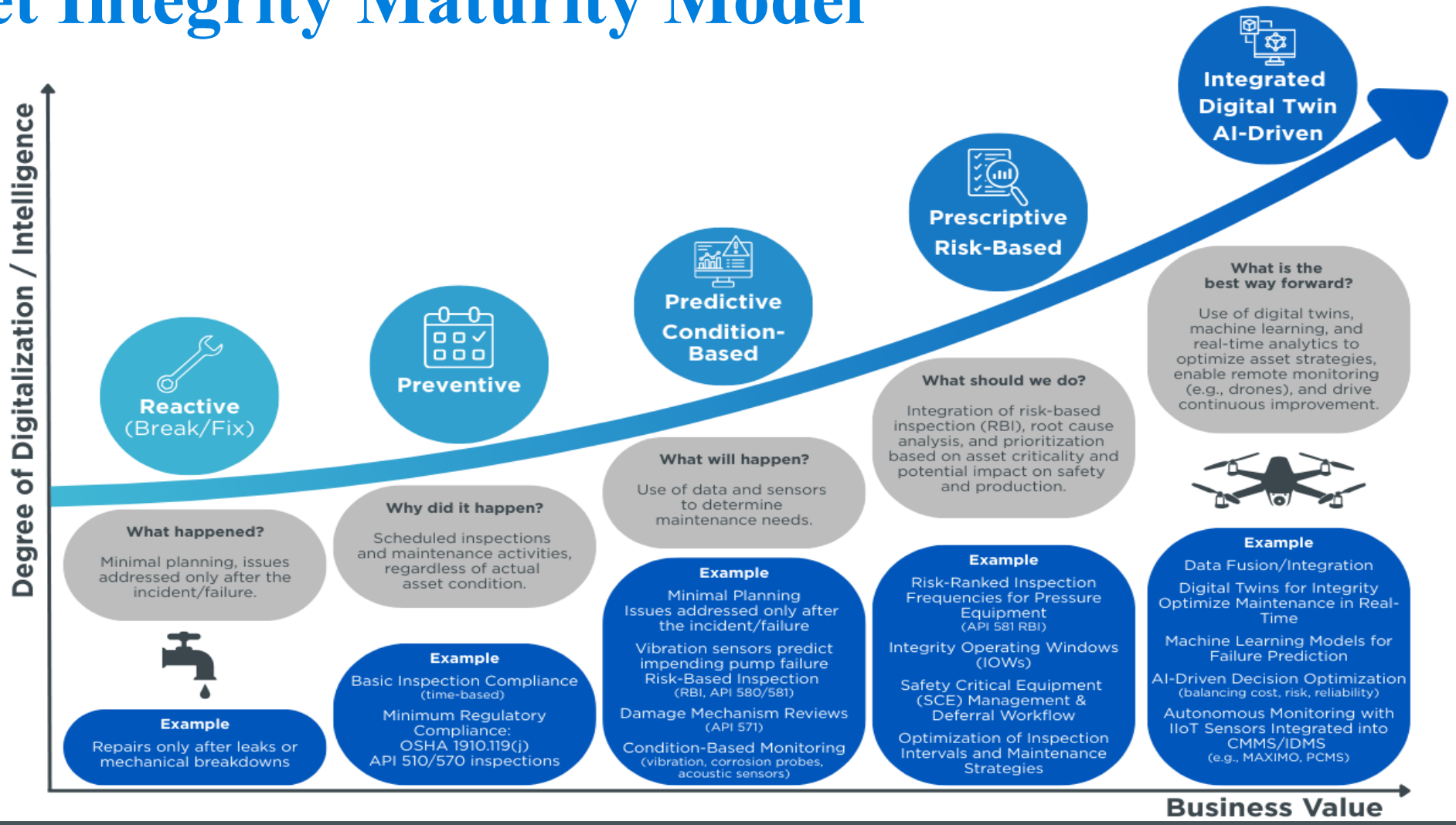
Prevents major accidents through hazard identification and risk control

PSM and AIM reduce the risk of Loss of Primary Containment (LOPC), improve equipment reliability, strengthen safety barriers, support regulatory compliance, and enable safe, reliable, and sustainable operations

