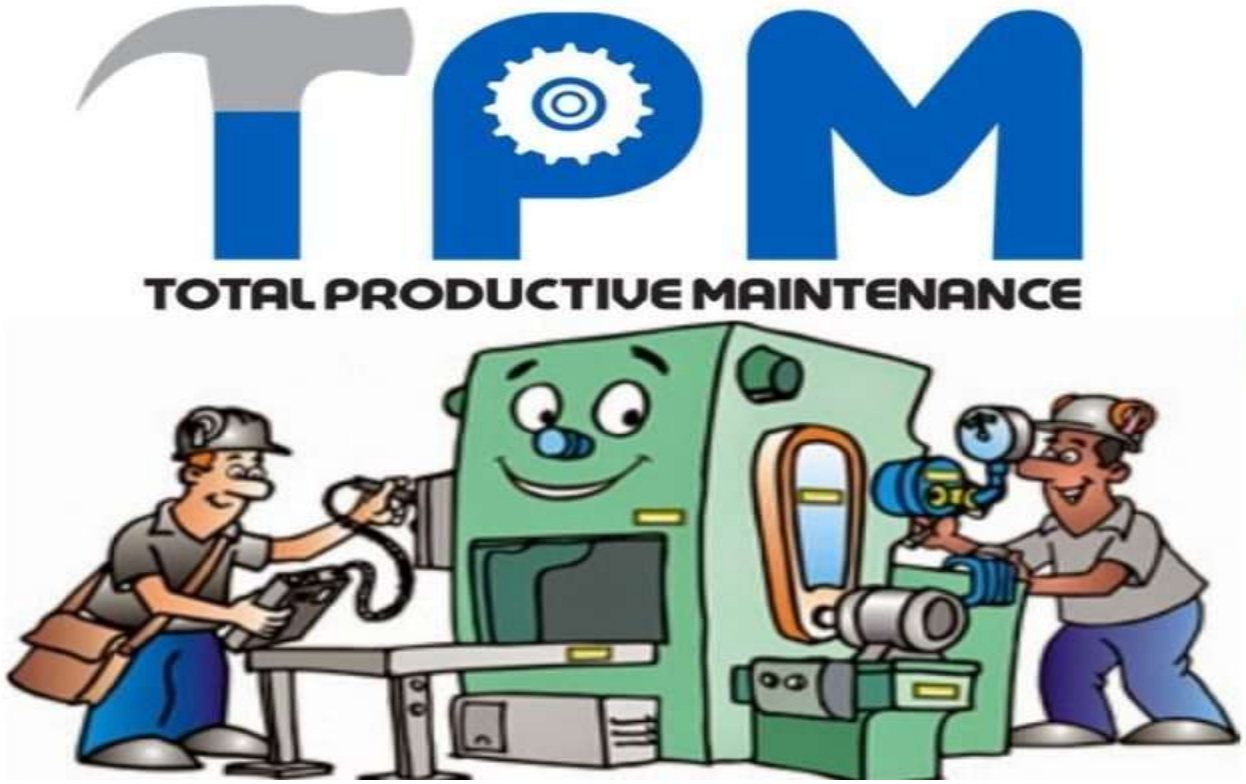
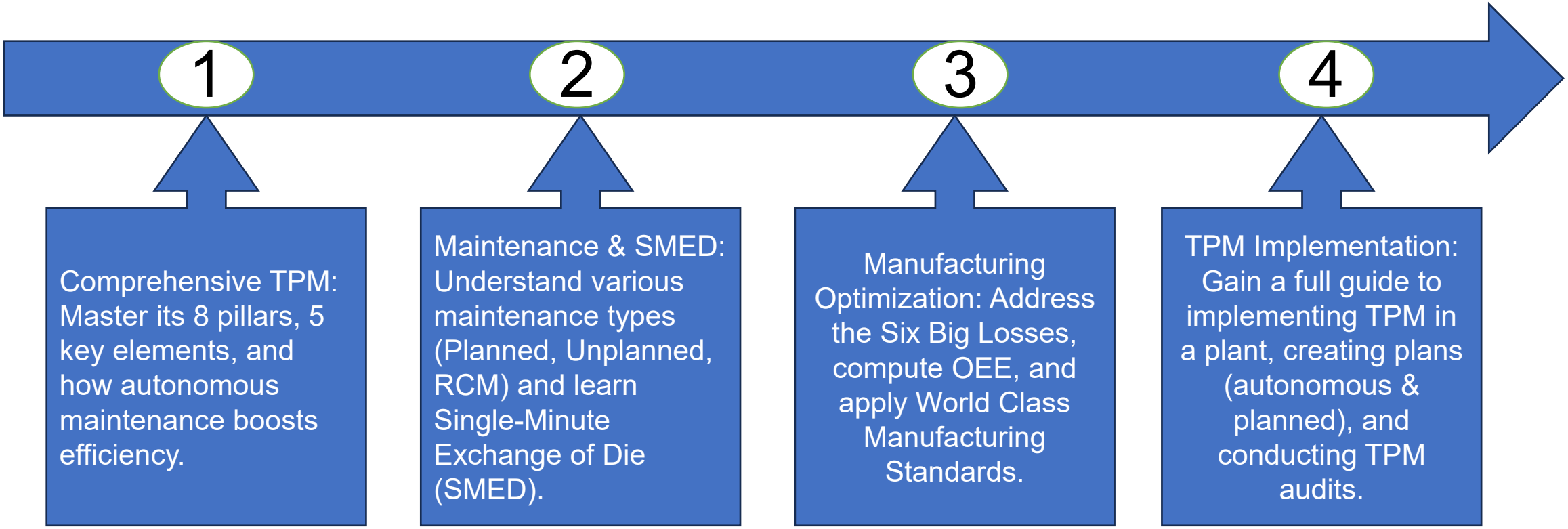
TPM
Total Productive Maintenance



What you'll learn



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Karim Besheir

- A highly qualified Maintenance Manager with a diverse educational background
- +27 experience as Manufacturing Excellence Leader with recognized strengths in driving organizations towards Zero Loss, Zero Breakdown, Zero Accidents & Zero Quality issue
- technical skills, asset Management software, problem-solving, finance, and prioritizing work in a dynamic environment.
- Certificate from the Institute OF Project Management Professional (PMP), a Master's degree in Business Administration with a specialization in Crisis Management, and a Bachelor's degree in Mechanical Engineering and Commerce. Possesses
- a wide range of skills in problem-solving and team management, along with excellent organizational and communication abilities. Demonstrates strong leadership qualities and has a proven track record in effectively managing maintenance operations

TPM Course Outline

1. Introduction to Total Productive Maintenance (TPM)
2. The Eight Pillars and The Five Elements of TPM
3. Managing Activities in a TPM Program
4. TPM and OEE (Overall Equipment Effectiveness)
5. TPM Implementation
6. The Role of Individuals in TPM Organizations
7. Levels of Maintenance and Cost Analysis
8. Problem Solving in a TPM Environment with Lean Tools
9. Using 5S Elements for TPM
10. The Benefits of TPM in a Plant

Introduction to Total Productive Maintenance (TPM)

•**What is TPM?** A holistic approach to equipment maintenance that aims to achieve perfect production.

