

S E S I Ó N



**BRÚJULA**



CONGRESO DE  
MANTENIMIENTO  
& CONFIABILIDAD  
C H I L E

4<sup>a</sup>  
EDICIÓN

## **Presentation of a successful experience, case study, or project.**

In the Brújula Session, you will learn from the shared experience of a successful implementation that will serve as a guide to initiate or improve your own plans.

Solve problems and improve your reliability through the implementation of new methodologies and technologies, understanding the origin, analysis, action plan, step-by-step process, achievements, setbacks, and lessons learned that culminate in the business case.



# Is maintenance just a cost center?

## Where's the value?

**James Reyes-Picknell**

Principal Consultant

# What are we spending on maintenance?

---

5 to 40% of non-energy operating costs

- Lowest in static infrastructure, highest in heavy mobile equipment

We spend it on:

- Labor (including overtime)
- Materials (usually close to 50/50 ratio with labor costs) & equipment
- Overheads (management, administrative, IT support)

We spend it through:

- Our own staff, support equipment, and stores / purchases
- Contractor staff, purchases and rental equipment

# What do we get for that spending?

---

Uptime on our productive assets (availability)

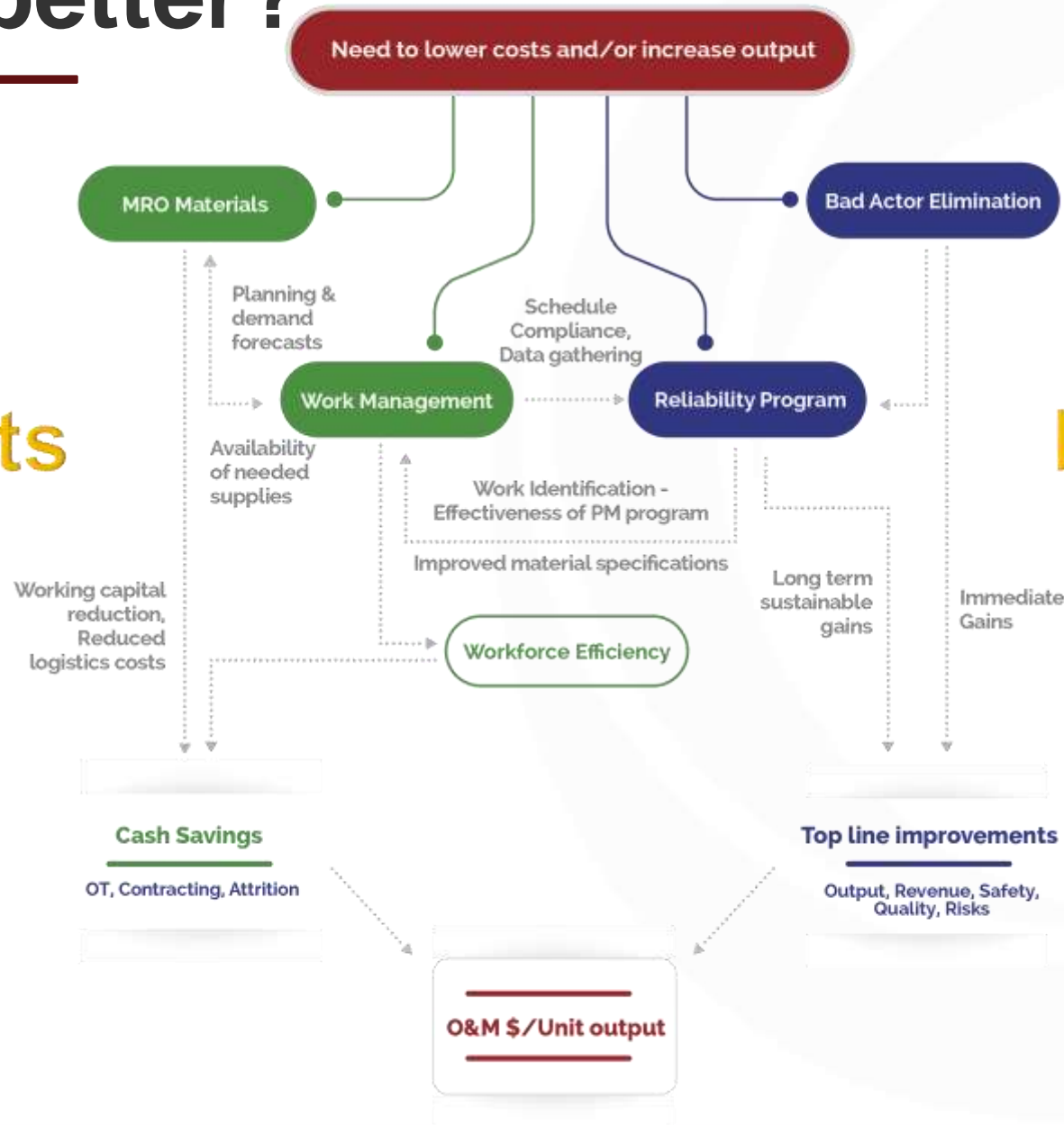
- Return to service after breakdowns
  - Tends to be expensive and disruptive to operations
  - Breakdowns happen naturally, through abuse, and through excessive maintenance
  - Focus on Work Management will reduce downtime per incident, but won't reduce incidents
- Avoidance of breakdowns through proactive maintenance
  - Much less expensive than breakdown work if we do the right proactive maintenance
  - Focus on the right maintenance will reduce frequency and severity of breakdowns

