



**NTSB** National Transportation Safety Board

# Using Collaboration to Improve Workplace Safety

Presentation to: Executive Business  
Issues Forum

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Date: October 10, 2017

# The Contrast

## - Conventional wisdom:

Improvements that reduce risk usually  
*also reduce productivity*

## - Lessons learned from proactive aviation safety programs:

Risk can be reduced in a way that also results in  
*immediate productivity improvements*

and

Focusing on safety can *improve safety much more*  
than focusing on compliance



# Process Plus Fuel Creates a Win-Win



# Outline

- **The Context**
- **Importance of “System Think”**
- **Importance of Better Information**
- **Improved Safety *and* Productivity**
- **Roles of Leadership and Regulator**
- **Transferability to Workplace Safety**

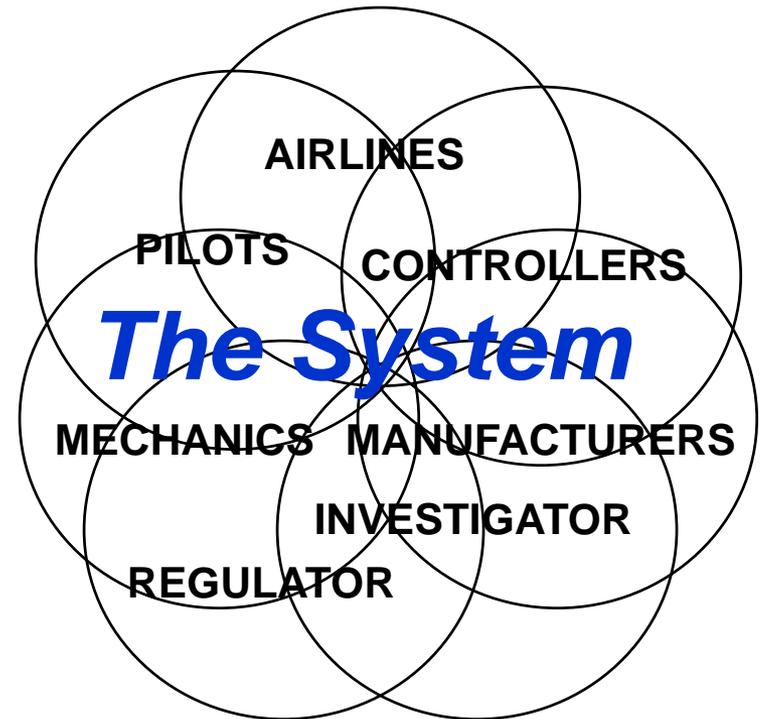
# NTSB 101

- Independent federal agency, investigate transportation mishaps, all modes
- Determine probable cause(s) and make recommendations to prevent recurrences
- Primary product: Safety recommendations
  - Favorable response > 80%
- ***SINGLE FOCUS IS SAFETY***
- Independence
  - Political: Findings and recommendations based upon evidence rather than politics
  - Functional: No “dog in the fight”



# The Context: Increasing Complexity

- **More system**  
*interdependencies*
  - Large, complex, interactive system
  - Often tightly coupled
  - Hi-tech components
  - Continuous innovation
  - Ongoing evolution
- **Safety issues are more likely to involve**  
*interactions between parts of the system*



# Effects of Increasing Complexity:

**More** “human error” because

- **System more likely to be error prone**
- **Operators more likely to encounter unanticipated situations**
- **Operators more likely to encounter situations in which “By the Book” may not be optimal (“workarounds”)**

# The Result:

**Front-line staff who are**

- Highly trained
- Competent
- Experienced,
- Trying to do the right thing, and
- Proud of doing it well

**. . . yet they still commit**

**Inadvertent  
human errors**

# **The Solution: System Think**

***Understanding how a change in one subsystem of a complex system may affect other subsystems within that system***



# “System Think” via Collaboration

**Bringing all parts of a complex system together to collaboratively**

- **Identify potential issues**
- ***PRIORITIZE* the issues**
- **Develop solutions for the prioritized issues**
- **Evaluate whether the solutions are**
  - **Accomplishing the desired result, and**
  - **Not creating unintended consequences**



# When Things Go Wrong

## How It Is Now . . .

You are highly trained

*and*

If you did as trained, you  
would not make mistakes

so

You weren't careful  
enough

so

You should be **PUNISHED!**

## How It Should Be . . .

You are human

*and*

Humans make mistakes

so

Let's *also* explore why the  
system allowed, or failed to  
accommodate, your mistake

*and*

Let's **IMPROVE THE SYSTEM!**

# Fix the Person or the System?

Is the **person**  
*clumsy?*

Or is the  
problem . . .

The *step*???



