



# Beyond the Bradley Curve Applications for Process Safety

Larry Pearlman

Managing Director – Americas

[lpearlman@JMJ.com](mailto:lpearlman@JMJ.com)

984.920.7550

# Agenda

01 Introduction & culture

---

02 A quick overview of the Bradley Curve

---

03 Why we need “Beyond”

---

04 Alternatives

---

05 A better path forward

---

06 Summary

---





### **June 21, 1911**

Crashed into the O.L. Halenbeck in Manhattan and almost sunk upon commissioning.

### **September 20, 1911**

Crashed into the Naval Cruiser HMS Hawke in Southampton.

### **February 24, 1912**

Lost one of its 26 ton propellers on a well-known wreck in the Grand Banks.

Edward J. Smith - Captain



Captain Edward J. Smith

**January 27, 1889**

Ran The Republic aground in New York.

**December 1, 1890**

Ran The Coptic aground in Rio de Janeiro.

**November 4, 1909**

Ran The Adriatic aground outside New York.

Known for running ships too fast through narrow passages.

Also known for poorly training his officers.

Was commissioned to command the Titanic.

# 'Safety outweighing every other consideration'



... was posted in the chart room of every  
White Star liner in 1912

# Do not oversimplify culture!

Behavior

Observable

Attitudes & Values

Competence

Reportable

Beliefs

Unconscious



# "How things get done" is superficial



Culture operates  
at many levels

Attitudes & Values



It's necessary to  
look at the root  
system



What's feeding it



The history of  
the soil

Reportable



Who planted  
what

Without digging, you never really understand culture

# Why we like continuums...

Simplify the complex

Measure progress

Benchmark

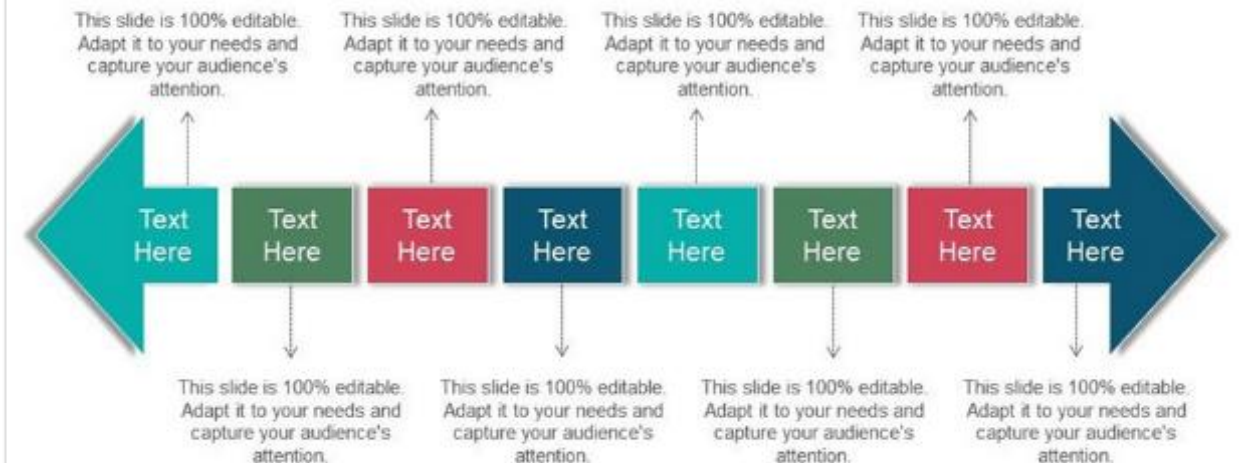
Define aspirations

Recognize a journey

Show a path forward

Provide distinction

## Continuum Diagram For Sequence Of Stages



Continuums are so popular, they are part of PowerPoint!



