

Safety Culture

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Safety Profitability Pyramid[©]



Safety Profitability Pyramid[©]

Profitability



Safety Profitability Pyramid[©]

Three Mile Island
Fukushima Daiichi
Deepwater Horizon
Texas City
Y12



Where's the data?

- Early research indicates there is a $-.3$ correlation between a healthy safety culture and cost per megawatt hour

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Conclusion?

- You do not balance safety with production
- You shortchange reliability, or you don't
- Safety/reliability is the foundation of production and profitability

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Agenda

- What is safety culture (SC)?
- How do you measure it?
- How do you change it?

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WHAT IS SAFETY CULTURE?

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Critical Concept about Safety Culture

- Not the definition but the nature of SC
- Misunderstanding of this causes a lot of wasted effort and misguided practices
- There is much misunderstanding in the industry about this
- It has extremely important implications for the practical application of SC

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What is Organizational Culture?

- First, a question
- ‘An empirically based abstraction’
 - Schein 2010
- A construct or idea we create to characterize the functioning of multiple, complex, interacting systems; including the functioning of the interactions of the systems, based upon observation.
 - Koves, 2013

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It is Also

- ‘A pattern of shared basic assumptions learned by a group as it solved its problems...’
– Schein 2010
- Best Example: National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling: Preliminary Conclusions – Managerial
 - ‘No evidence at this time to suggest that there was a conscious decision to sacrifice safety concerns to save money.’
- “It is the way we do things around here.”

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What Safety Culture is NOT

- Industrial safety – alone
- Safety Conscious Work Environment (SCWE) – alone
- Radiological safety – alone
- Nuclear core safety – alone
- Security – alone
- Environmental safety – alone

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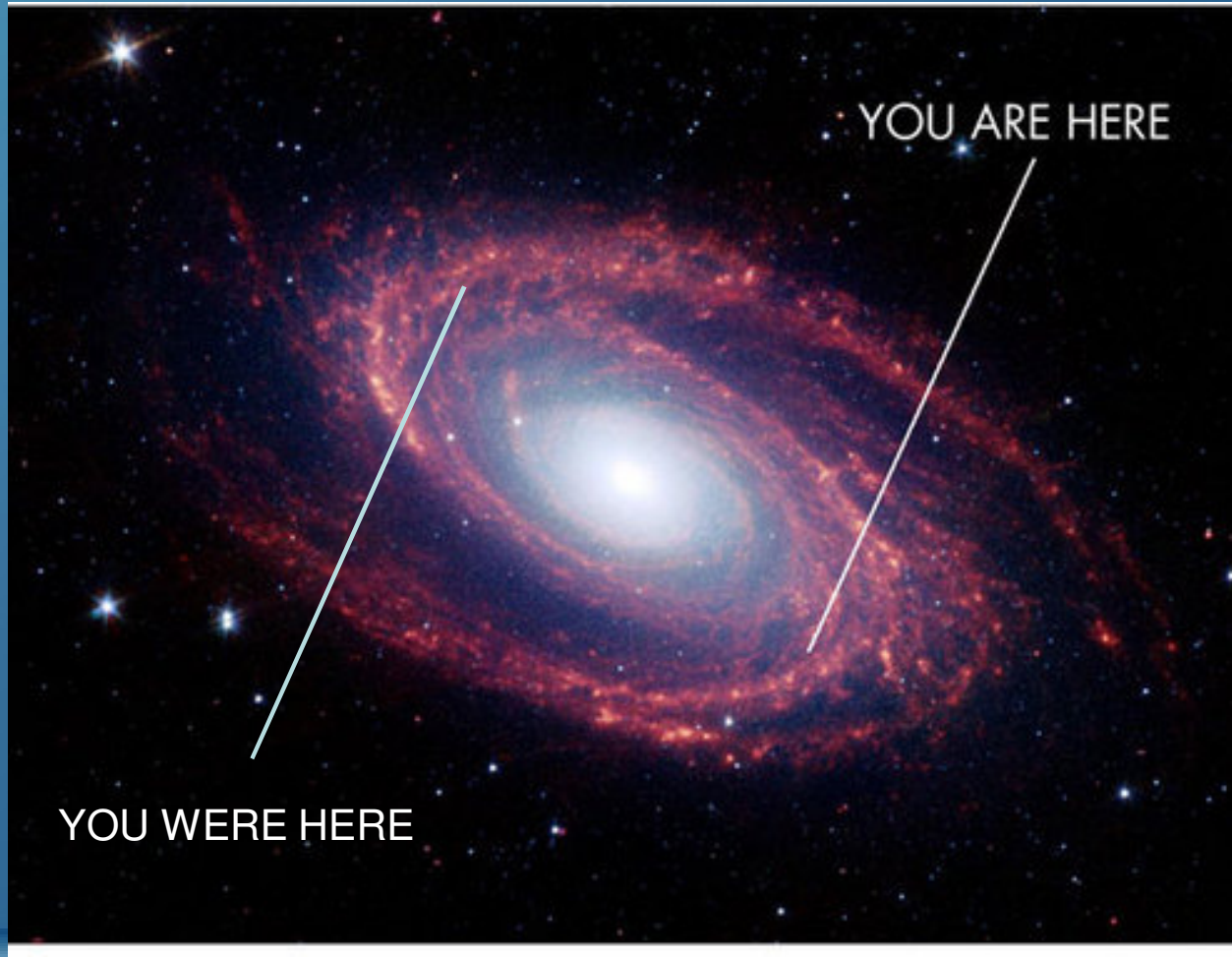