•**Core Principles:** Zero breakdowns, zero defects, and zero accidents.

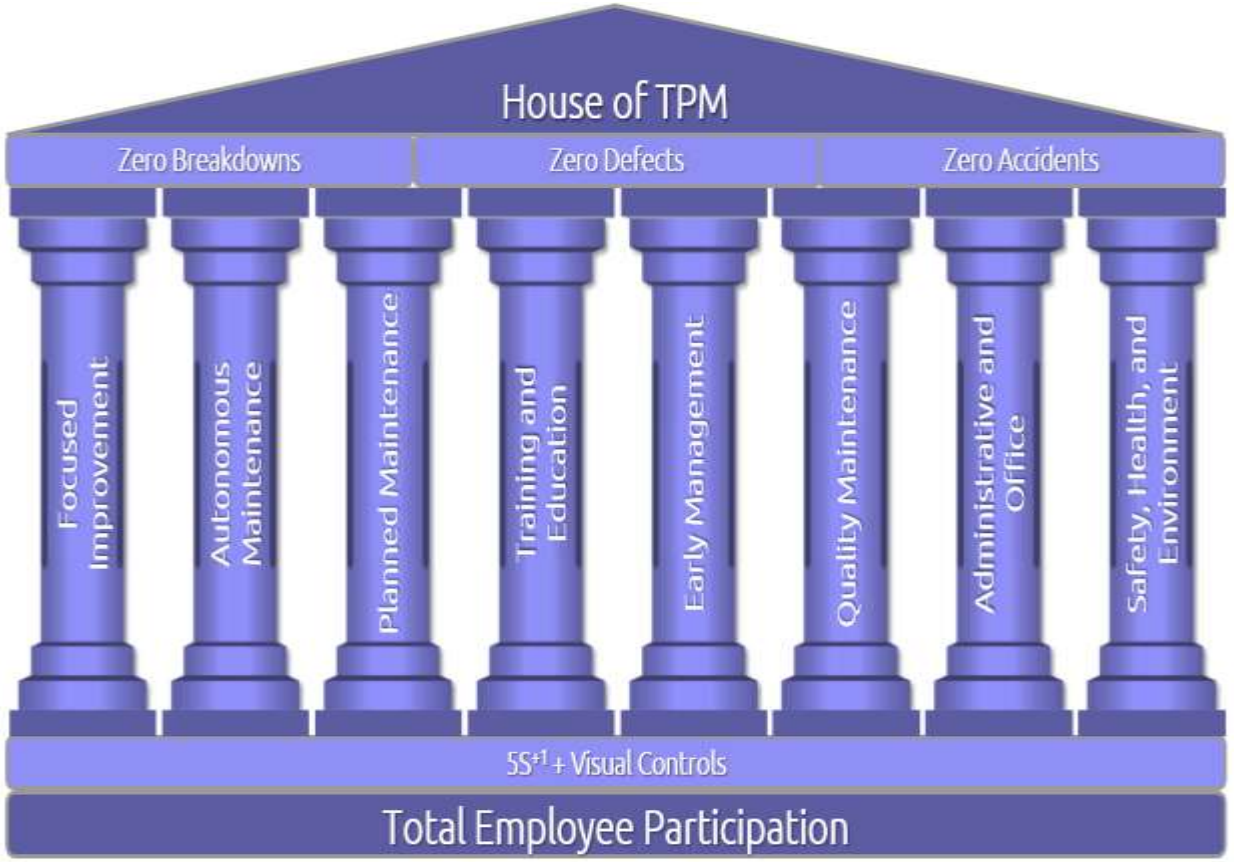
•**Evolution of Maintenance:** From reactive to proactive and predictive maintenance.

•**Strategic Objectives:** Maximizing equipment effectiveness and efficiency.

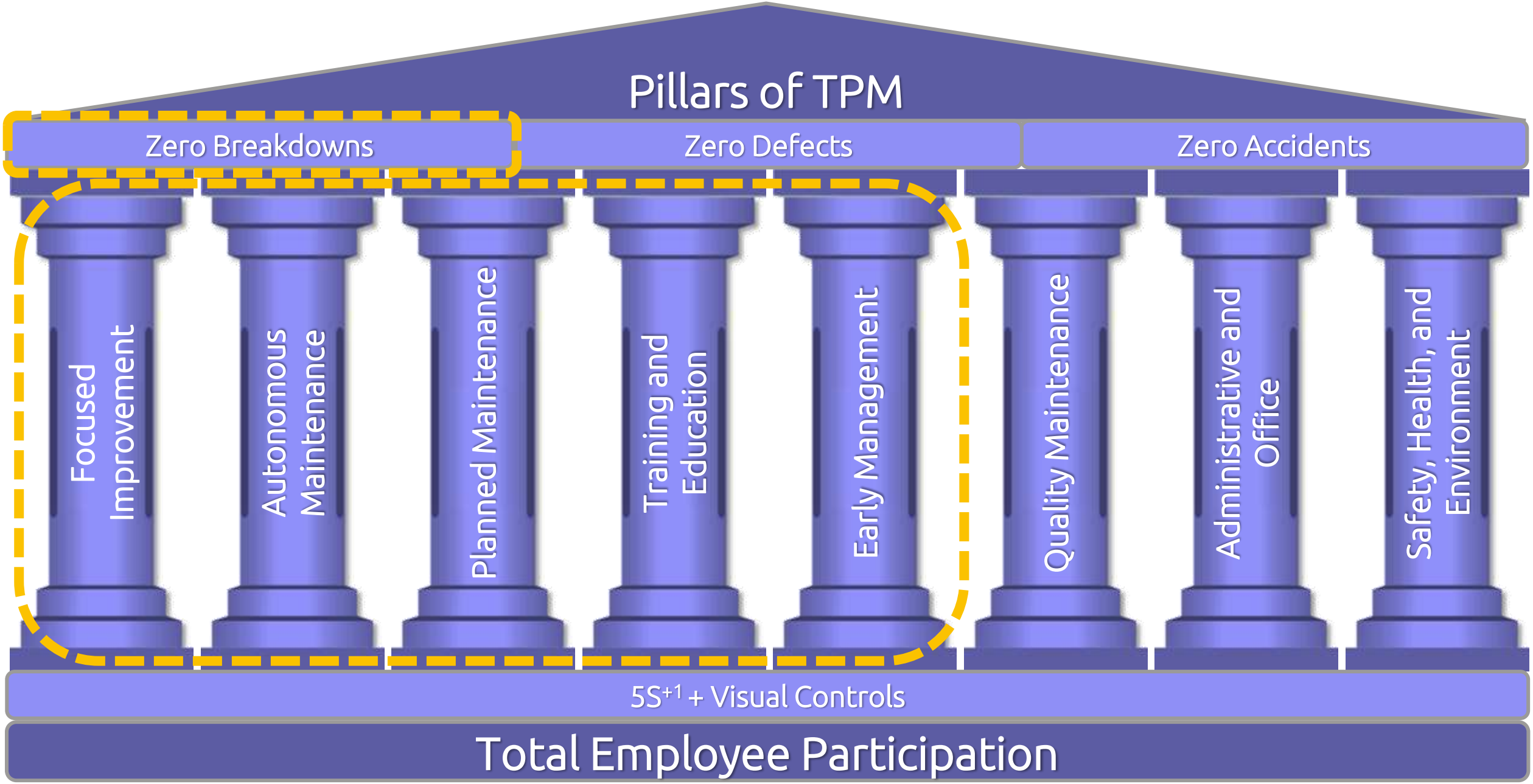
•**Benefits Overview:** Enhanced productivity, cost reduction, improved safety.