Fewer asset related downtime incidents means less disruption to operations, longer run times, and more revenue generation

# Can we do better?

## Tactical Improvements

## Strategic Improvements



# Safety improves with reliability

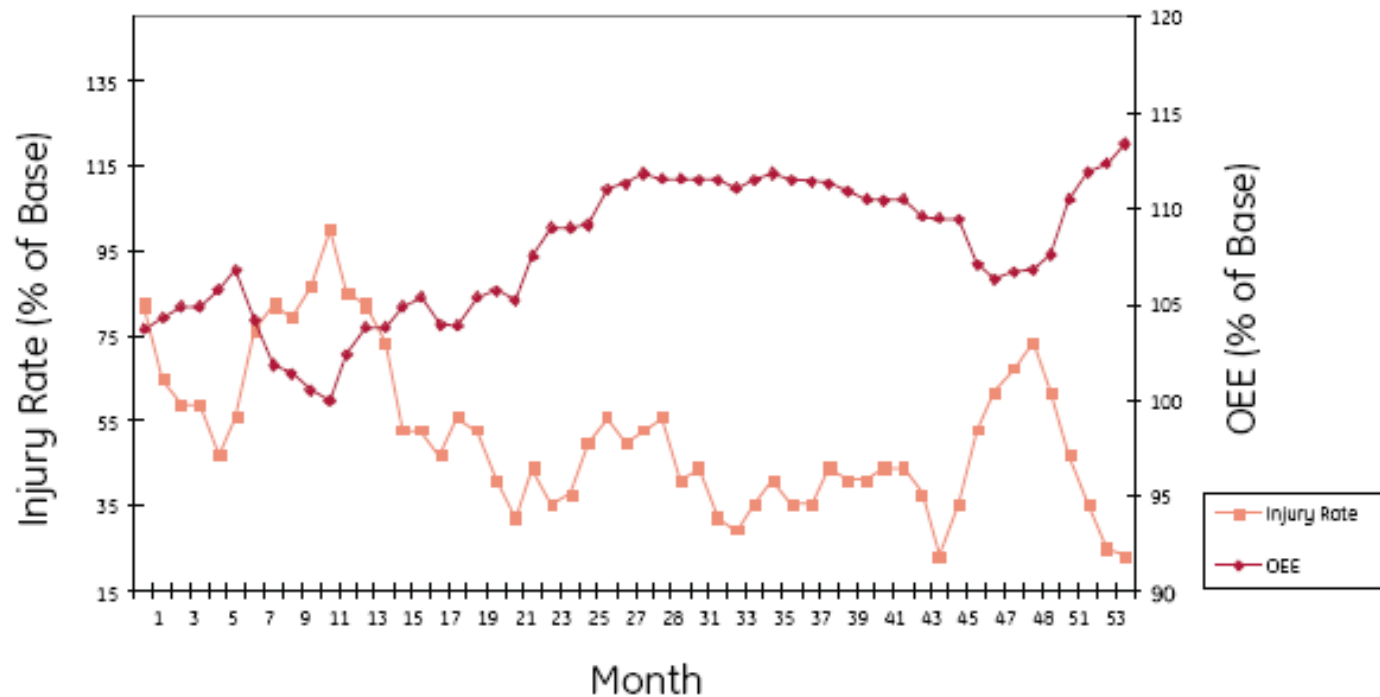


Figure 5 – Injury Rate and Overall Equipment Effectiveness (OEE).

From: Ron Moore, “Making Common Sense, Common Practice”, May 2004, Elsevier

Safety programs often focus on the tactical and ignore the strategic relationship to reliability



# Other “risks” are also reduced

---

Reliability improves safety through less exposure to equipment in an abnormal state (failed). Less bad happens if the equipment runs as it should.

Similarly, risks are also reduced:

- Environmental incidents (containment, emissions, energy consumption)
- Business loss (less risk to insured and uninsured business losses)
- Stock/spare parts outages (greater stability in demand forecasting)
- Customer/public image

# We improve through a deliberate approach

Tactical

Strategic

	Efficiency	Effectiveness
