



NTSB National Transportation Safety Board

Future Concerns

re

Pilot Professionalism

Presentation to: M & N

Safety Standdown 2011

Name: Christopher A. Hart

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The Starting Point

Pilot Professionalism
is not
just a *pilot* issue --

It is
a *System* issue

Abundant Professionalism

- Hudson River Landing, 2009
- Gliding to the Azores, 2001
- Sioux City, IA, 1989
- Gimli Glider, 1983

Professionalism Lacking

- Stick shaker: PULL! (2009)
- Minneapolis over-flight, 2009
- Takeoff without runway lights, 2006
- Let's try FL 410, 2004

Not Just In Aviation

- Troubling trends of decreasing professionalism are appearing in all modes of transportation
- Example: The use of cellphones, while on duty and underway, for non- duty talking/texting

Cellphone Talking/Texting

- Reflects serious lack of professionalism
- Emerging problem in all modes
 - Ongoing NTSB investigations in various modes looking at cellphone talking/texting
 - Problem is also getting worse on streets and highways
- Chatsworth, CA, commuter train collision, 2008
 - Engineer passed red (stop) signal while texting
 - Collided head-on with freight train, 25 fatalities
 - Resulted in NTSB recommendations to install and monitor in-cab camera
- Philadelphia, tug/barge collision with tourist “duck,” 2010
 - Medical emergency for tug operator’s 9-year old son
 - Tug operator on cellphone 10 of 12 minutes before collision
 - Tug/barge overran “duck,” 2 fatalities

Ingredients for Professionalism

- Robust initial and recurrent
PILOT TRAINING
- **SYSTEM THINK** by all of the key players,
including
 - Manufacturers
 - Air traffic controllers
 - Airports

Loss of Military Pipeline

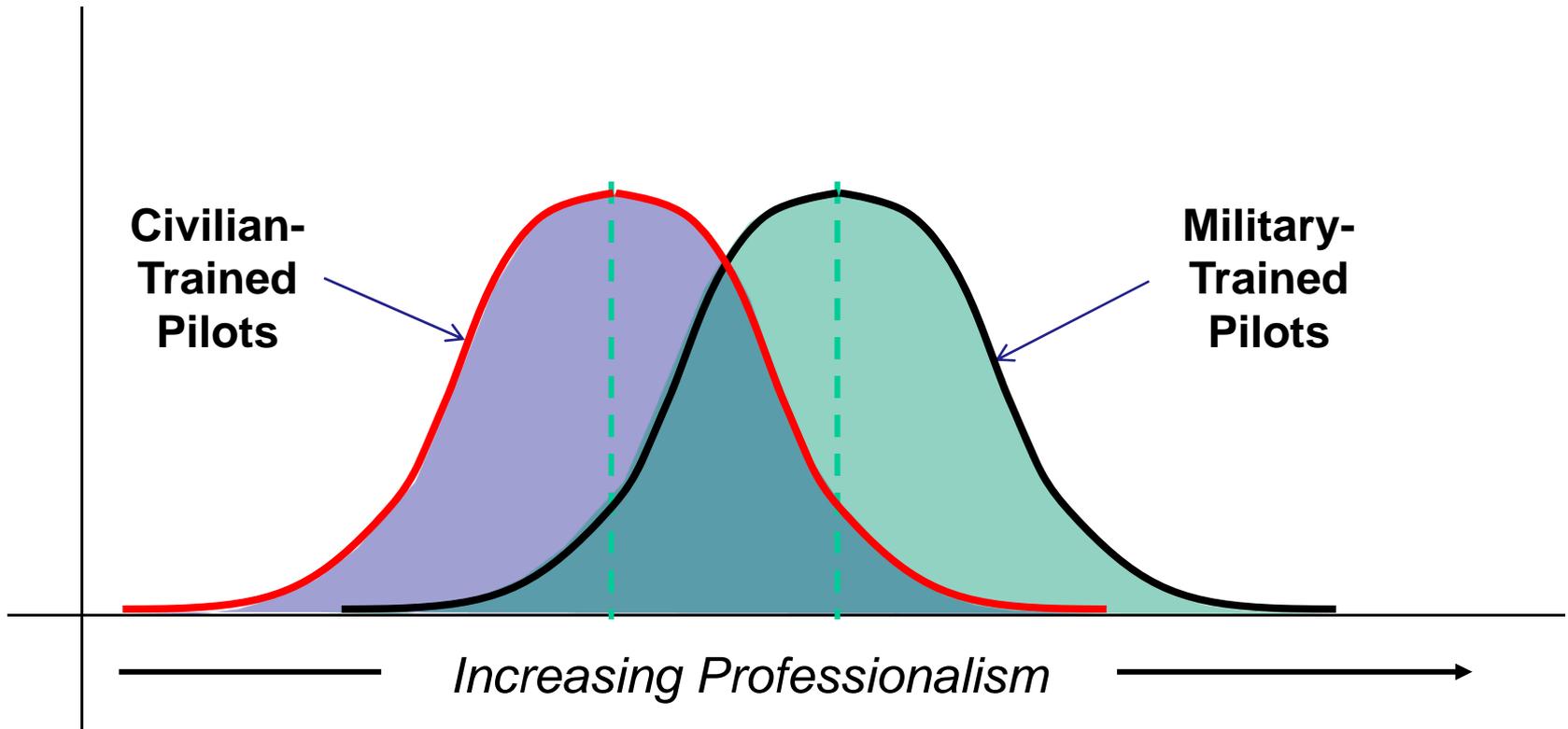
- Formerly abundant supply of commercial airline pilots with world-class military training is diminishing, and will probably never return
- How do we assure continued highest-quality training for commercial airline pilots?