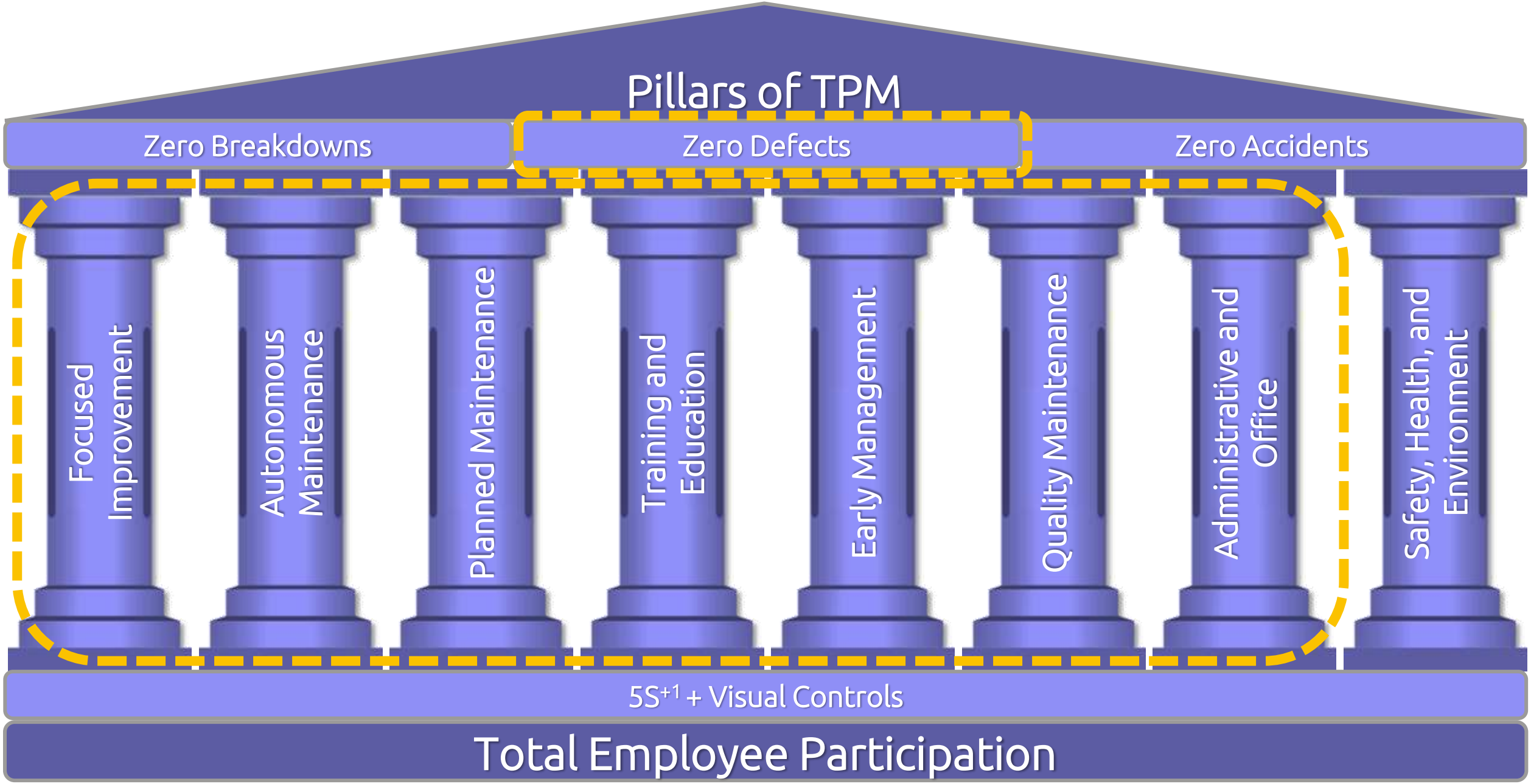
The Eight Pillars and The Five Elements of TPM

- Eight Pillars Overview: Brief introduction to each pillar (e.g., Autonomous Maintenance, Planned Maintenance, Quality Maintenance)
- .Key Elements of TPM: Discuss foundational aspects like management commitment and employee involvement.
- Interconnectedness: How the pillars and elements work together for a robust TPM system.
- Building Blocks: Understanding these components is crucial for successful implementation.
- Holistic Approach: Emphasizing the comprehensive nature of TPM's structure.