# Enhance Understanding of Person/System Interactions By:

- Collecting,
  - Analyzing, and
  - Sharing
- ## Information

# Objectives:

**Make the System**

***(a) Less  
error prone***

**and**

***(b) More  
error tolerant***

# The Health Care Industry

## *To Err Is Human:*

### *Building a Safer Health System*

**“The focus must shift from blaming individuals for past errors to a focus on preventing future errors by designing safety into the system.”**

**Institute of Medicine, Committee on Quality of Health Care in America, 1999**

# **Major Source of Information: Hands-On “Front-Line” Employees**

**“We knew about  
that problem”**

***(and we knew it might hurt  
someone sooner or later)***

# Next Challenge



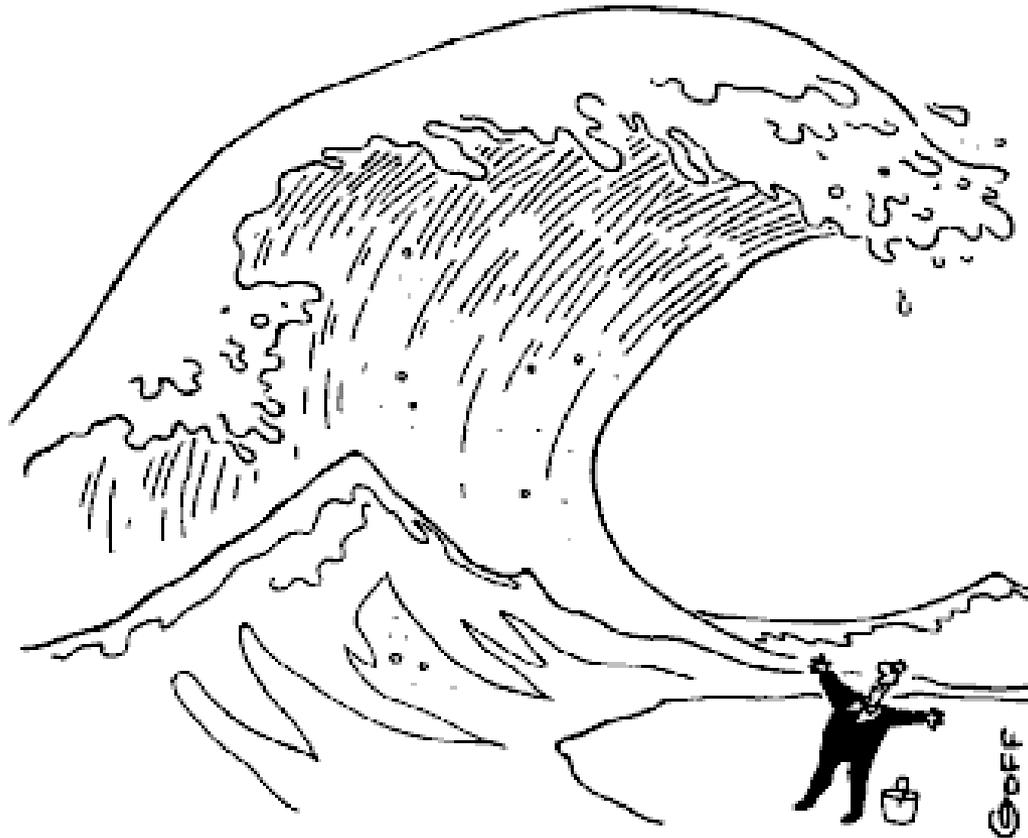
**Legal/Cultural Issues**

**Improved Analytical Tools**

*As we begin to get over the first hurdle, we must start working on the next one . . .*

# Information Overload

© 1996 Ted Goff



"EUREKA! MORE INFORMATION!"

# From Data to Information

*Tools and processes to convert large quantities of data into useful information*

## Data Sources

Info from front line staff and other sources

DATA



**Analysts**

USEFUL

INFORMATION

## Smart Decisions

- Identify issues
- **PRIORITIZE!!!**
- Develop solutions
- Evaluate interventions