# What is the Bradley Curve?

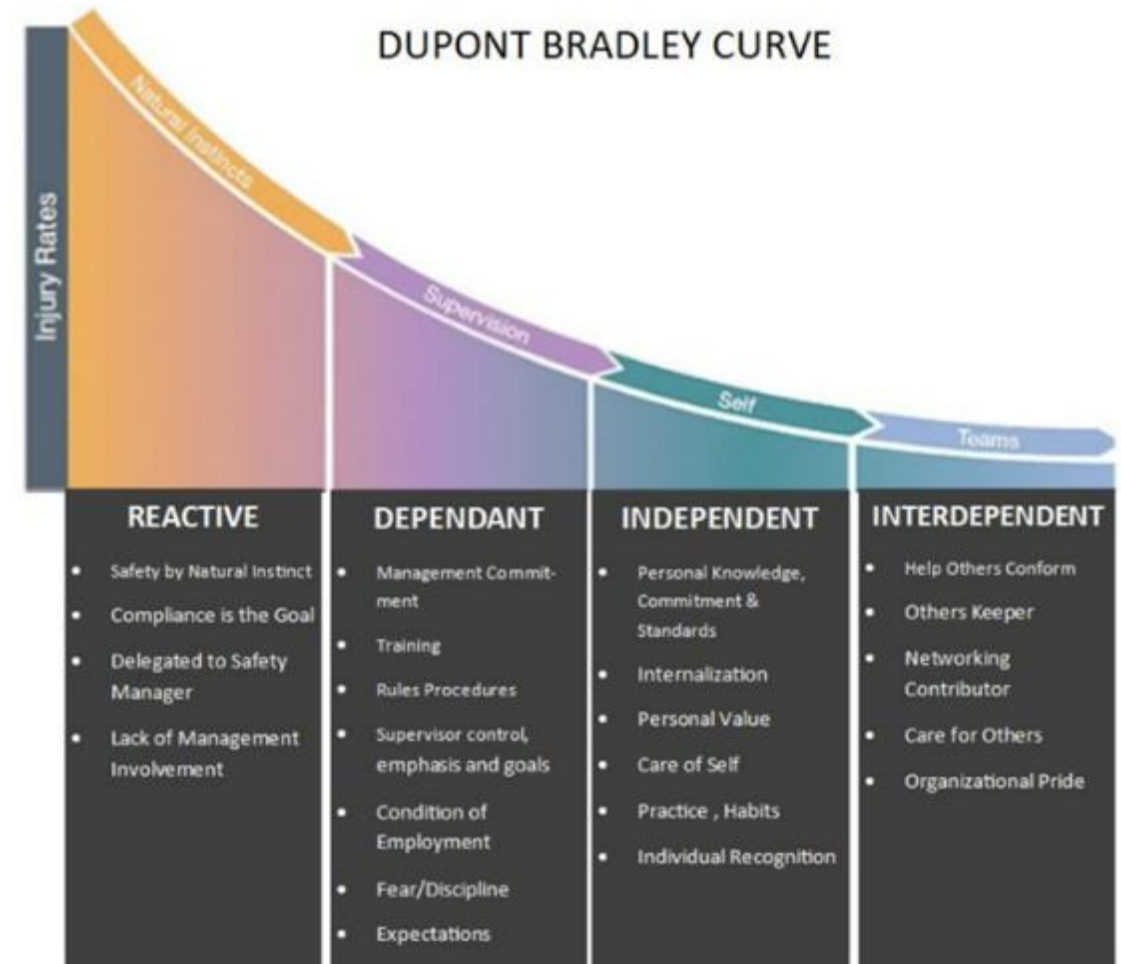
“Reactive” is disempowering and relies on instinct