Is this a car?

Why Take so Much Time with the Definition?

- Help you understand that safety culture is like health
 - It is an idea created by humans
 - Measuring safety culture is not an 'engineered activity' – it requires a human judgment
 - It follow rules 'from the other side of the galaxy'

Imagine you are now in the other end of the galaxy



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East vs. West

- Western end (where you were) – Engineering land
- Eastern end (where you are now) – Safety culture land
- What is different about the Eastern spiral arm?
- Only one thing!
 - The rules have changed

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New Rules

- Less is more
- Perception is reality
- You have to go slow to go fast
- You don't 'fix' people
- Communication (why) is important!
- Listening is more important than telling
- Completing a checklist does not mean you have accomplished anything

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The Traits of a Healthy Nuclear Safety Culture

(Some booklets available in front)

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Definition of Nuclear Safety Culture

The core values and behaviors resulting from a collective commitment by leaders and individuals to emphasize safety over competing goals to ensure protection of people and the environment

» (NRC Safety culture policy statement, March 2011)

For plants, nuclear safety is still the overriding priority

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Personal Accountability

- All individuals take personal accountability for safety

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Questioning Attitude

- Individuals avoid complacency and continuously challenge existing conditions and activities in order to identify discrepancies that might result in error or inappropriate action.

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Effective Safety Communication

- Communication maintains a focus on safety

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Leadership Safety Values and Actions

- Leaders demonstrate a commitment to safety in their decisions and behaviors

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Decision-Making

- Decisions that support or affect nuclear safety are systematic, rigorous, and thorough

Respectful Work Environment

- Trust and respect permeate the organization

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Continuous Learning

- Opportunities to learn about ways to ensure safety are sought out and implemented

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Problem Identification and Resolution

- Issues potentially impacting safety are promptly identified, fully evaluated, and promptly addressed and corrected commensurate with their significance.

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Environment for Raising Concerns

- A safety-conscious work environment is maintained where personnel feel free to raise concerns without fear of retaliation, intimidation, harassment, or discrimination

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Work Processes

- The process of planning and controlling work activities is implemented so that safety is maintained.

HOW DO WE MEASURE SAFETY CULTURE?

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How do you Measure Health?

- Any tools?
- What is the scale?