Relation Between the “Zero Targets” and the “Pillars”


Pillars of TPM
Zero Breakdowns
Zero Defects
Zero Accidents
Focused Improvement
Autonomous Maintenance
Planned Maintenance
Training and Education
Early Management
Quality Maintenance
Administrative and Office
Safety, Health, and Environment
5S+1 + Visual Controls
Total Employee Participation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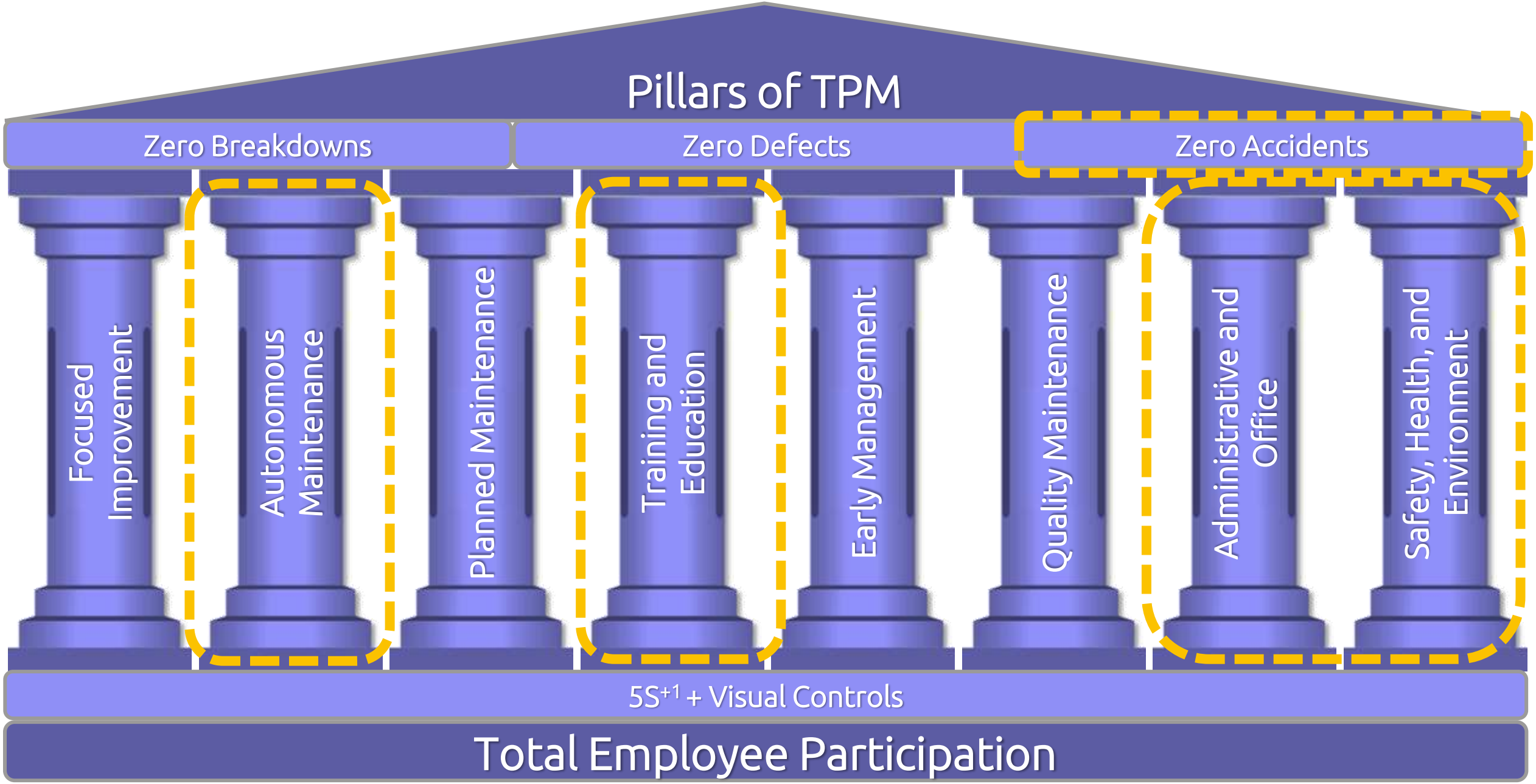
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Quality Maintenance
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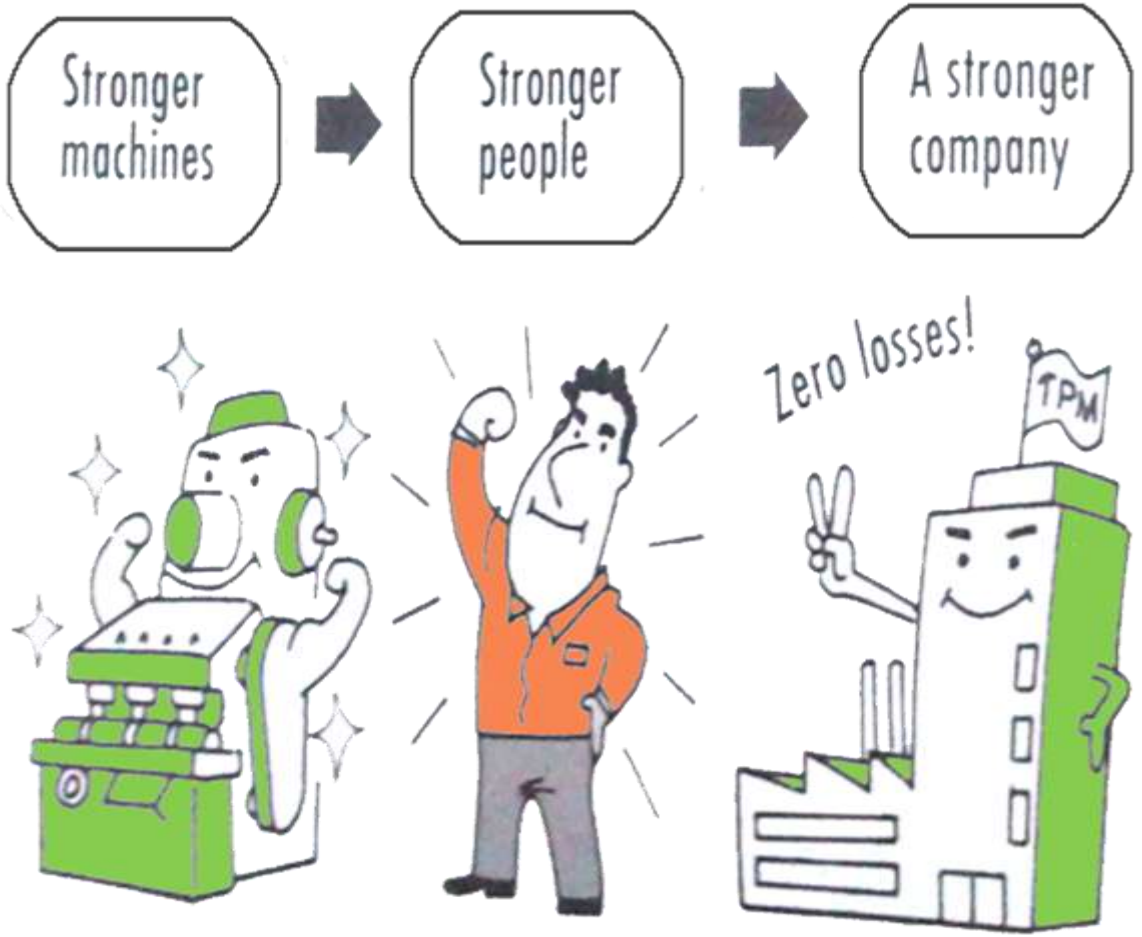
Safety, Health, and Environment
5S+1 + Visual Controls
Total Employee Participation