Meaning	The virtue of being efficient. Miserly use of resources.	The magnitude of nearness of the actual to the intended result.
What does it mean in Maintenance?	Doing work the right way and at the right time without error.	Doing the right work that produces the greatest result.
Places emphasis on	Inputs and outputs - costs and completion.	Methods and outcomes delivering the greatest value.
Time horizon	Short term	Long term
Approach	Narrow focus within department	Holistic, with broad based cross functional collaboration
How do we get there?	Implementing strategy	Formulating strategy
Leadership/Sponsorship	Functional / Departmental or Site	Corporate / Executive
Focus is on...	Operational activities	Business outcomes



# Strategic move towards proactive is the key

---

## Proactive

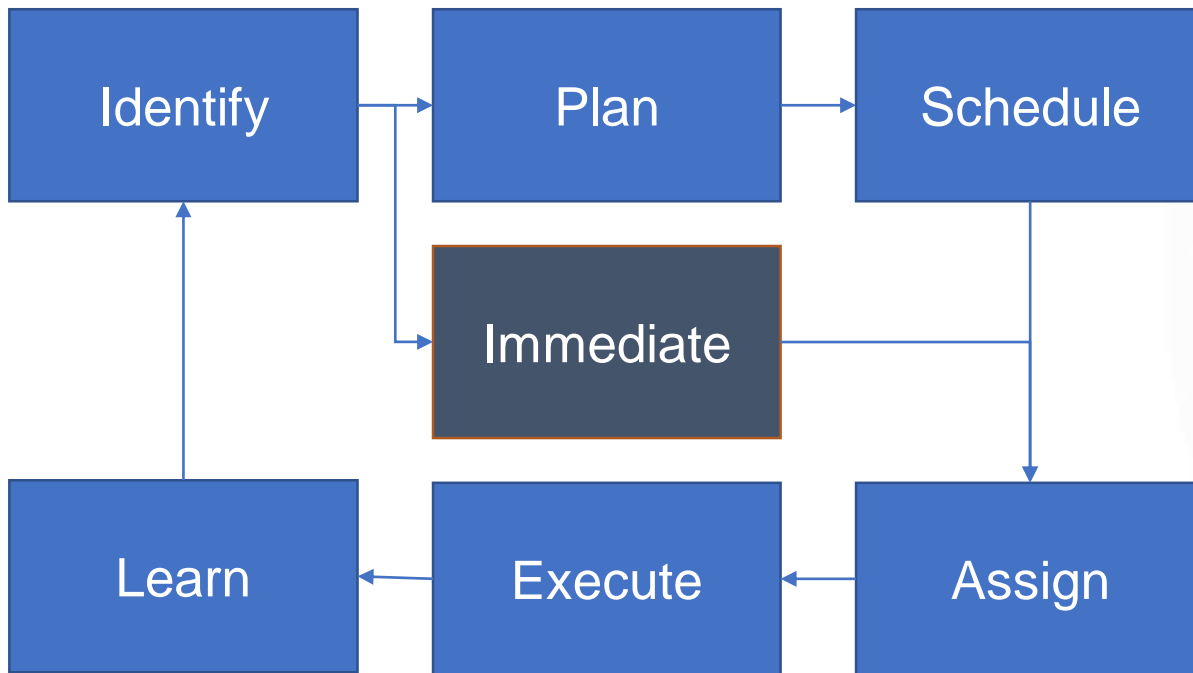
- Precise timing, planning and scheduling
- Eliminates serious breakdowns
- Reduces impact of most breakdowns
- Reduces all risks
- Stabilizes availability and production rates (lowers variability)
- Lowest cost form of maintenance
- Enables maximum revenue generation

