



**Dedicated
in humble gratitude to
the women and men of
the USDA Forest Service
who sacrificed their lives
in the line of duty while
caring for the land and
serving people.**

USDA Forest Service Centennial, 2005

Moving Gracefully from Compliance to Learning:

The beginning of the
USFS Learning Journey

Ivan Pupulidy, PhD

Adjunct Professor

*Advanced Safety Engineering
and Management*

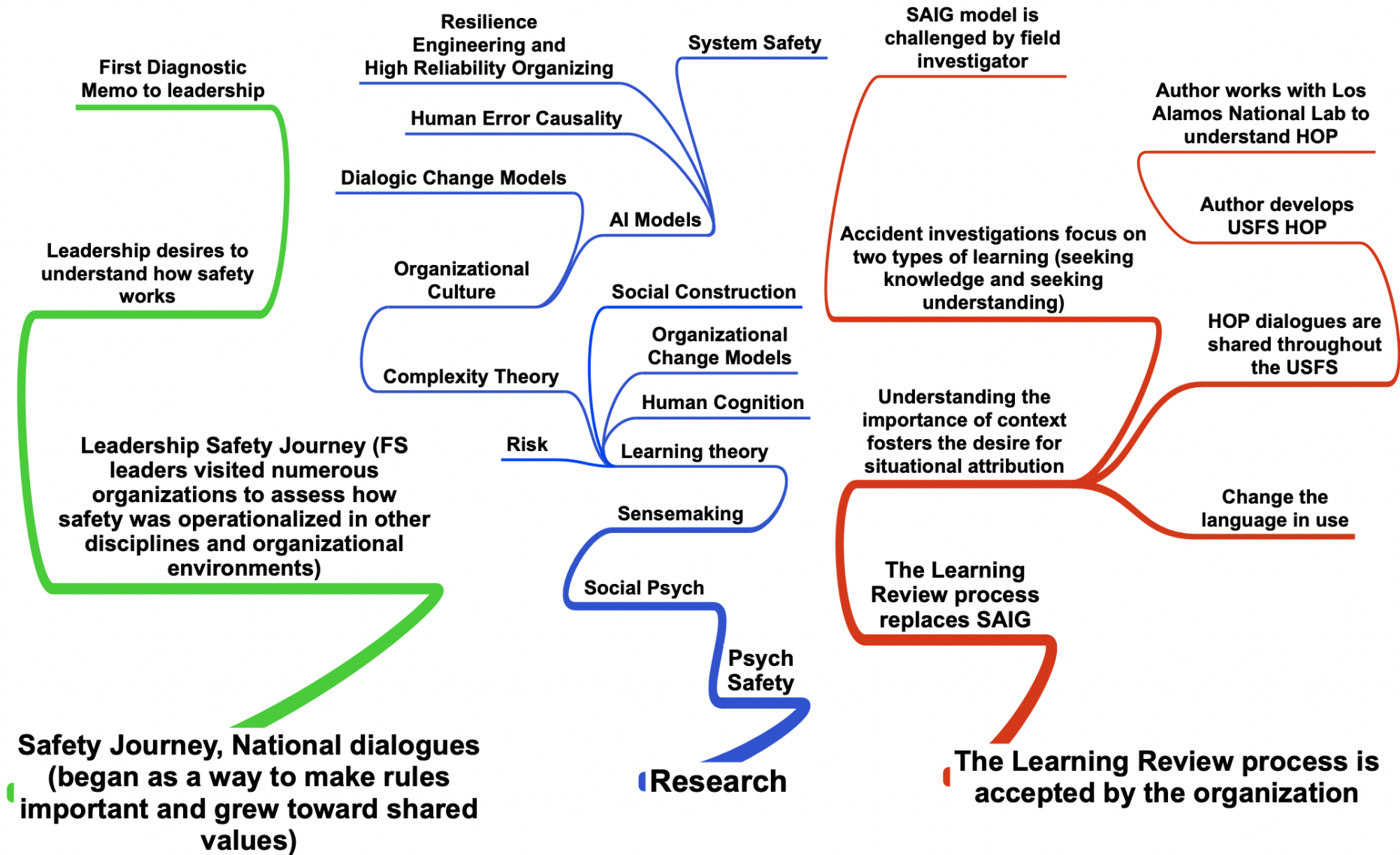
*The University of Alabama at
Birmingham*