Managing Activities in a TPM Program

- **Program Planning:** Initial steps for designing and launching a TPM initiative.
- **Role Definition:** Clearly assigning responsibilities to foster effective participation.
- **Activity Scheduling:** Planning maintenance tasks and improvement activities.
- **Performance Monitoring:** Using KPIs to track the progress and effectiveness of activities.
- **Cross-Functional Collaboration:** Encouraging teamwork across departments for seamless execution.



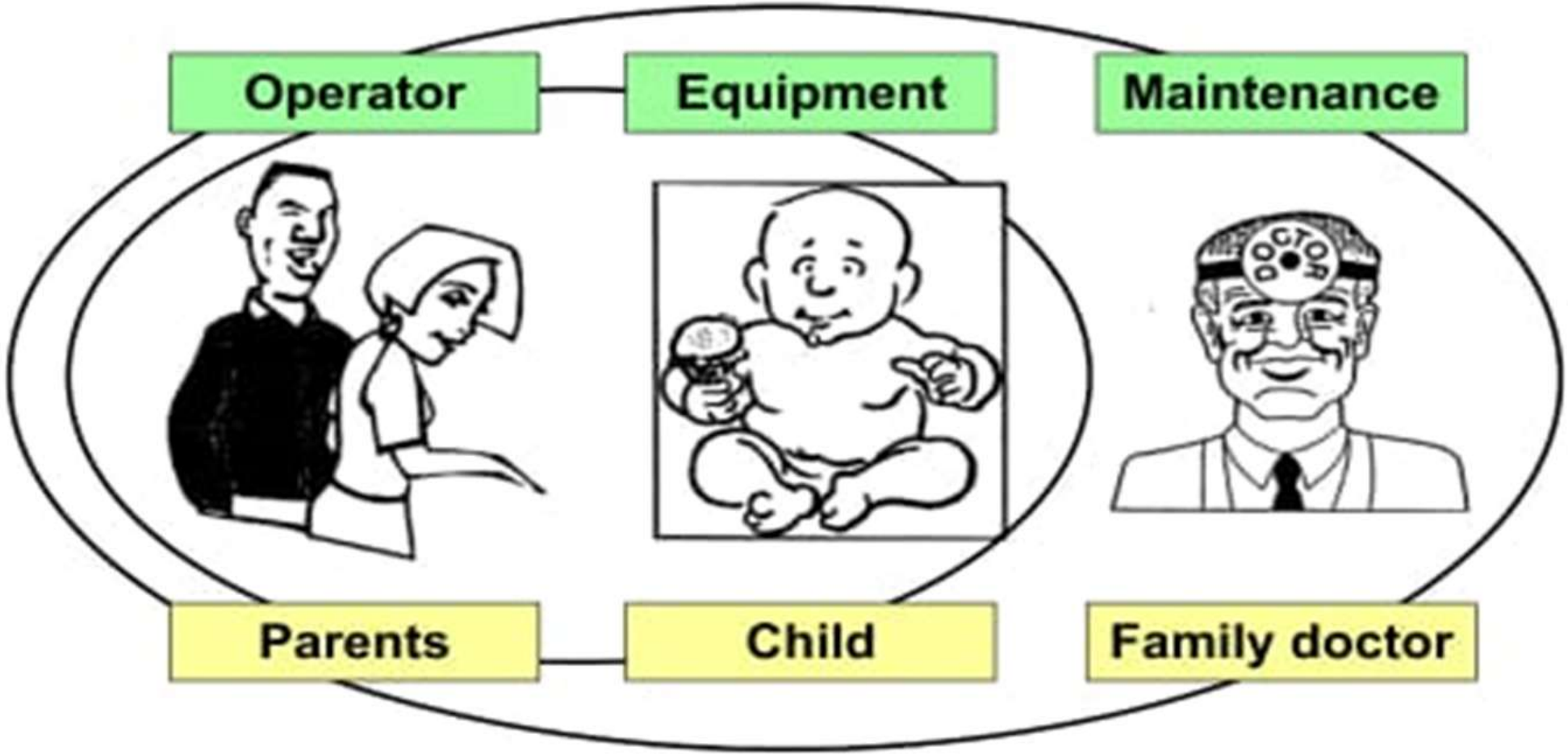
TPM and OEE (Overall Equipment Effectiveness)

- **OEE Defined:** A critical metric for measuring the true productivity of equipment.
- **The Three Factors of OEE:** Availability, Performance, and Quality Rate.
- **Calculating OEE:** Understanding how to compute and interpret the OEE score.
- **TPM's Impact on OEE:** How TPM practices directly contribute to higher OEE values.
- **Leveraging OEE Data:** Using OEE insights to identify improvement opportunities and prioritize actions.

TPM Implementation Roadmap: From Strategy to Execution

- **Implementation Phases:** Detailed steps for deploying TPM across the plant.
- **Developing Maintenance Plans:** Crafting effective autonomous and planned maintenance schedules.
- **Training and Skill Development:** Equipping staff with the necessary knowledge and tools.
- **Pilot Projects:** Starting small and scaling up successful TPM initiatives.
- **TPM Audits:** Conducting regular assessments to ensure adherence and identify gaps.