## Reactive

- Surprise timing
- Some planning possible but scheduling impossible
- Breakdowns normal
- Frequent disruption of production (high variability in output)
- Increased risks to quality, safety, environment and business
- Highest cost form of maintenance
- Difficult to forecast revenue
- Can harm public image, attract regulatory attention

# Proactive shift improves work identification

## Maintenance Work Management



WM is tactical, but shifting to proactive turns it into a strategic advantage.

Identification of all likely breakdowns is a part of identifying the proactive work that is needed.

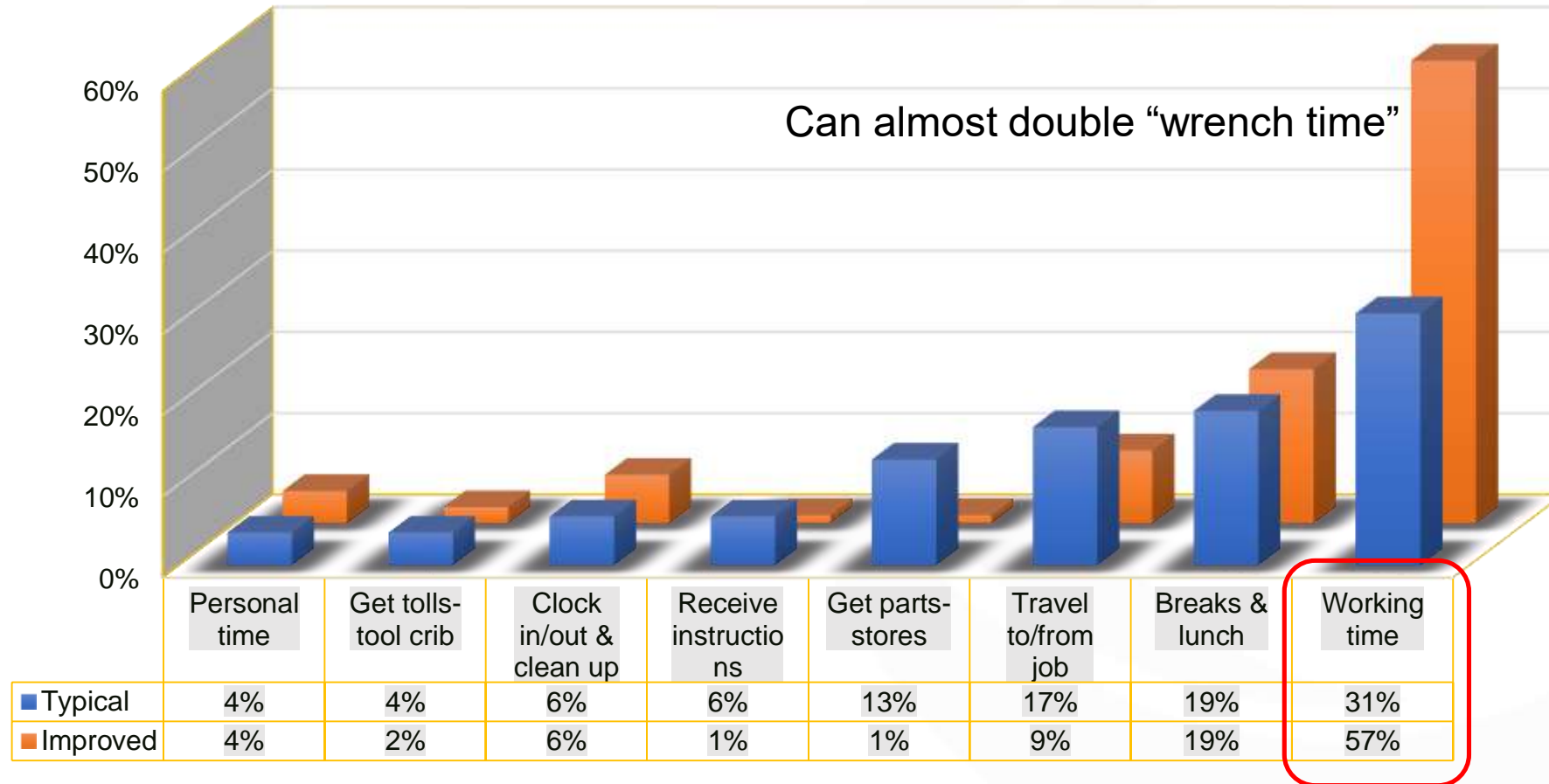
This increases ratio of proactive to breakdown substantially.