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Measuring SC

- Collect data
- Make a judgment
- Differences in:
 - Number of people
 - Amount of data collected
 - Experience of the analysts
 - In general, the level of rigor

Measuring Culture Using Surveys

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SC Surveys

- Perception of the employees, not actually measuring the culture, even if it is called a 'culture' survey

Conclusions from Survey Research

- SC is a broad, holistic construct that is hard to measure
- There is a measurable relationship (correlation) between safety culture (SC) and NPP safety and financial performance
- Stations with a healthy safety culture generally perform better on safety, reliability, and financial indicators
- In the same way the health of a person impacts their performance, SC impacts NPP performance
- In the same way that health impacts the longevity of a person, SC impacts the sustainability of a NPP

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HOW DO YOU CHANGE SAFETY CULTURE?

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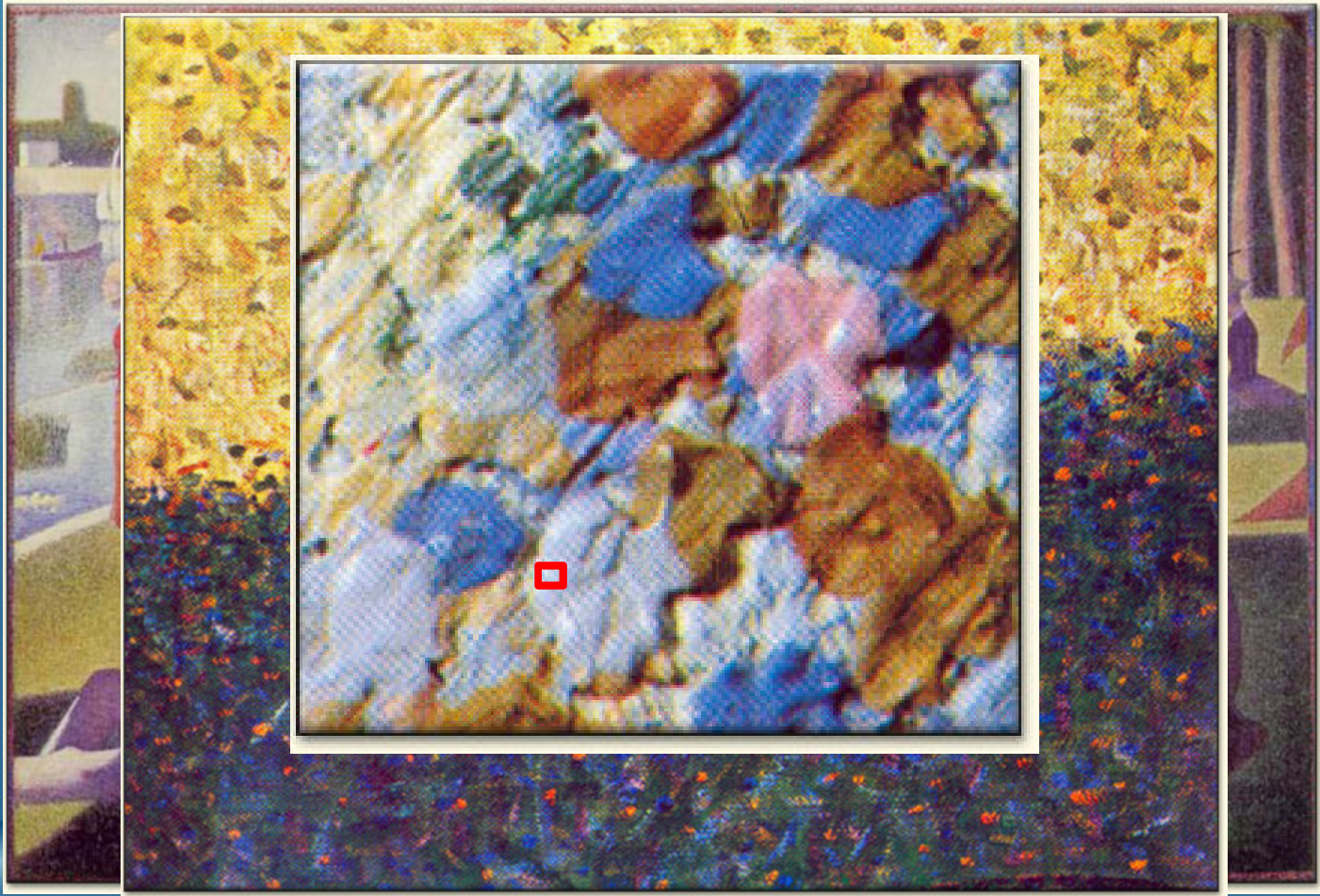
Understanding Culture Requires Systems Thinking