The relationship between Operators and Maintenance



Human Capital in TPM: Empowering Teams and Individuals

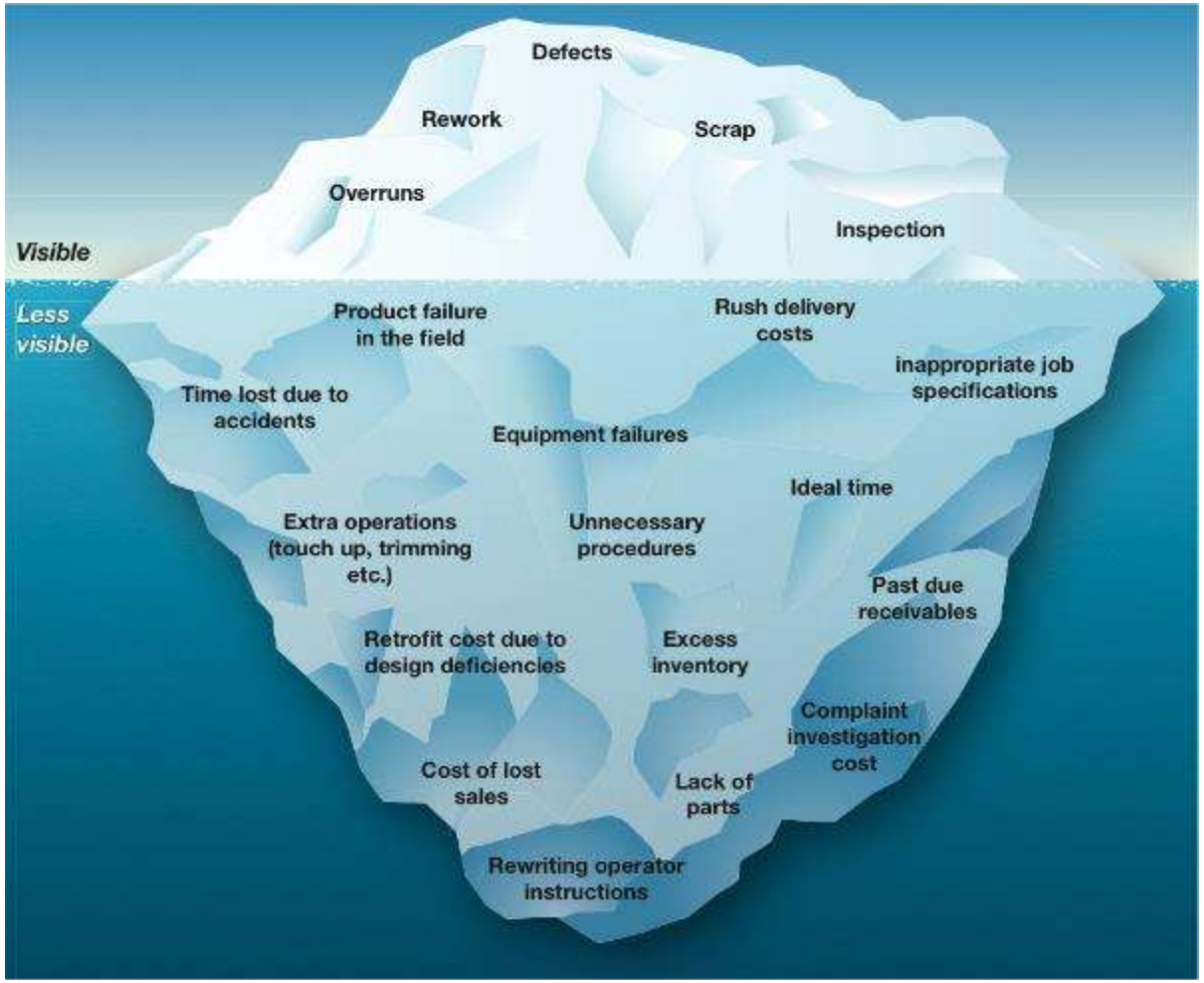
- **Operator Involvement:** The pivotal role of frontline operators in autonomous maintenance.
- **Maintenance Team Evolution:** Shifting from reactive to proactive and problem-solving roles.
- **Leadership Engagement:** Management's commitment as a driving force for TPM success.
- **Cross-Training:** Developing versatile employees capable of various tasks.
- **Culture of Ownership:** Fostering a sense of responsibility and accountability for equipment.

Optimizing Maintenance: Strategies and Cost Implications

- **Types of Maintenance:** Exploring predictive, preventive, corrective, and condition-based maintenance.
- **Maintenance Cost Analysis:** Understanding the financial impact of different maintenance approaches.
- **Life Cycle Costing:** Evaluating costs over the entire lifespan of equipment.
- **Balancing Costs and Performance:** Finding the optimal maintenance strategy for efficiency.
- **Strategic Sourcing:** Optimizing spare parts management and vendor relationships.