Since proactive and breakdown (reactive) work are identified both can be planned for.

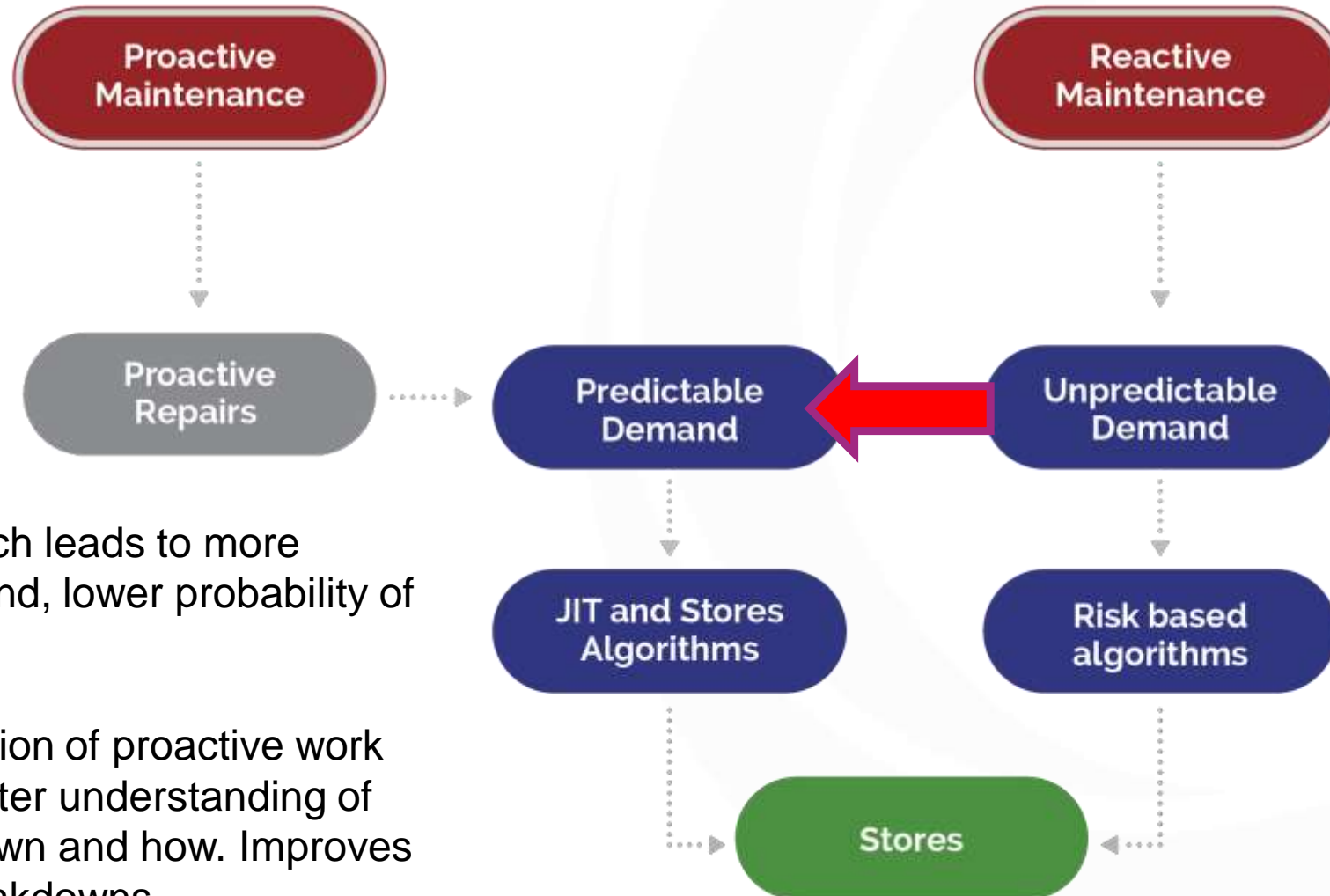
Proactive can be scheduled.