- Culture is about integration
- There are no easy answers
- It is about seeing the big picture

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Do You Understand This Picture?

Sunday Aft. on the Island of La Grande Jatte – Seurat



A Case Study

- A case study about how the leadership of a high-performing plant started to change the culture
- The lessons learned from the experience

Example

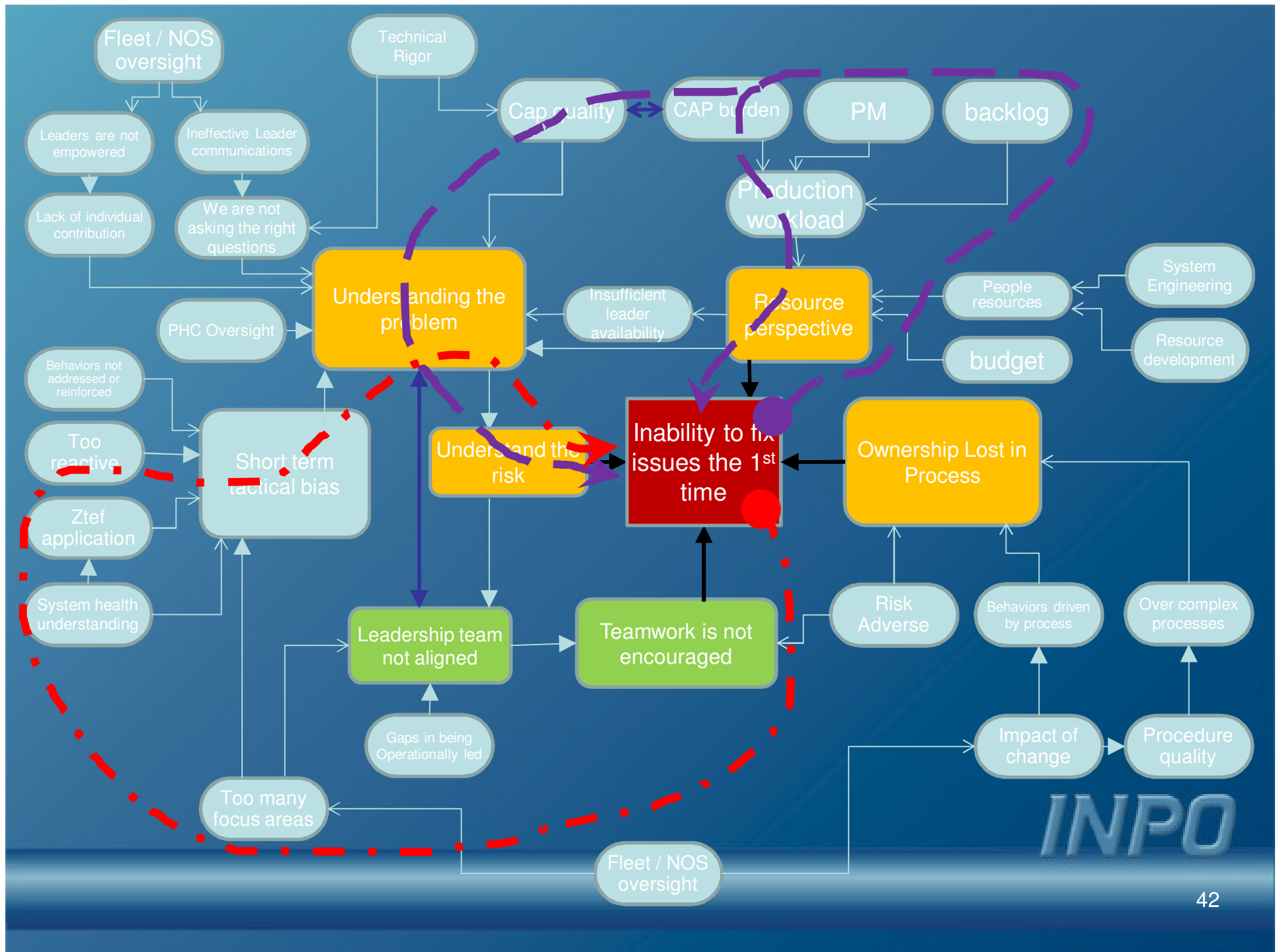
- Station was a high performing plant
 - Good evaluations many years in a row
 - But it started to decline
- They had a long history of repeat issues
 - There would be a problem. They would 'fix' it. But then it would resurface at a later time.
 - They wanted to understand why they were not fixing it right the first time