Self-designing
Cultural
Change

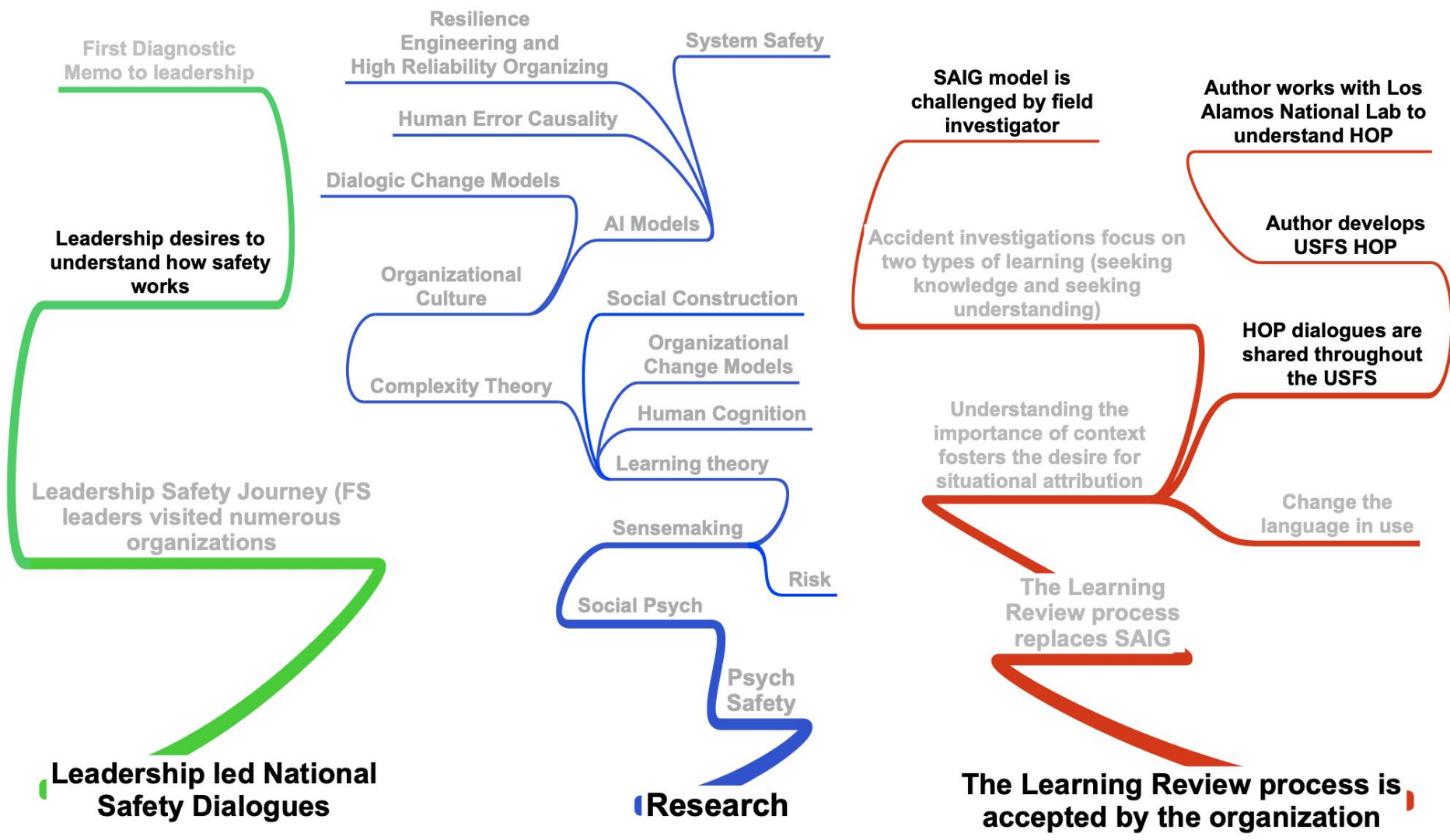
Our Story





Evolutionary Milestones

Pupulidy 2019



Evolutionary Milestones

History

The design in
retrospect

Evolutionary milestones

- Leadership journey
- Challenging the assumptions around error
- Changing the investigation paradigm
- The role of Research
- Metrics – changing the organizational discourse and the emergence of trust

Leadership journey

Challenging assumptions
at the leadership level

HOP

Leadership asked,
“Why don’t
people just
follow the rules?”