Civilian Tests for Pilots

- Written Test*
 - Knowledge
- Flying Test*
 - Knowledge
 - Skills
- Tests for
 - Judgment?
 - Professionalism?

*Note: No limit on how many times needed to pass

Overlapping Bell Curves



The Training Challenge

- Initial training must:
 - Develop knowledge and skills
 - Be evaluated by more than just (eventually) passing tests
 - Also develop and instill judgment and professionalism
- Recurrent training must:
 - Continue to develop and strengthen all of the above

Why System Think?

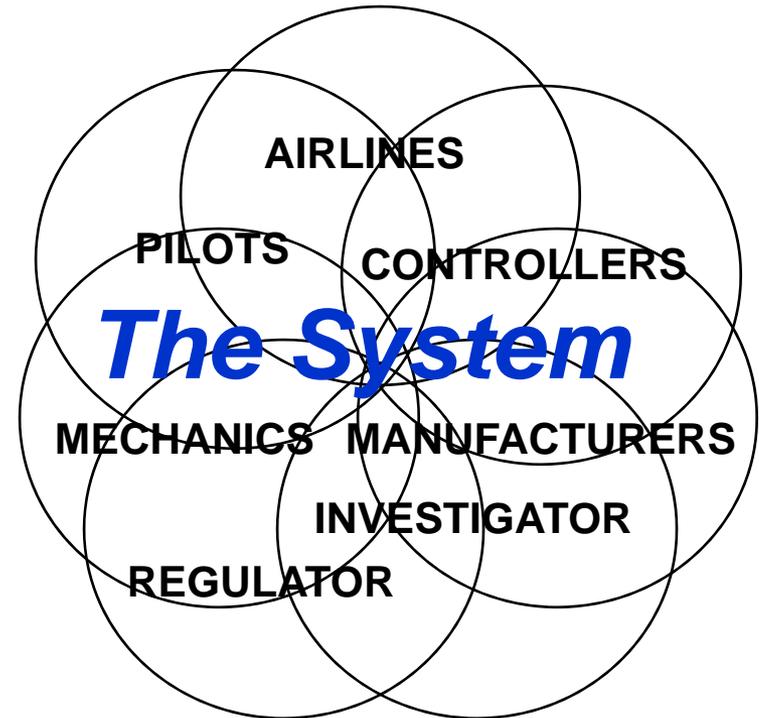
- **More System**

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

The Result:

Pilots 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**

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???*



Recent Examples

- Air France Flight 447 (2009)
 - Loss of airspeed information in cruise
 - Many systems disabled
 - Simulator training re cruise mishaps?