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Data Collection

- Analysis team
 - A core team of three individuals leading the analysis
 - Some additional individual contributor team members
- Interviewed approximately 130 people
 - About 20% of the station
 - The data collection was in November and December 2013 (during an outage and the holidays)
 - Analysis was in January 2014 was similar to previous plant

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Implementation

- They implemented many different actions and had an action for almost every box on the mind map
- The main point is that they clearly understood the issues driving the culture and were then able to address them

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Quantitative Results (8 Months)

- 2013 they had about 3 component failures per month
 - At 8 months, about 1 per month (~66% reduction)
- Their equipment reliability improved from 82 to 91 (August 2015 @ 96)
- Station moved from #5 in the fleet to #2 in the fleet on the employee engagement survey
- Important 'to-do' lists were shorter and the issues are on for less time

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Quantitative Results (8 Months)

- Maintenance backlogs were trending down
- Less recurring issues (0 in 8 months)
- 25% of all indicators are green (first time in three years)

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Qualitative Results

- ‘Next Level Leaders’ – In the plan-of-the-day meeting much more accountability and peer-to-peer challenge and less senior management challenge
- Workers who are observed feel they get better coaching
- More problems are identified on pre-job walkdowns
- The Performance Improvement manager said there has been a real attitude change to really try and fix issues the first time