Leadership journey

Challenging assumptions at
the leadership level

HOP



Leadership journey

Challenging assumptions
at the leadership level

HOP



Leadership journey

Challenging assumptions
at the leadership level

HOP



Leadership journey

Challenging assumptions
at the leadership level



Leadership journey

Challenging assumptions
at the leadership level

HOP



Leadership journey

Crisis of Trust

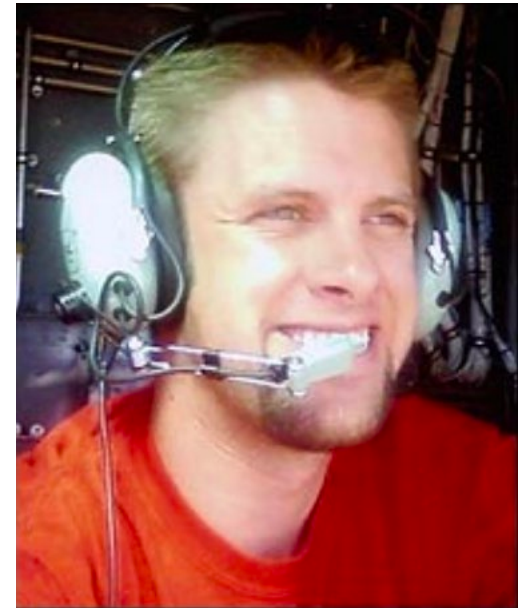
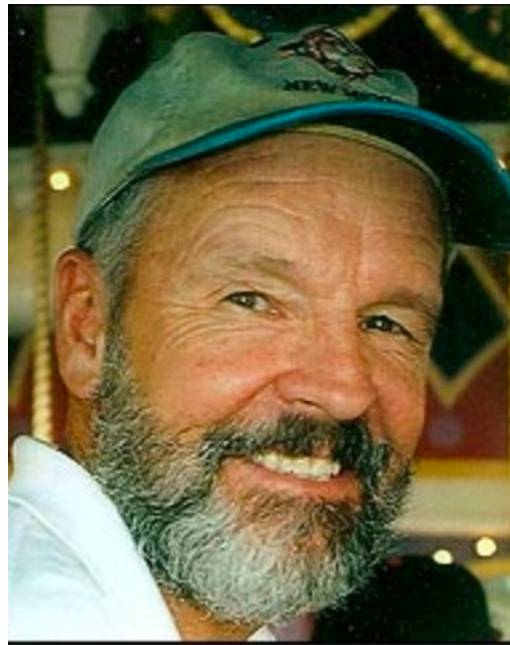
Tanker 09 – P2V Neptune



Leadership journey

Crisis of Trust

“Sept. 1, 2008 — Neptune Aviation P2V-7 N4235T, just north of Reno-Stead airport, NV, NTSB SEA08GA194. Three killed; Gene Wahlstrom, Gregory “Gonzo” Gonsioroski, Zachary Vander-Griend.



Leadership journey

Crisis of Trust

26.9 Seconds

- At 1808:05.4, the CVR indicated the co-pilot said "Whoa," followed by a sound of heavy breathing.
- At 1808:10.5, the CVR indicated the captain said, "We got a fire over here. A big ol fire."
- At 1808:15.2, the CVR indicated the co-pilot said, "I'm holding full right aileron."
- At 1808:28.8, the CVR indicated the captain made a sound of heavy breathing..
- At 1808:31.0, the CVR indicated the captain made a sound of heavy breathing.
- At 1808:32.3, the CVR indicated the sound of impact. ... End of recording.

Leadership journey

Crisis of Trust

The causes of most accidents or incidents are a result of failures to observe established policies, procedures, and controls.