Reactive will arise randomly, but you can be ready for it.

# Good planning of all work, and process discipline improve productivity



# Better planning of more proactive work helps solve the #1 complaint (i.e.: parts)



Proactive approach leads to more predictable demand, lower probability of stock out.

Correct identification of proactive work also results in better understanding of what will breakdown and how. Improves readiness for breakdowns.

# Big cost savings are possible (example)

## “As is” and “future” states

- **As is**
    - 20% planned & scheduled
      - 10% (half) is PM
    - 80% unplanned & unscheduled
  
  - **Future (goal)**
    - 80% planned & scheduled
      - 50% to 60% is PM
      - Includes “found” work from PM
    - 20% unplanned & unscheduled
- 
- Cost unit assumption (cost ratio 3 : 1)
    - 1 “generic” work unit of P&S work = 1 \$unit
    - 1 “generic” work unit of unP&unS work = 3 \$units
  
  - Old Budget = \$10 million
    - = 20 x 1 \$unit + 80 x 3 \$units
    - = (20 + 80 x 3) x 1 \$unit
  
    - \$unit = \$10 m / 260 units
    - = \$38,462 / unit
  
  - New Budget = 80 x 1 \$unit + 20 x 3 \$unit
    - = (80 + 20 x 3) x \$38,462
    - = 140 x \$38,462 = \$5,384,615
  
  - **Saves \$4.62 million**

Caution: cannot achieve this with good work management alone. Also need reliability

# Revenue gains

---

Shifting to proactive enables increased availability (uptime).

If your operations can utilize that added availability then production output will increase.

Utilization can improve with higher availability because there are fewer disruptions.

Rule of thumb: 1% increase in Av means 1% increase in revenue.

Plants: Av > 95% (some like utilities better than 98%)

Fleets: Av > 85% (90% if new)

Discrete manufacturing: Av > 91%

**{Av (target) - Av (today)} x Revenue (\$ today) = Potential revenue gain (\$ incremental)**



# It is achievable

---

One customer operating 6 (gold) mines (all médium scale operations):

- Annual maintenance costs savings were \$100 million
- Annual potential revenue gain was > \$900 million
  - That was the equivalent of adding another mine to the company portfolio with NO capital investment required.

Another customer, operating 4 (diamond) mines, (2 large, 2 small):

- First year revenue gain was \$600 million

Utilities (elec and gas) upwards of 20% cost savings



CONGRESO DE  
MANTENIMIENTO  
& CONFIABILIDAD  
C H I L E

4<sup>a</sup>  
EDICIÓN

# THANK YOU!

**James Reyes-Picknell**

[james@consciousasset.com](mailto:james@consciousasset.com)