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PRINCIPLES AND METHODOLOGY OF CULTURE CHANGE

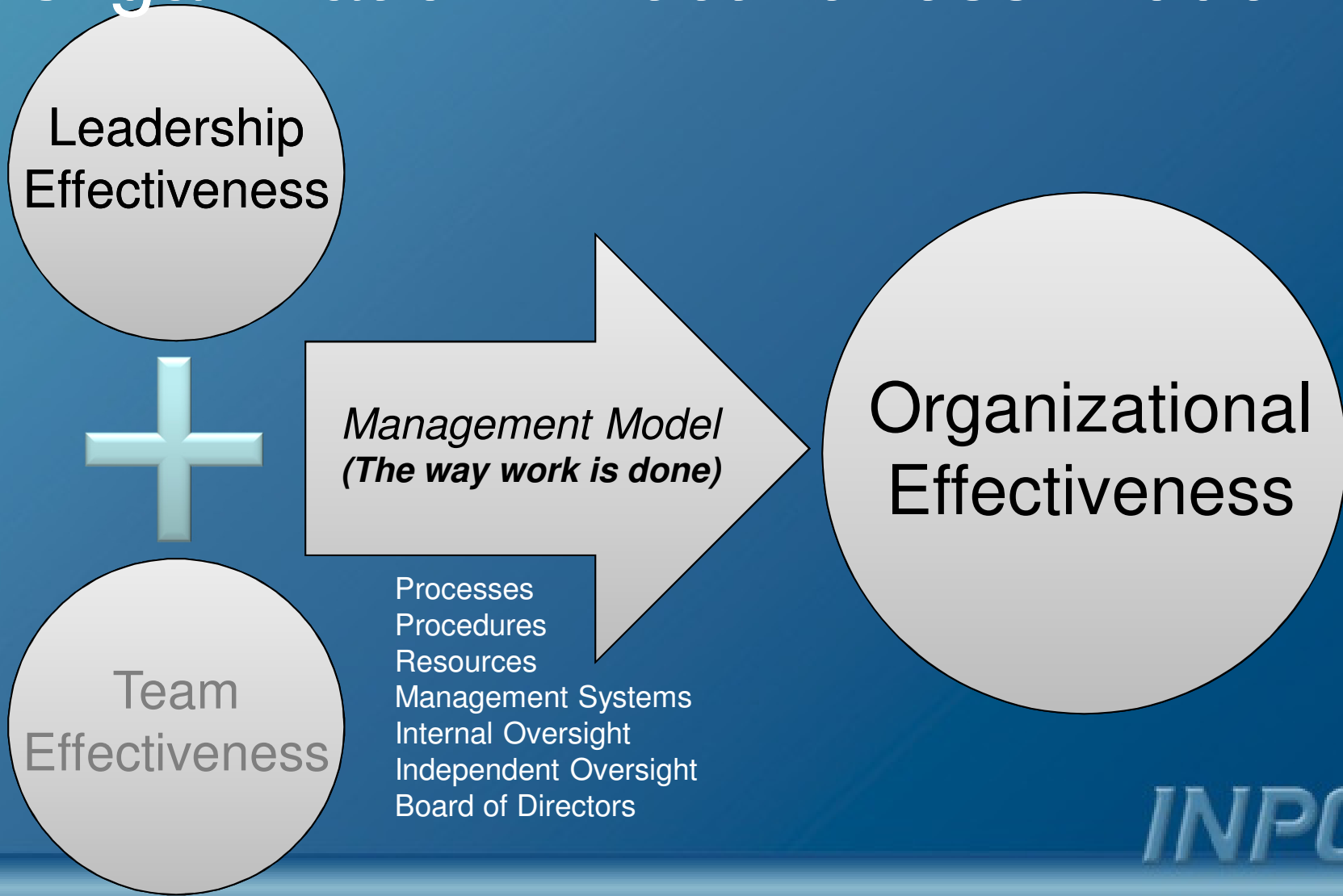
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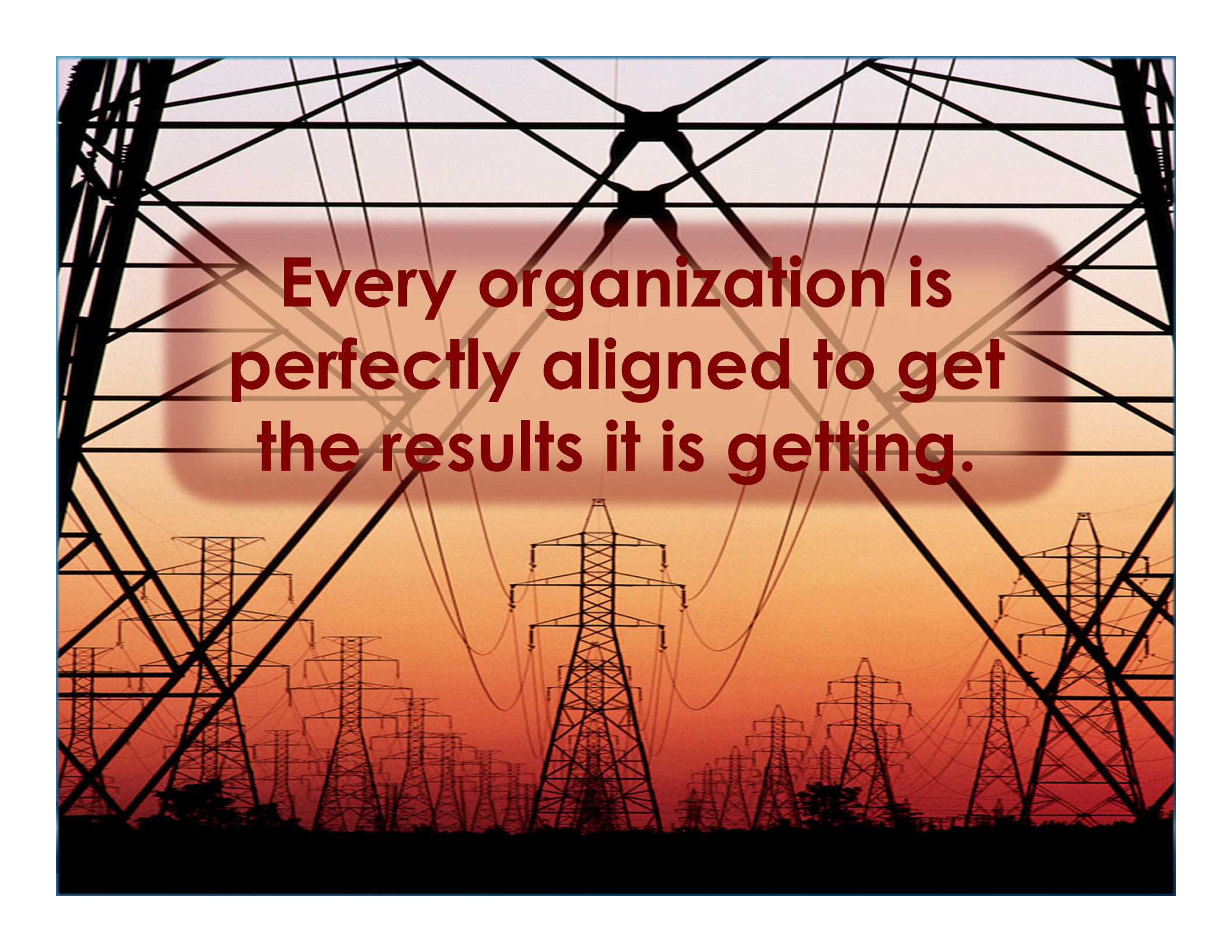
Principles for Culture Change

- Commitment by the leadership to:
 - Commit the resources necessary to really understand the problem
 - Develop and communicate the desired vision
 - Change their behavior and decision-making to align with the vision
- Change the management systems to align with the vision, both:
 - Formal systems
 - Informal systems
- Engage the front-line workforce in:
 - Communicating the vision
 - Identifying issues
 - Developing solutions
 - Implementing solutions

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Organization Effectiveness Model





**Every organization is
perfectly aligned to get
the results it is getting.**

Methodology for Culture Change

- Step 1: Thoroughly understand the issue and the many contributors to the problem
- Step 2: Implement actions that are clearly targeted toward the contributors of the problem
- Sorry to be disappointing If you are hoping for a brilliant new methodology
 - The methodology is not new but the implementation probably will be
 - We typically greatly underestimate the work necessary to understand the problem

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Louis V. Gerstner Jr. On Culture Change

- Mr. Gerstner argues that strategy and corporate culture are intimately linked. "You can't talk a culture into changing," he said. "You can't just exhort people to be different. You've got to point to fundamental strategic changes you're going to implement in a company and then drive the execution of that strategy. And it is in the execution of the strategy that the culture begins to change."

New York Times, March 10, 2002

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THANK YOU

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QUESTIONS AND DISCUSSION

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