Chapter 1—Accident Investigation

1.1 Introduction

A Forest Service serious accident is one that involves:

- A death
- Three or more persons hospitalized after treatment for reasons other than observation
- Wildland fire shelter deployments or entrapments
- Property damage, other than to aircraft, that exceeds \$250,000
- Damage to aircraft that exceeds \$1,000,000 or results in total destruction of the aircraft

A. Supervisors and managers at all organizational levels are responsible for identifying and abating hazards, incorporating safe operating procedures into each of our daily tasks, and refusing to accept unnecessary risk. **The causes of most accidents or incidents are a result of failures to observe established policies, procedures, and controls.** All too often, accident investigations reveal existing hazards that were not adequately addressed.

B. The accident investigation gathers and interprets information to help managers understand how and why an accident or

- Executive Order 12813
- FSM 5700, Aviation Management
- FSM 6700, Safety and Health Program, Chapter 6732.1

1.3 Purpose

The purpose of accident investigations is to provide management with information for accident prevention. The *Accident Investigation Guide* details information on the investigative process and associated activities, including maintaining custody of evidence, interviewing witnesses, documenting witness statements, managing records, and management actions. The guide also provides an accident review board formation protocol for wildland fires, aircraft accidents, and fatalities, and a glossary. Because the guide is updated regularly, it contains the most current information available.

A compact disk (CD)

Accident Investigation Guide

2005 Edition

Leadership journey

Crisis of Trust



NTSB Probable Cause: The failure of the flight crew to maintain airspeed above in-flight minimum control speed (V_{mca}) after losing power in the left jet engine during initial climb after takeoff. Contributing to the accident was the crew's inadequate cockpit resource management procedures, the failure of the captain to assume command of the airplane during the emergency, the flight crew's failure to carry out the jet engine fire emergency procedure, and the failure of the crew to jettison the retardant load. Note: NTSB charged this accident to Cal Fire.”



Leadership journey

Crisis of Trust

More accidents investigations
were created with the same
language and Causal Findings

Firefighters stopped taking leadership assignments

They stopped talking – to the agency and each other

Fear began to dominate the culture

Learning shifted to ‘how to best defend oneself from the
agency’

Leadership
Journey

The need for change

From 1994 to 2017
Wildland Fire
experienced over 400
Line of Duty
Firefighter Fatalities
and our accident rate
was not changing .