“Dependent” relies on rules and procedures

“Independent” relies on personal values and individual skills and knowledge

“Interdependent” relies on teams of people keeping each other safe

Not necessarily a ‘linear’ journey

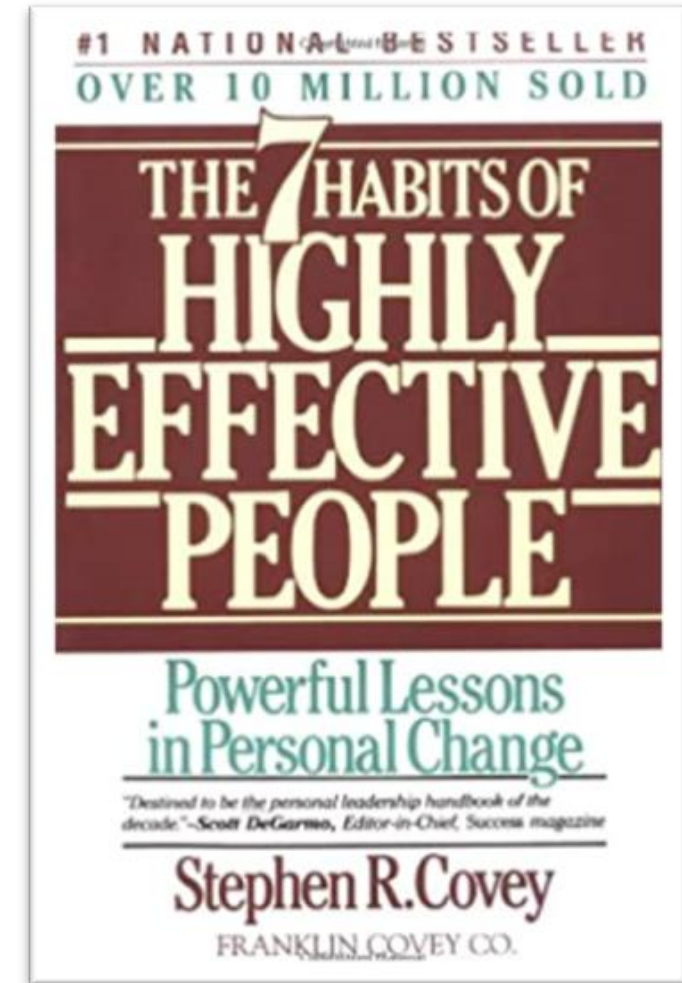


# What is the Bradley Curve?

Developed in 1995, it wasn't grounded in research

It was built upon Stephen Covey's Book "The 7 Habits of Highly Effective People"

The premise is that the more interdependent employees are, the safer the organization becomes.