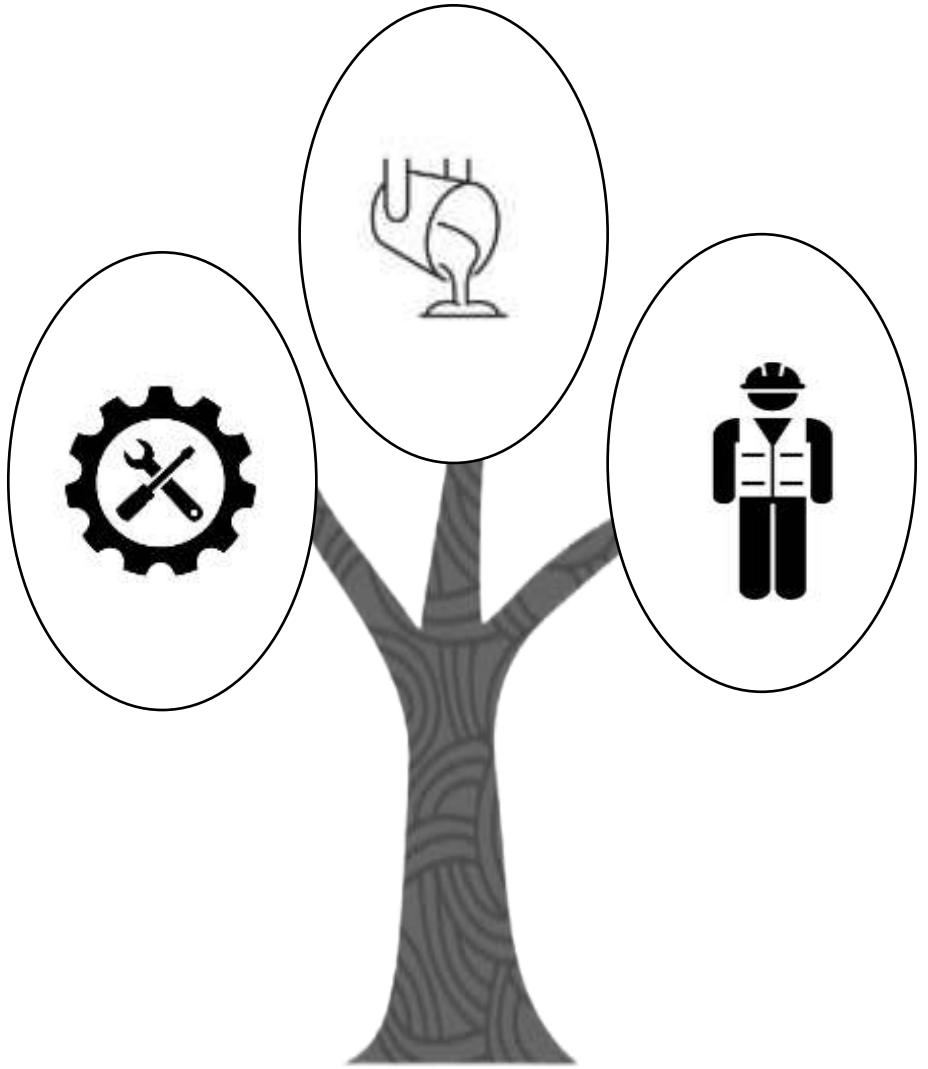
Loss Analysis: Losses in any Business

Losses are like Icebergs; the more we dig, the more losses we'll find



16 Big Losses Tree

Material	Man	Equipment
Defects	Ineffective Motions	Breakdowns
Rework	Poor Administrative Organization	Setup and Adjustments
Logistics Losses	Non-Standardized Work	Small Stops
Material Losses	Knowledge Management Loss	Reduced Speed
	Poor Communication	Energy Losses
	Low Morale	
	Lack of KPIs	

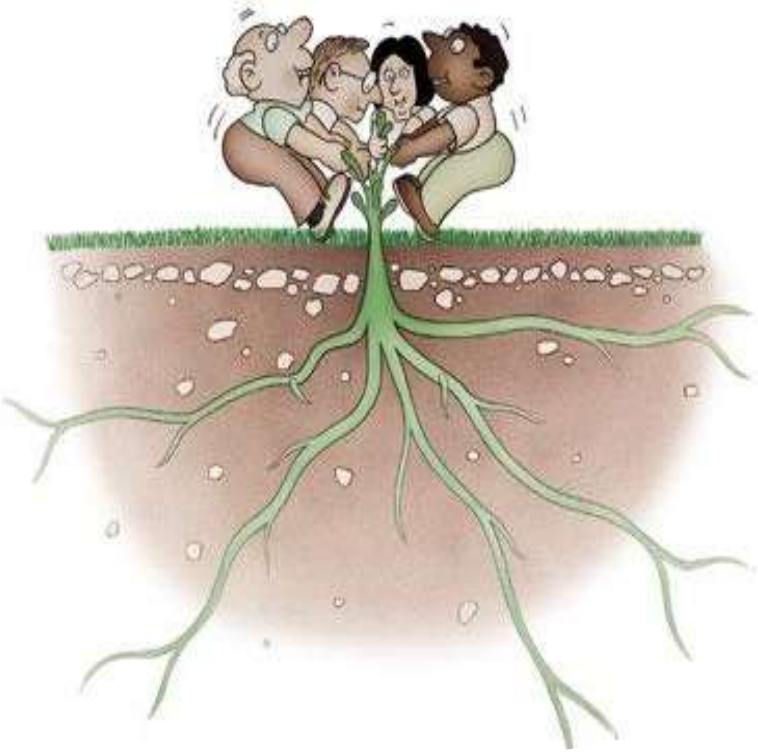


Loss Contribution Per Department FIXED

No.	Main Pillar	Type of Loss	Maintenance	Production	Quality	Procurement	Planning	HR
1	Material 	Defects	✅	✅	⛔	✅	⛔	✅
2		Rework	✅	✅	⛔	✅	⛔	✅
3		Logistics Losses	⛔	⛔	⛔	✅	✅	⛔
4		Material Losses	✅	✅	⛔	✅	⛔	✅
5	Man	Ineffective Motions	✅	✅	⛔	⛔	⛔	✅
6		Poor Administrative Organization	✅	✅	⛔	⛔	✅	✅
7		Non-Standardized Work	✅	✅	✅	⛔	✅	✅
8		Knowledge Management Loss	✅	✅	✅	⛔	⛔	✅
9		Poor Communication	✅	✅	✅	⛔	✅	✅
10		Low Morale	✅	✅	⛔	⛔	⛔	✅
11		Lack of KPIs	✅	✅	✅	⛔	✅	✅
12	Equipment	Breakdowns	✅	✅	⛔	✅	⛔	✅
13		Setup and Adjustments	✅	✅	⛔	✅	✅	✅
14		Small Stops	✅	✅	⛔	✅	⛔	✅
15		Reduced Speed	✅	✅	✅	✅	⛔	⛔
16		Energy Losses	✅	⛔	⛔	✅	⛔	⛔

Continuous Improvement: Lean Tools for TPM Problem Solving

- **Lean Principles Integration:** How Lean methodologies enhance TPM problem-solving.
- **Root Cause Analysis:** Utilizing tools like the 5 Whys and Fishbone Diagrams.
- **Kaizen Events:** Conducting rapid improvement workshops for specific problems.
- **Poka-Yoke (Mistake-Proofing):** Implementing solutions to prevent errors.
- **Standardized Work:** Ensuring consistency and efficiency in problem-solving processes.