Expert

Empowerment

Tacit Knowledge

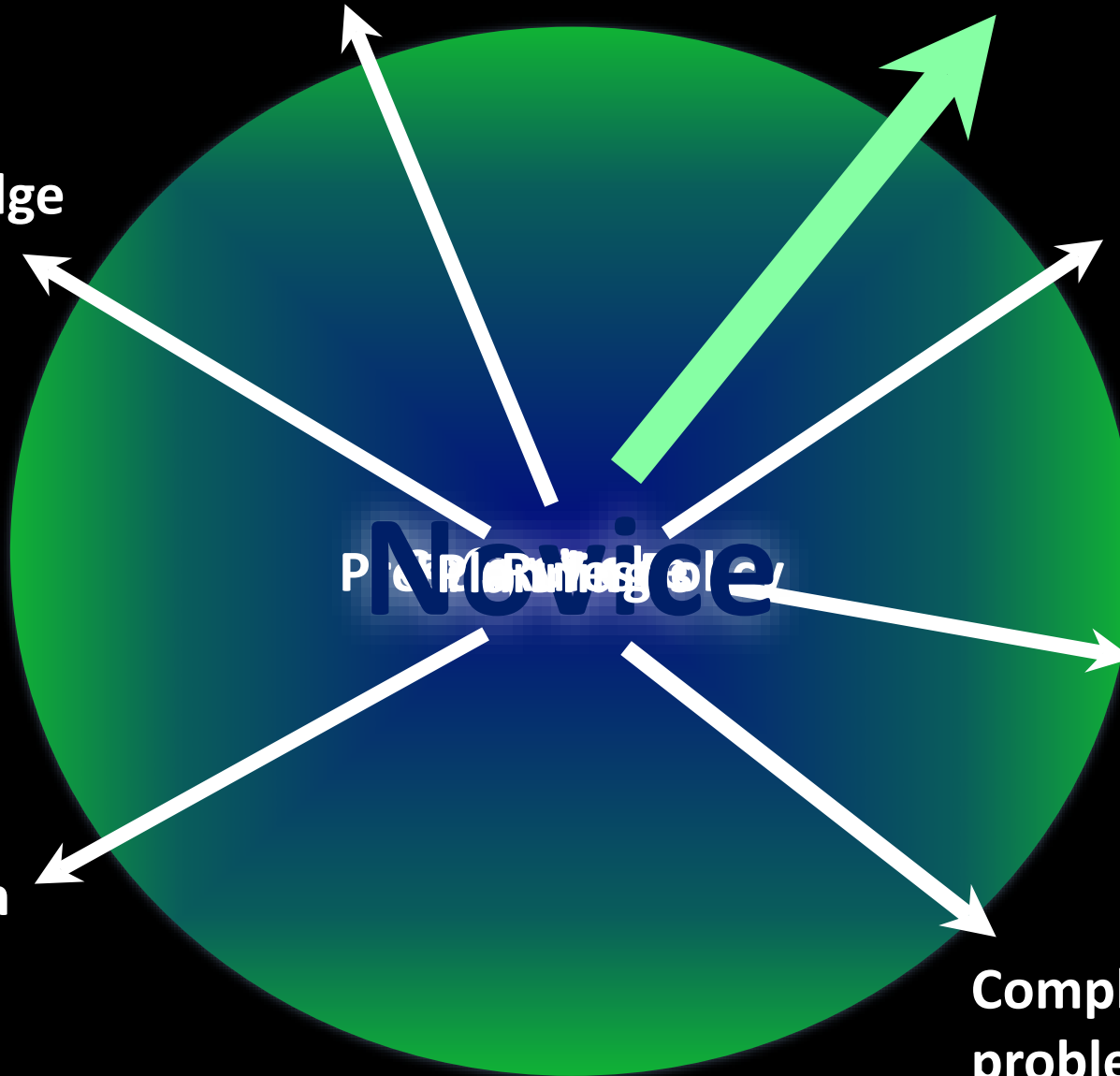
Improvisation

Novice

Application & adaptation

Intuition

Complex adaptive problem solving



We expect our novices to:

We expect our experts to:

Have knowledge of prescriptive policy

Know how to improvise

Comply with instruction

Apply rules to situations and adapt as needed

Know basic rules, regulations, policy, and procedures

Use complex adaptive problem solving or critical thinking skills to achieve results

Know and follow the plan

Use intuition to know when to depart from the plan

Follow known rules, regulations, policies and procedures

Apply intuitive knowledge rooted in context, experience and practice – this is the best source of long-term competitive advantage and innovation.

Language which may apply to novice “control”

Language applies to expert performance “empowerment”

Skill Acquisition - Expertise

<p>Novice</p>	<p>Rigid adherence to rules or plans Little situational perception No (or limited) discretionary judgment</p>
<p>Advanced Beginner</p>	<p>Guidelines for action based on attributes and aspects, which are all equal and separate Limited situational perception</p>
<p>Competent</p>	<p>Conscious deliberate planning Standardized and routine procedures</p>
<p>Proficient</p>	<p>Sees situations holistically rather than as aspects Perceives deviations from normal patterns Uses maxims for guidance, whose meanings are contextual</p>
<p>Expert</p>	<p>No longer relies on rules, guidelines or maxims Intuitive grasp of situations Analytic approach used only in novel situations</p> <p><small>Dreyfus and Dreyfus</small></p>

Research and
Application

Field Innovation -
Emergence of the
Learning Review




Sidney Dekker, Erik Hollnagel, Ed Schein David
Woods, Karl Weick, Todd Conklin, Reuben McDaniel

Workers do things because they care!




Workers balance operational trade-offs based on system pressures and goal/value conflicts.



Shifting assumptions
through the new
investigative
techniques

The Learning Review

In our effort to try to understand the behavior of others, we either explain their behavior in terms of their personality and disposition (internal), or we explain their behavior in terms of the situation (external).



Shifting assumptions
through the new
investigative
techniques

The Learning Review

How an organization responds and learns from work events is Shapes Culture!

Effective response leads to improvement, and poor response leads to additional problems—some of which may be catastrophic.

Shifting assumptions
through the new
investigative
techniques

The Learning Review

The Learning Review is Based on Principles of:

Do no further harm to the system or the people in the system.