# Where would you place these scenarios on the Bradley Curve?



Engineering errors



Procurement decisions



Insufficient competency



Design flaws



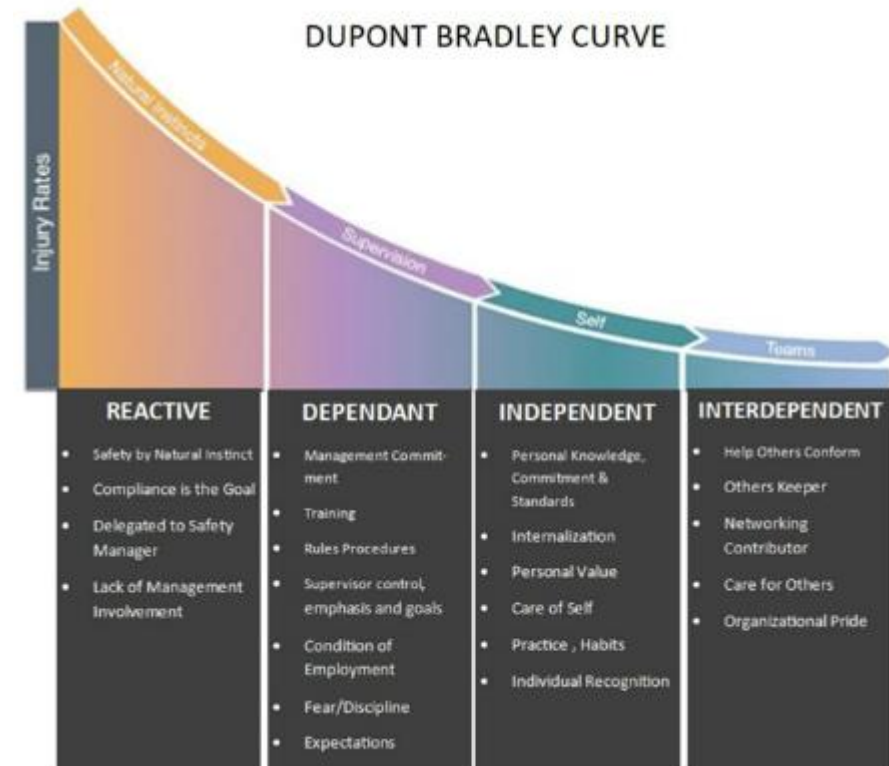
Mental lapses



Behavioral traps



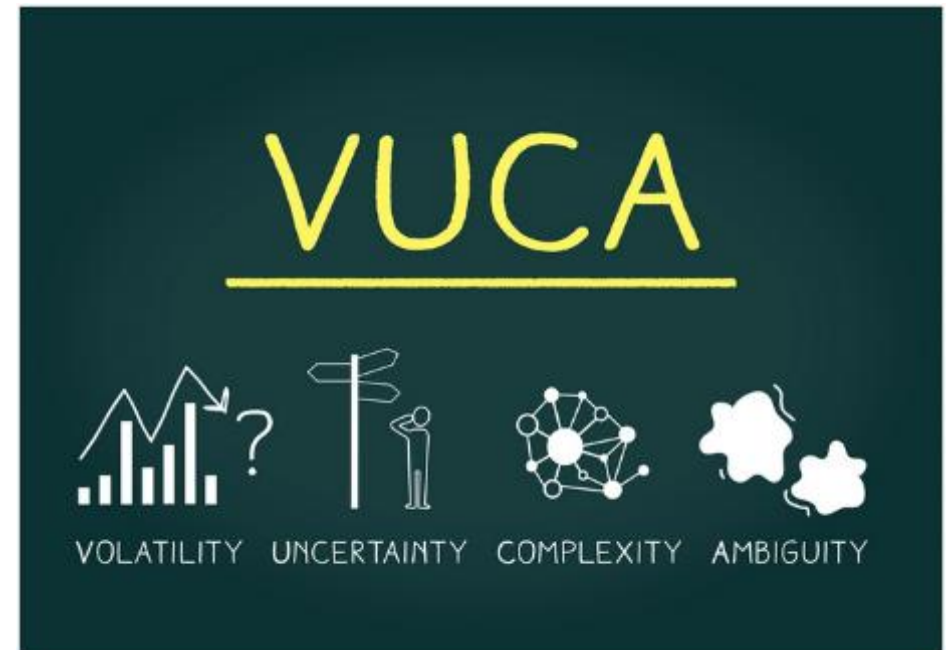
Human factors



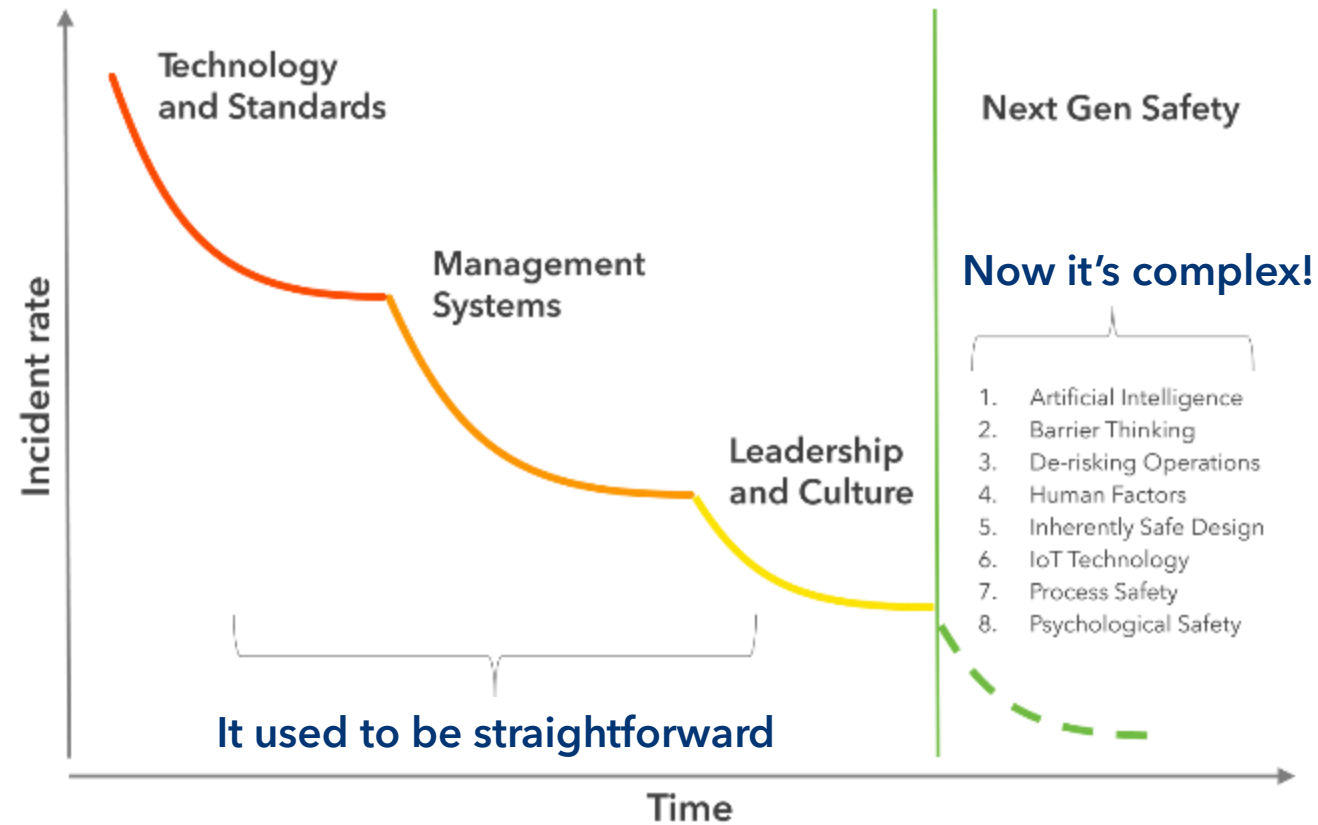


# The reality is that we live in a VUCA world!

Our models need to change!