Tools



Processes

# Aviation Success Story

**83% decrease** in fatal accident rate,  
1998 - 2007

largely because of

***System Think***

fueled by

***proactive safety  
information programs***

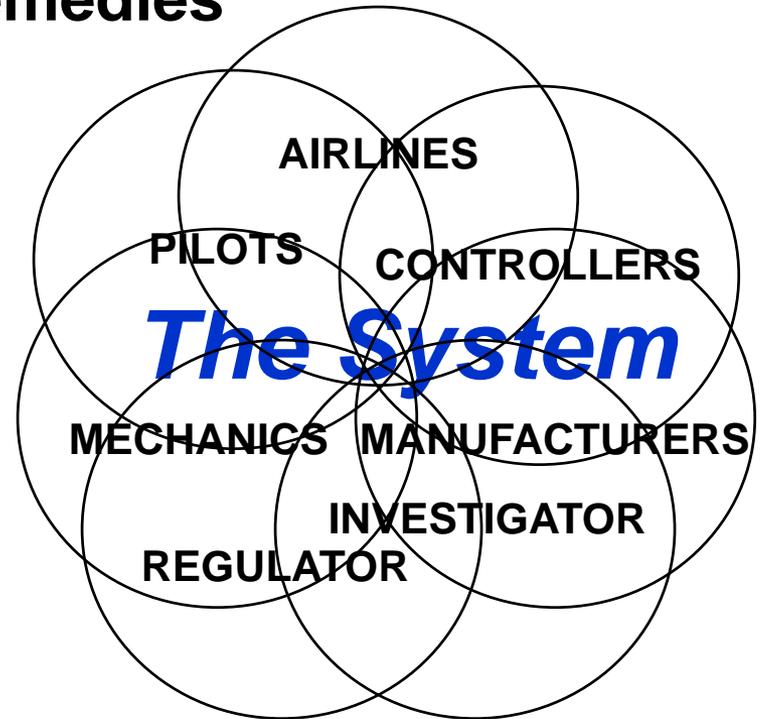
P.S. Aviation was already considered **VERY SAFE** in 1997

P.P.S. The new level of safety was **WELL ABOVE** the floor of regulatory compliance

# The Power of Collaboration

Engage all participants in identifying problems and developing and evaluating remedies

- Airlines
- Manufacturers
  - *With the systemwide effort*
  - *With their own end users*
- Air Traffic Organizations
- Labor
  - *Pilots*
  - *Mechanics*
  - *Air traffic controllers*
- Regulator(s)



# Moral of the Story

Anyone who is  
involved in the *problem*  
should be  
involved in the *solution*



# Major Paradigm Shift

- **Old: The regulator identifies a problem, develops solutions**
  - Industry skeptical of regulator’s understanding of the problem
  - Industry fights regulator’s solution and/or implements it begrudgingly
  
- **New: Collaborative “System Think”**
  - Industry involved in identifying problem
  - Industry “buy-in” re interventions because everyone had input, everyone’s interests considered
  - Prompt and willing implementation
  - Interventions evaluated . . . *and tweaked as needed*
  - Solutions probably more effective and efficient
  - Unintended consequences much less likely

# Challenges of Collaboration

- Human nature: “I’m doing great . . . *the problem is everyone else*”
- Participants may have competing interests, e.g.,
  - Labor/management issues
  - May be potential co-defendants
- Regulator probably not welcome
- Not a democracy
  - Regulator must regulate
- Requires all to be willing, *in their enlightened self-interest*, to leave their “comfort zone” and think of the System

# Applicability of Collaborative Approach:

- Entire industry
- Company (Some or All)
- Type of activity
- Facility
- Team
- Workplace safety

# Workplace Safety Beta Test

- **Select troublesome area**
  - **Nagging problem for many years**
  - **Many interventions have been tried, not successful**
  - **Likelihood that problems are systemic, not just people**
  - **Collaboration as effort to address the system problems**
  - **Less defensiveness because not focused on single event**
- **Select collaborative corrective action group**
  - **All who have a hand in the process**
  - **Manufacturers?**
  - **Operators?**
  - **Regulators?**
  - **Others?**

# Note Significant Differences

- **Workplace safety focuses on compliance rather than safety**
  - **Focus on compliance stops upon achieving compliance; focus on safety does not stop and produces much higher level of safety**
- **CAST success story results from collaboration**
  - **Workplace safety rarely includes all interested parties, e.g., manufacturers, regulator**

# The Role of Leadership

- Demonstrate safety commitment . . .  
*but acknowledge that mistakes will happen*
- Include “Us” (e.g., System) issues,  
Not just “You” (e.g., training) issues
- **Make safety a middle management metric**
  - Engage labor early
  - Include the **System** --  
manufacturers, operators, regulator(s), and others
- Encourage and facilitate reporting
  - Provide **feedback**
  - Provide adequate **resources**
  - **Follow through** with action

# How The Regulator Can Help

- Emphasize the importance of System issues *in addition to* (not instead of) worker issues
  - Encourage and participate in industry-wide “System Think”
- Facilitate collection and analysis of information
  - Clarify and announce *policies for protecting information and those who provide it*
    - Encourage other industry participants to do the same
- Recognize that *compliance* is very important, but the *mission is reducing systemic risk*

# Conclusions

- ***Safety issues in complex systems usually involve human/system interface issues***
- ***Collaboration can help address not only the human performance issues but also the system issues***
- ***Collaboration can also help ensure that safety improvement programs also improve productivity, which makes the safety improvements more sustainable***
- ***Focusing on safety can produce a much higher level of safety than focusing on compliance***



Thank You!!!



*Questions?*