Learning can only take place in Humble Inquiry and Critical Reflection.

Our people are good and well intended and working in a system that is perfectly designed to deliver what it does!

Conditions Influence Decisions and Actions

Why the decisions and actions made sense to people during the event.

Our goal is to understand the **internal** and **external** pressures that influenced decisions and actions.



Used to create the network of influence map

INCIDENT



Seeking Excellence Journey

1 INITIATE LEARNING REVIEW

- Establish logistics, briefings, team selection, and organization

2

RECOGNIZE

ABILITY TO DO HARM

QUESTION EVERYTHING

INFORMATION COLLECTION

RECOGNIZE GRAY AREAS

- Not all choices are black and white
- Gather information to build complex narrative (Include Multiple Perspectives)
- Gather physical information
- Develop Event Narrative
- Place decision/actions in context (influence map)



3

ANALYSIS & SENSE-MAKING

Reflection -What do we know that will help us on the journey?

Focus Groups

- Are the influences consistent with operations or unique to the event?
- What other conditions are relevant?
- What can we Learn?

4

LEARNING REVIEW BOARD

What can we do to improve the system? Learning Products!

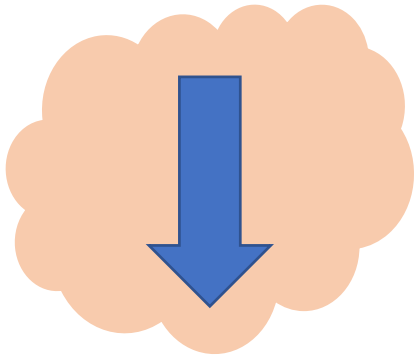
WATCH FOR UNEXPECTED CONSEQUENCES

How did we
know it was
working?

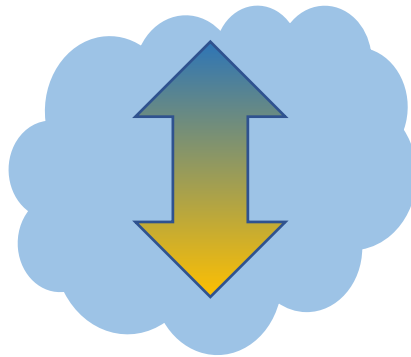


How did we know it was working?