- Turkish Airlines Flight 1951, Amsterdam (2009)
 - Aware of left-side radar altimeter malfunction
 - Thought they switched to right-side radar altimeter
 - Autothrottles wanted to stay at idle

Enhance Understanding of Person/System Interactions By:

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

Objectives:

Make the System

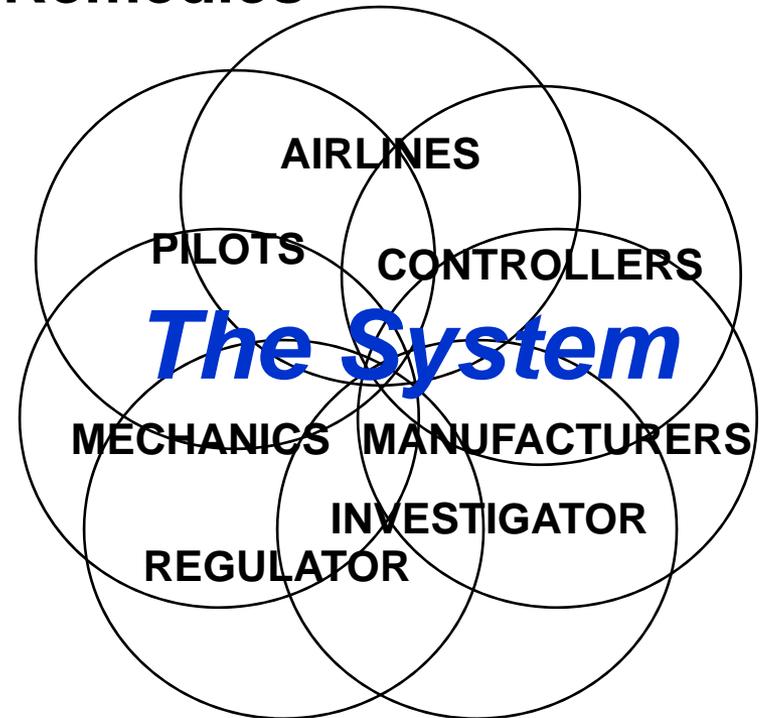
*(a) Less
Error Prone*

and

*(b) More
Error Tolerant*

CAST “System Think”

- 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



Aviation Success Story

65% Decrease in Fatal Accident Rate,
1997 - 2007

largely because of

System Think

fueled by

***Proactive Safety Information
Programs***

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

Pilots as End-Users

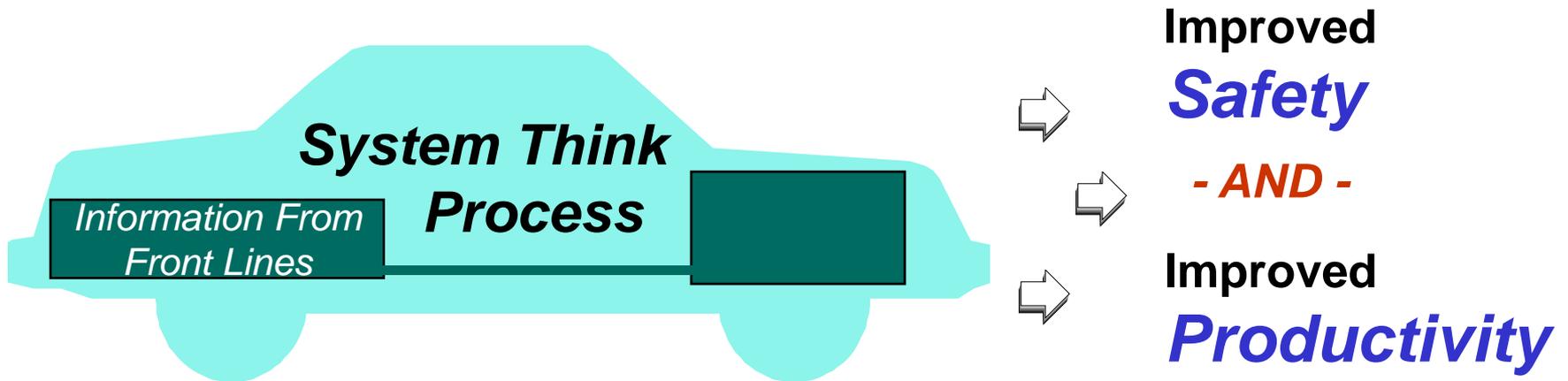
- Ideally, since pilots are the end-users:
 - Aircraft manufacturers should obtain input from pilots throughout design and development
 - Air traffic control system and procedural developments should include pilot input
 - Airport design should include pilot input

Manufacturer “System Think”