# The Safety Improvement Journey



# BP Baker Panel

“While corporate leaders of BP had set a positive tone regarding personal safety, they had not done so with process safety.”

The Baker Panel concluded that BP attended to personal safety indicators (e.g., injuries, days missed from work), which were considered above-average for the industry, and erroneously inferred that these positive indicators of personal safety also indicated adequate process safety.

The BP US Refineries Independent Safety Review Panel  
2007





# Measuring Process Safety Culture

## Correlates with Days Away From Work (DAFW)

	Dimension	Question
PSA	Operational Integrity	57. I understand the design limits of our equipment.
PSA	Operational Integrity	38. We operate within the operating limit of our equipment.
SCA	Skilled & Competent	30. I understand my safety responsibilities.

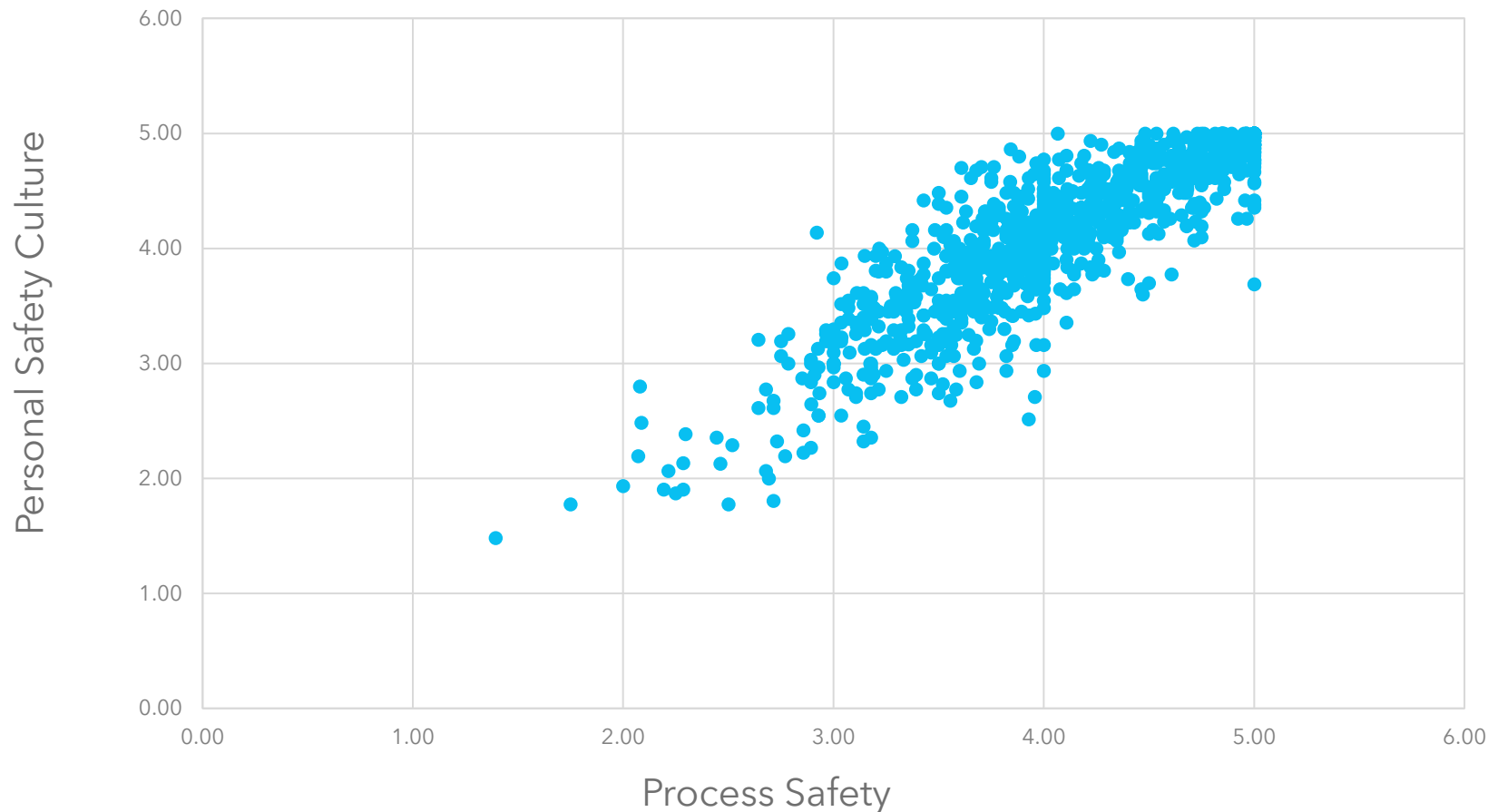
## Correlates with Tier 1 Spills/Leaks (API RP 754)