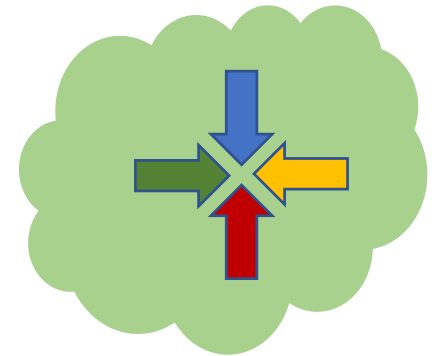
We conducted three National Dialogues



2014
Coercive



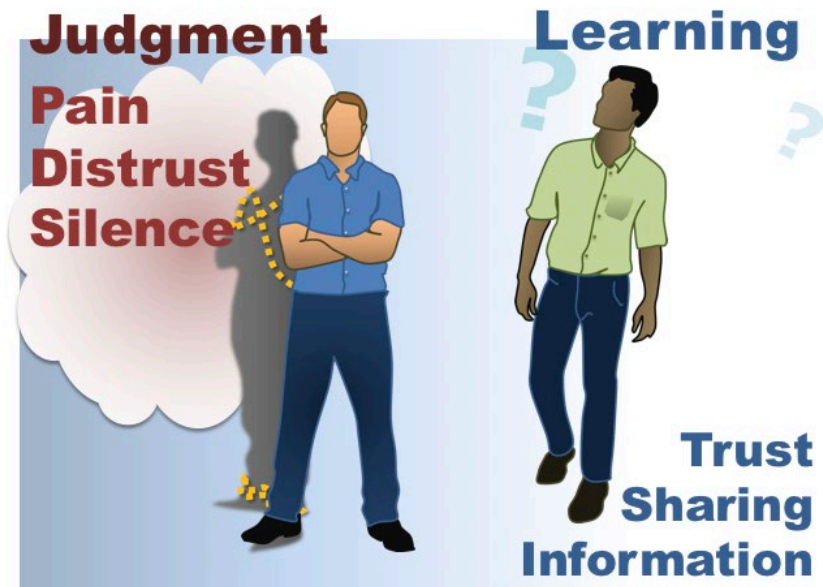
2015
Communicative



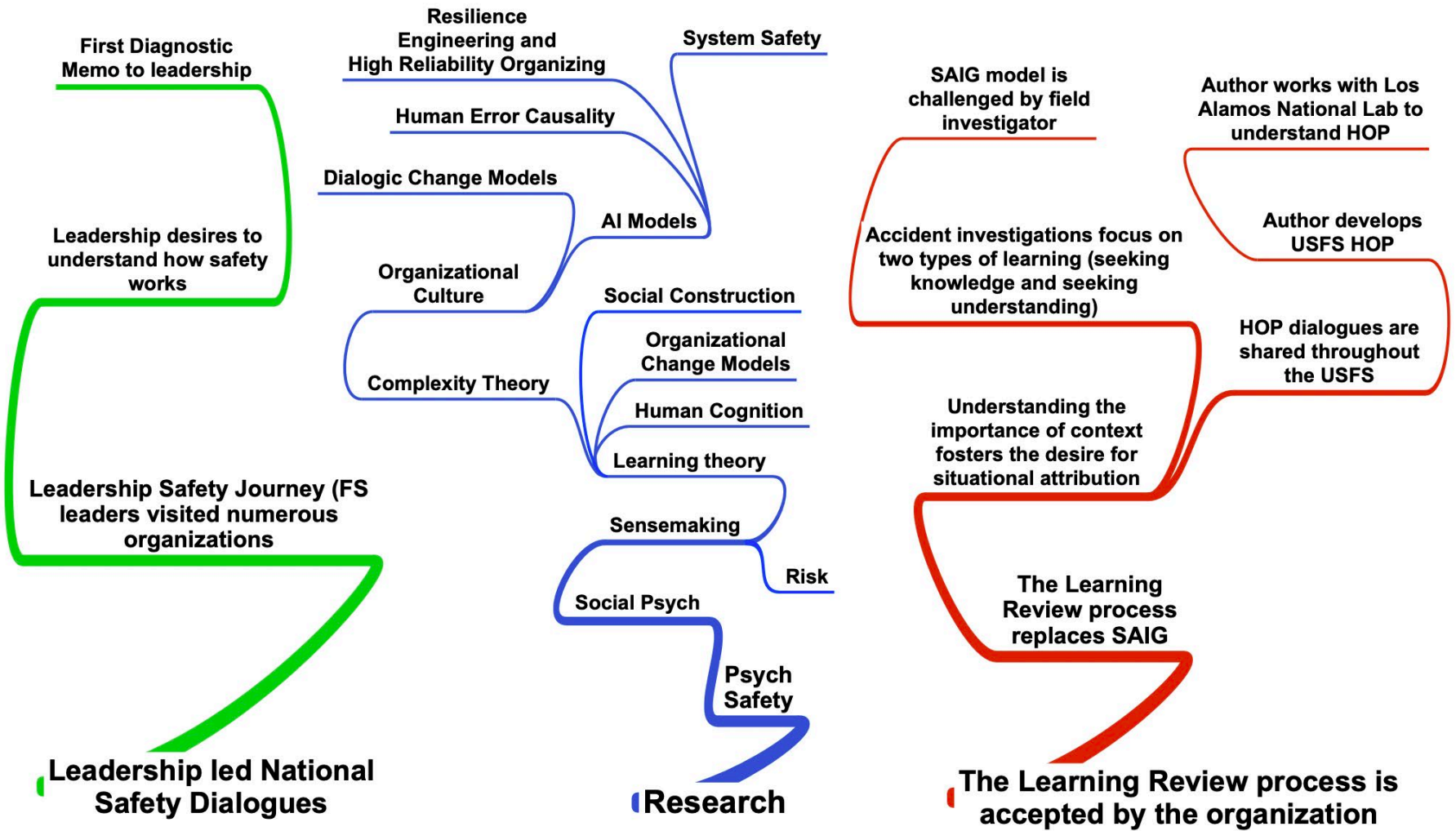
2016
Collaborative

How did we know it was working?