Some Manufacturers Seek Input,
Throughout the Design Process, From

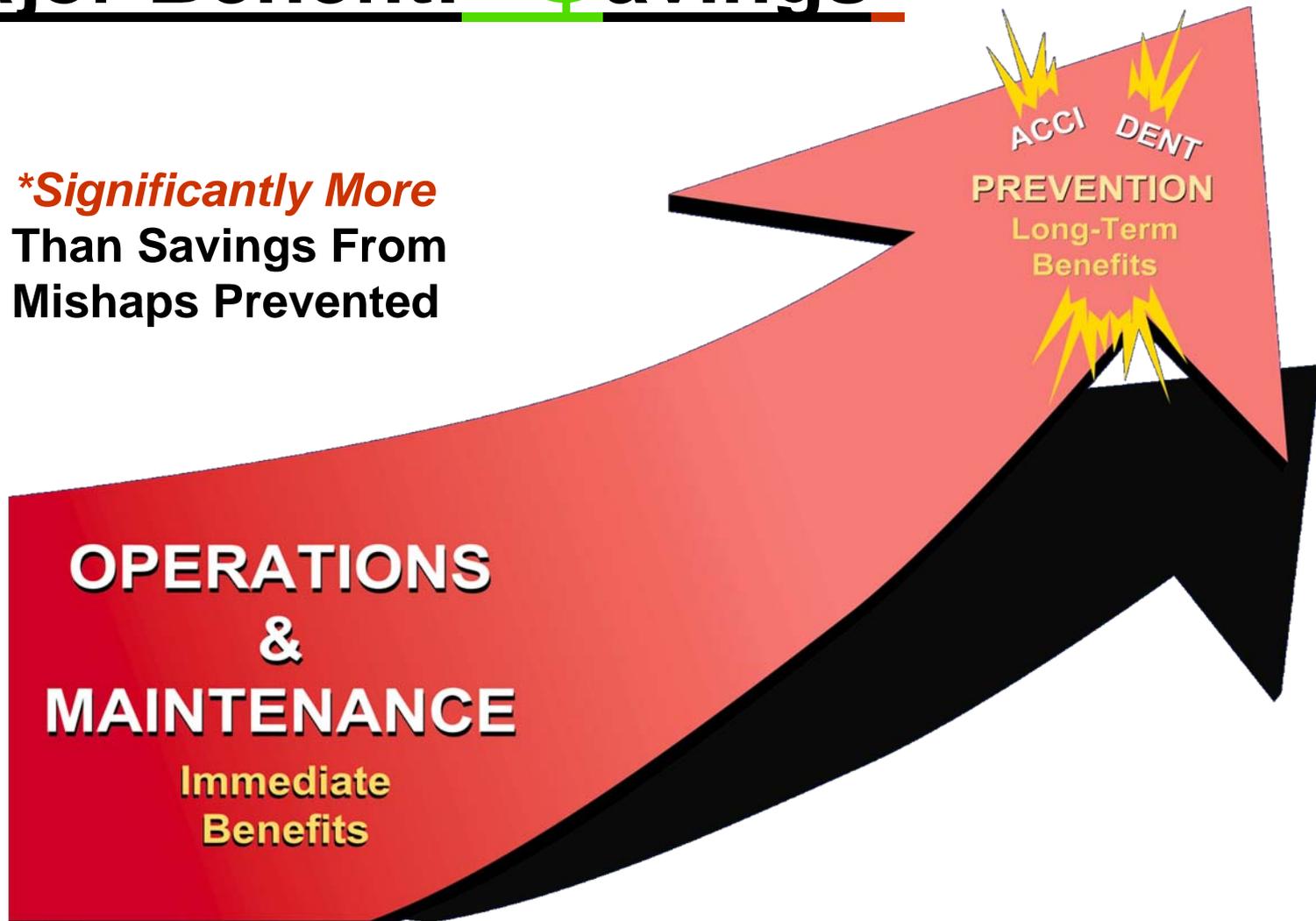
- *Pilots* (User Friendly)
- *Mechanics* (Maintenance Friendly)
- *Air Traffic Services* (System Friendly)

Very Exciting Discovery: Safety/Productivity Win-Win



Major Benefit: Savings*

**Significantly More*
Than Savings From
Mishaps Prevented



Collateral Issue: Criminalization

- Systems getting more complex
 - Good people trying to do the right thing
- Human error: Immediate response is to ***PUNISH!***
- Issue: Best way to stop error that is *inadvertent?*

Undesirable Results

- Hinders mishap investigations
- Chills willingness to participate in proactive information programs
 - Concorde, Paris (2000)
 - Linate Airport, Milan (2001)
 - GOL 1907, Brazil (2006)

Thank You!!!



Questions?