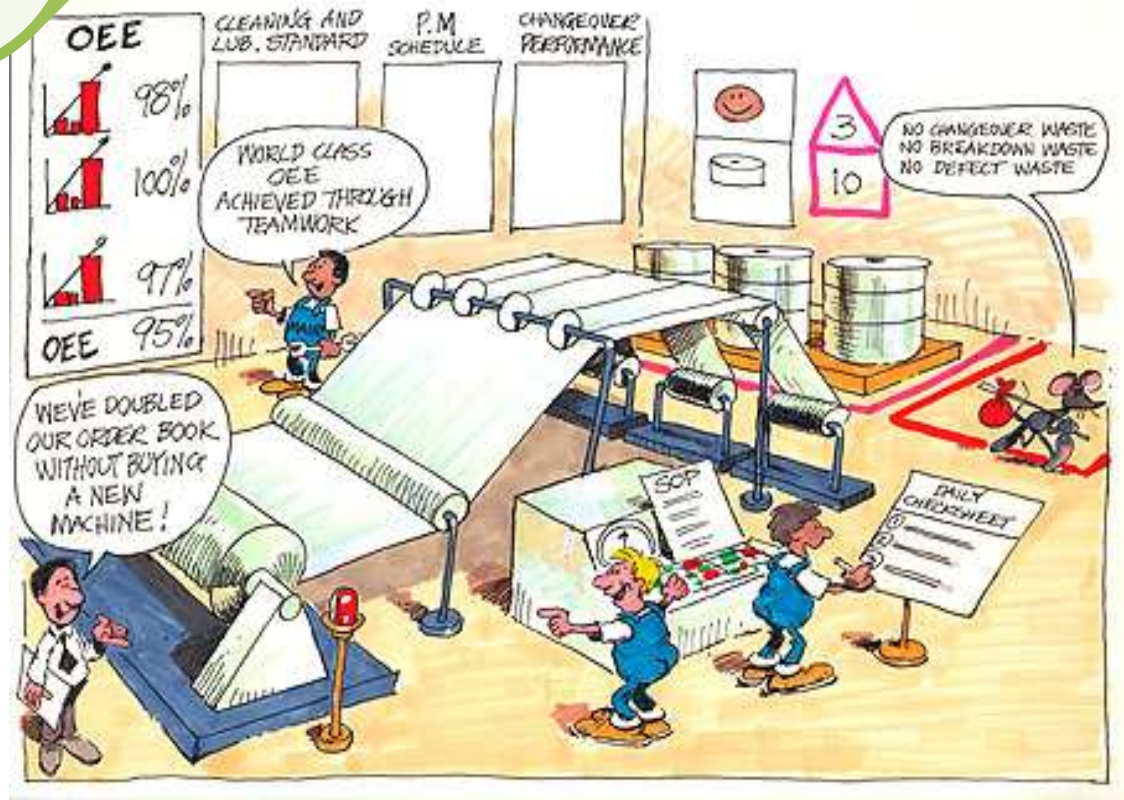
Workplace Organization: 5S (6S) for TPM Excellence

- **The 5S Principles:** Sort, Set in Order, Shine, Standardize, Sustain (Seiri, Seiton, Seiso, Seiketsu, Shitsuke).
- **Adding Safety (6S):** Incorporating safety as a crucial sixth element.
- **Impact on Autonomous Maintenance**: How 5S creates a foundation for operator-led maintenance.
- **Visual Management:** Using 5S to make problems and standards visible.
- **Waste Reduction**: How a well-organized workplace reduces various forms of waste.

The TPM Transition

Before TPM

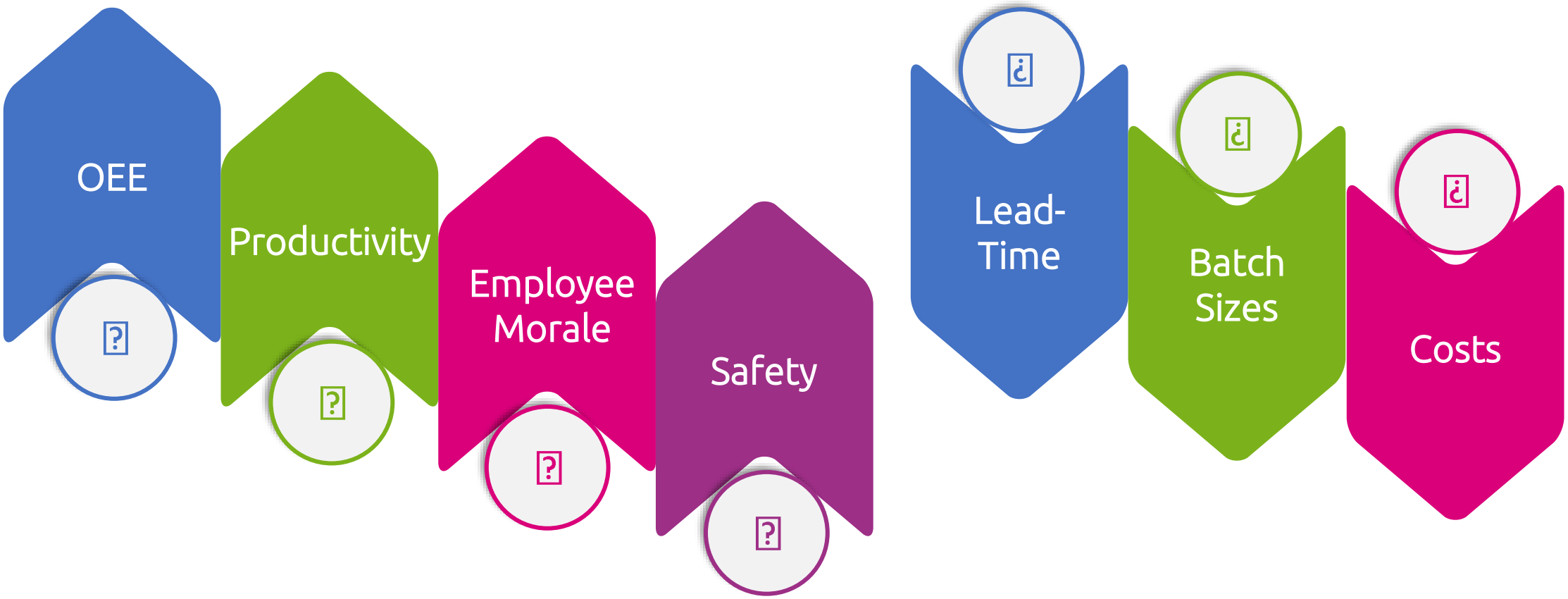
After TPM



Key Benefits of TPM Implementation

- **Improved Equipment Reliability:** Significant reduction in breakdowns and downtime.
- **Reduced Operating Costs:** Lower maintenance expenses and energy consumption.
- **Enhanced Productivity and Quality:** Consistent output and fewer defects.
- **Safer Work Environment:** Proactive identification and elimination of hazards.
- **Increased Employee Engagement:** Empowered and motivated workforce contributing to success.

TPM Effect on Company Performance




THANK
YOU !