	Dimension	Question
PSA	Leadership Integrity	36. Site management effectively communicates our process safety results.
PSA	Design Integrity	43. I participate in hazard reviews and assessments.
PSA	Operational Integrity	34. We always operate according to procedures.
SCA	Reinforces Behaviors	21. My immediate manager holds employees accountable for following safety procedures.
SCA	Reinforces Behaviors	20. My immediate manager's actions are consistent with what he/she says.
SCA	Engage Employees	27. I would feel comfortable reporting a safety incident or near miss.
SCA	Comm Expectations	23. My immediate manager puts our team's safety ahead of his/her own ambitions.
SCA	Reinforces Behaviors	24. In the last 12 months, my supervisor has reviewed my work to make sure I am working safely.
SCA	Safety Leadership	19. My immediate manager is accessible to me when needed.
SCA	Reinforces Behaviors	4. At my Company, senior leadership's actions are consistent with what they say (they "walk the talk").

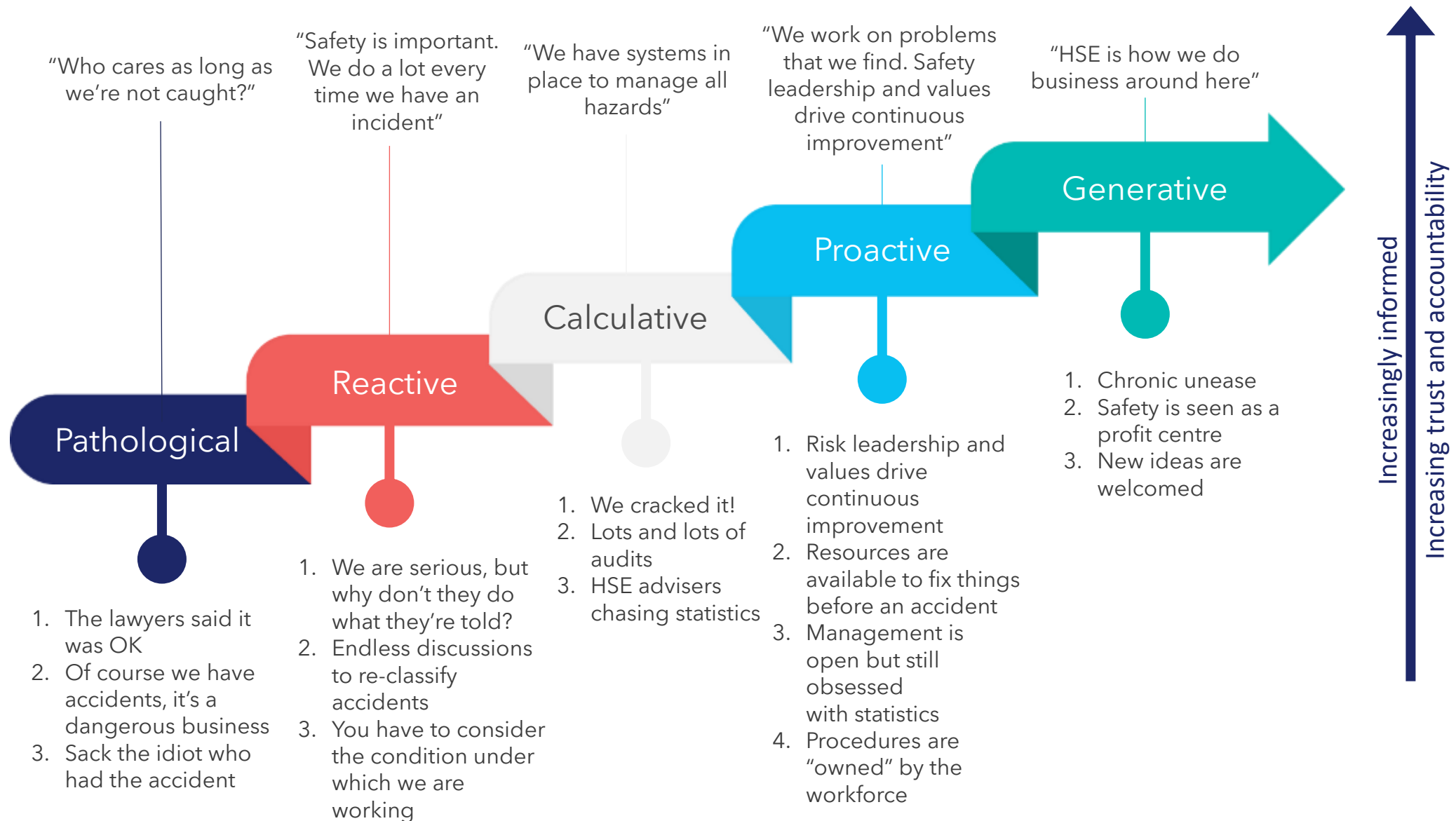
Companies need to get these three items right!