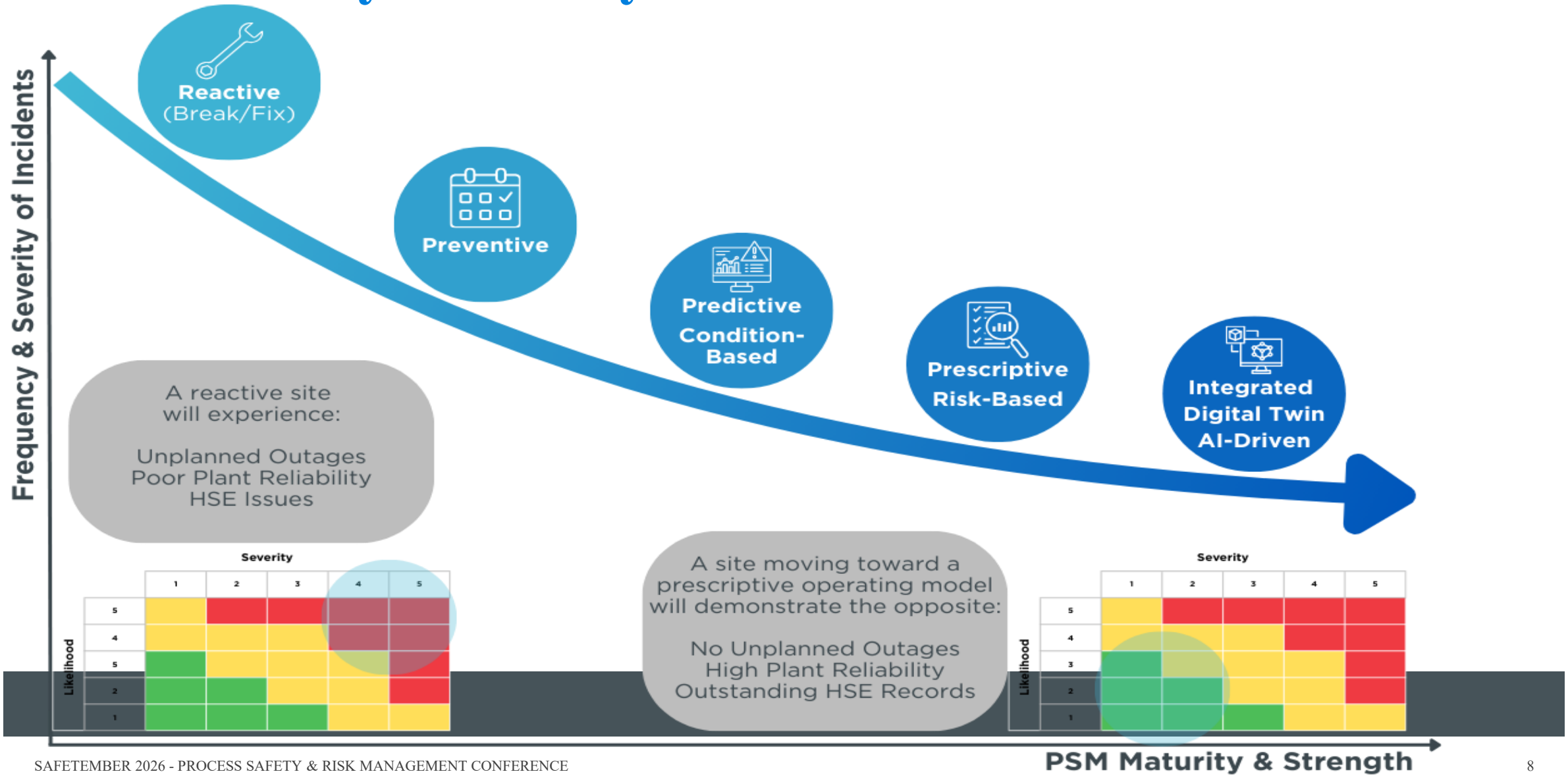
Asset Integrity Approach



Asset Integrity Maturity Model



Process Safety Maturity Model



PSM Metrics and Asset Integrity

Three major references for PSM metrics:

- *CCPS*
- *API RP 754*
- *UK HSE*

Lagging

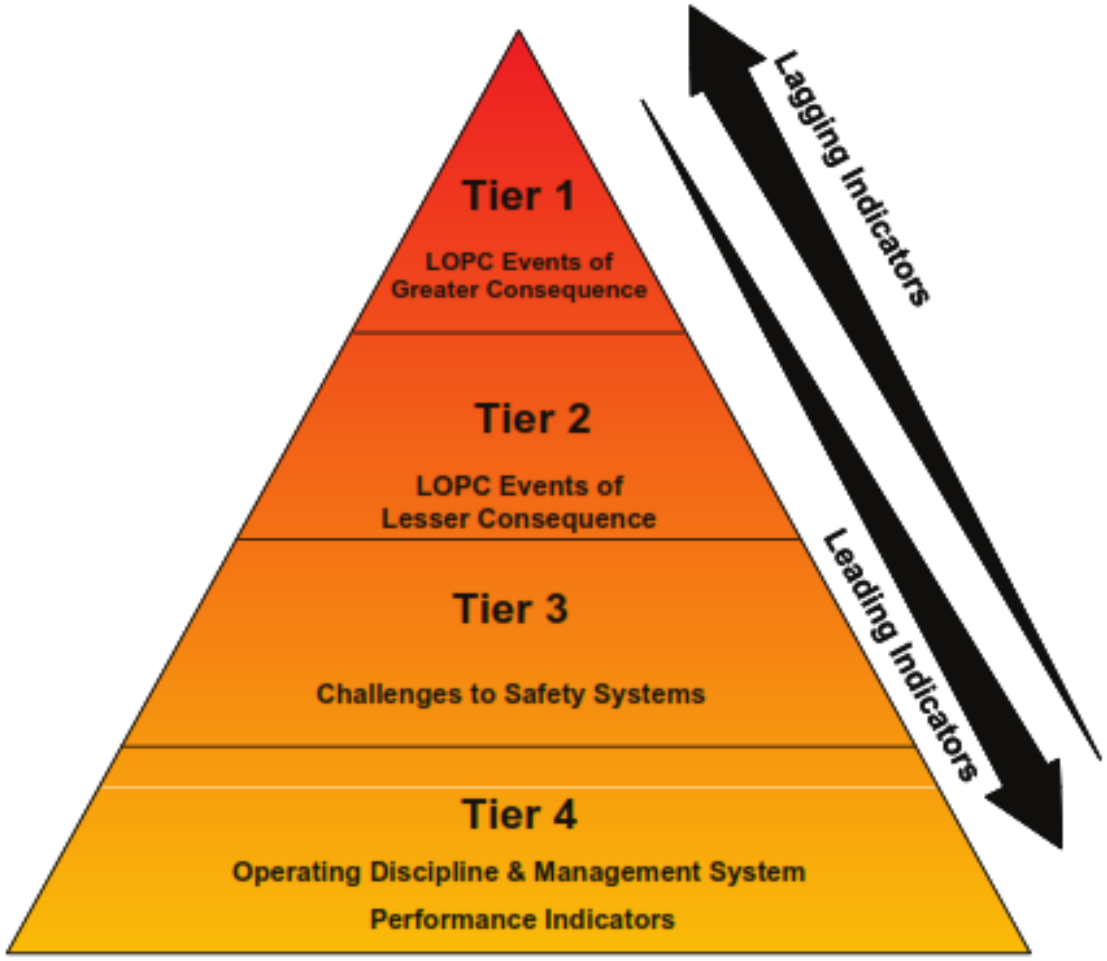
- Process Safety Incident Count (PSIC)
- Process Safety Total Incident Rate (PSTIR)
- Process Safety Incident Severity Rate

Near Miss

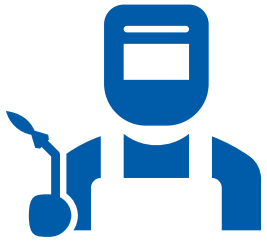
- Any **loss of containment** of materials included in the PSM program
- Any unexpected fire or flames
- Any activation or discharge from a **pressure relief device**
- Activation/challenge of an **SIS or other process control function**
- Process excursion or deviation
  - Exceeding IOWs, unusual or unexpected reactions
- Other errors of omission or commission

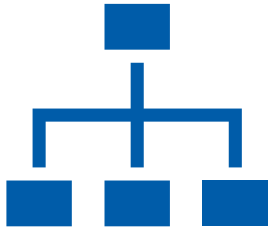
Leading

- Percent of **overdue ITPM tasks**
- Percent **downtime (reliability) of safety critical equipment**/safeguards



AIM WITHIN PSM





US Occupational Safety and Health Administration (OSHA) 1910.119(j)(...)

(1) Application

(2) Written procedures

(3) Training for maintenance activities

(4) Inspection and testing

(5) Deficiencies

(6) Quality assurance

Key PSM Elements most directly related to AIM:

Process safety information (PSI)

Management of change (MOC)

Pre-startup safety review (PSSR)

Process hazard analysis (PHA)

Contractors

Hot work permits/Safe work practices (HWP/SWP)

Emergency response plans (ERP)

CONCLUSION

- This has demonstrated that the historical practice of managing Process Safety Management (PSM) and Asset Integrity Management (AIM) within independent, fragmented organizational silos introduces severe vulnerabilities into high-hazard process industries.
- Integration of **Asset Care and Process Safety Maturity Framework**, emphasizes that physical equipment reliability and operational barrier strength are fundamentally codependent variables.

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Thank You!

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