# Does a process safety assessment predict a safety culture? Answer: Yes! Our survey results show that these two are strongly linked.

A PSA significantly predicts safety culture  $R^2 = .765$ . Employees who feel that their process safety needs are being attended to are **significantly more likely** to believe they work in a strong culture of safety.



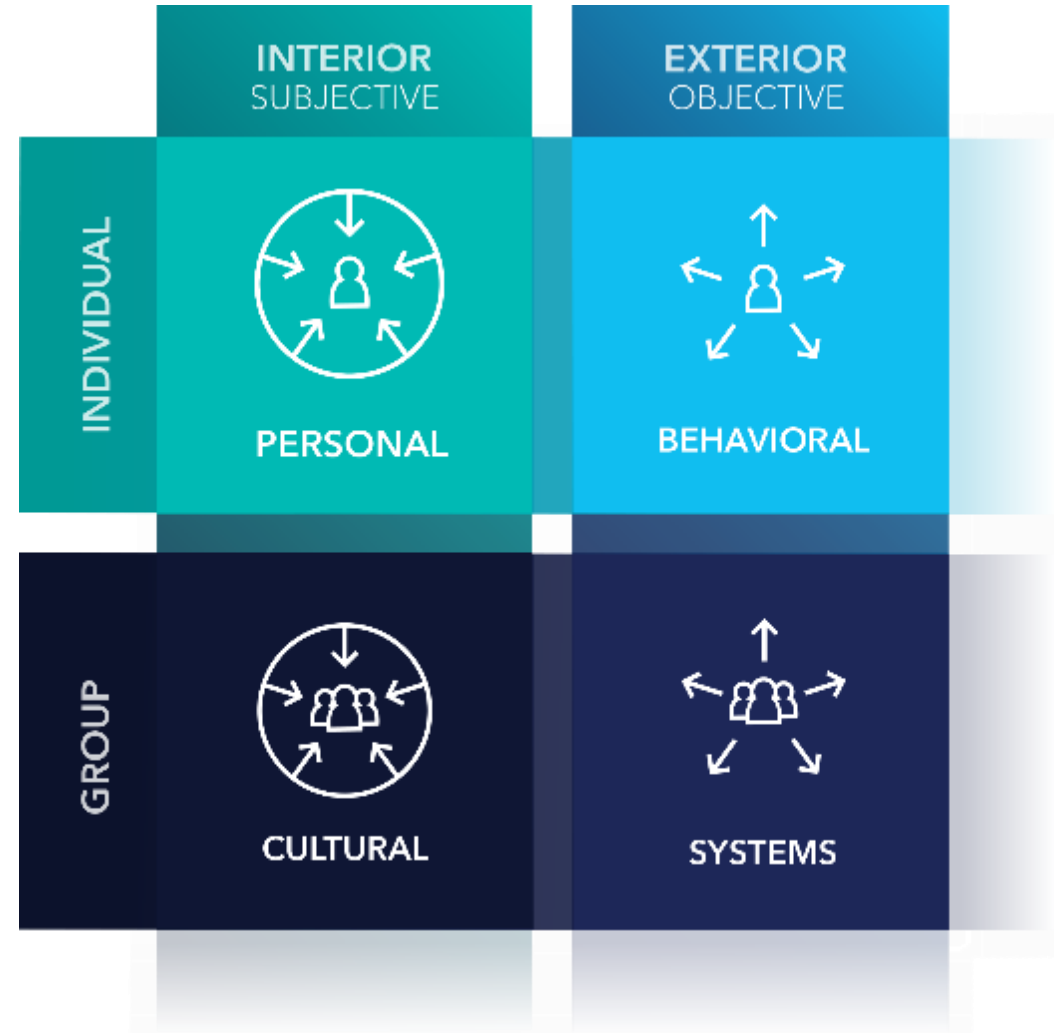
# Self-Reflection: Safety Culture Maturity Model



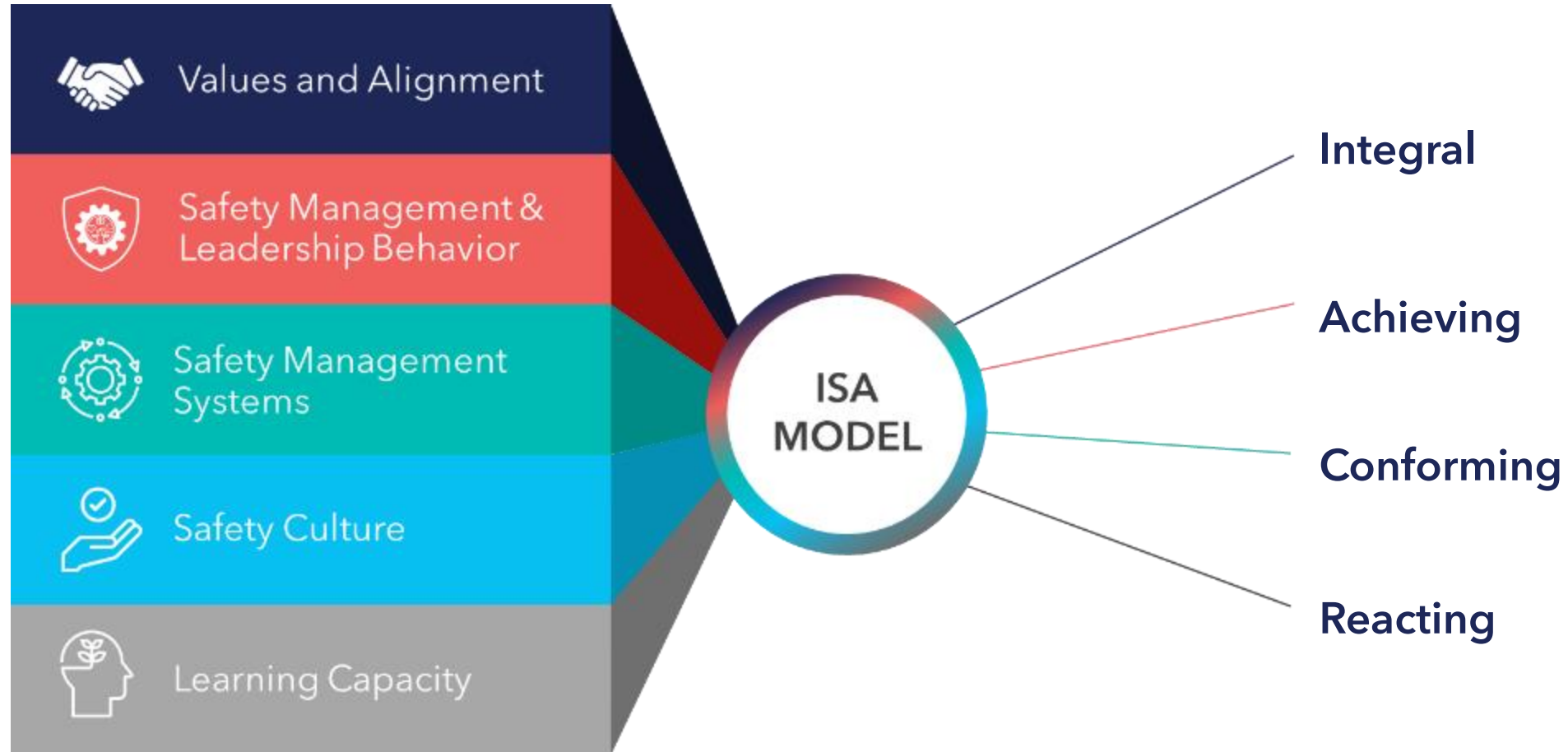


# Integral View

Leaders are responsible for the "whole thing"



# ISA Model



# Summary

## Five Dimensions

- The world of safety has grown in complexity
- Old models no longer explain reality
- We need to look holistically at safety and safety culture
- Our new models need to develop and recognize complexity
- Need to provide our organizations a more informed view of culture



# Thank you!

Larry Pearlman

Managing Director - Americas

[lpearlman@JMJ.com](mailto:lpearlman@JMJ.com)

984.920.7550