Moved from correct and fix to understanding and learning.

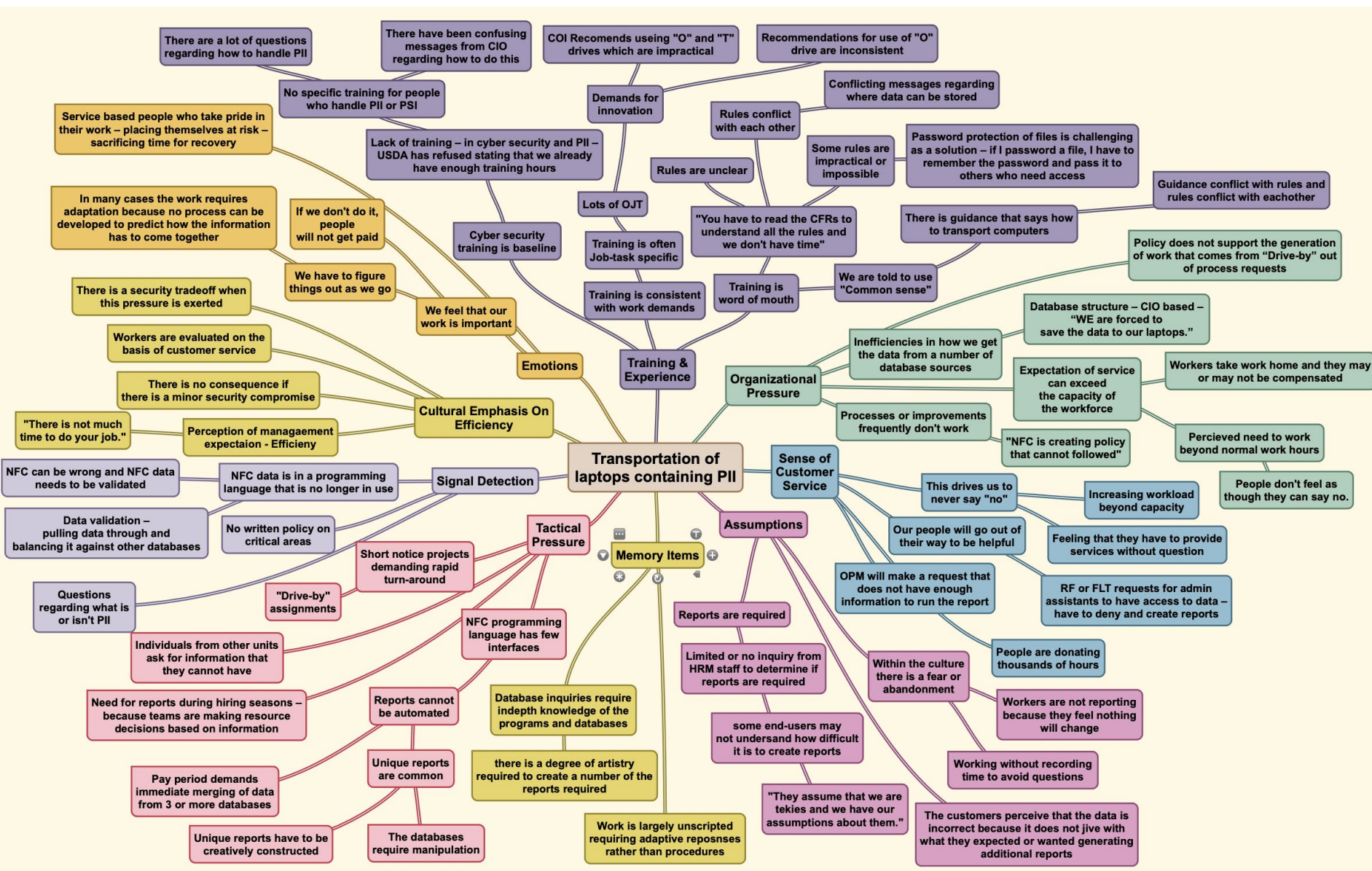


- Families
- Regulators
- Field personnel
- Leaders are learners too – lead where you stand



Evolutionary Milestones

Pupulidy 2019





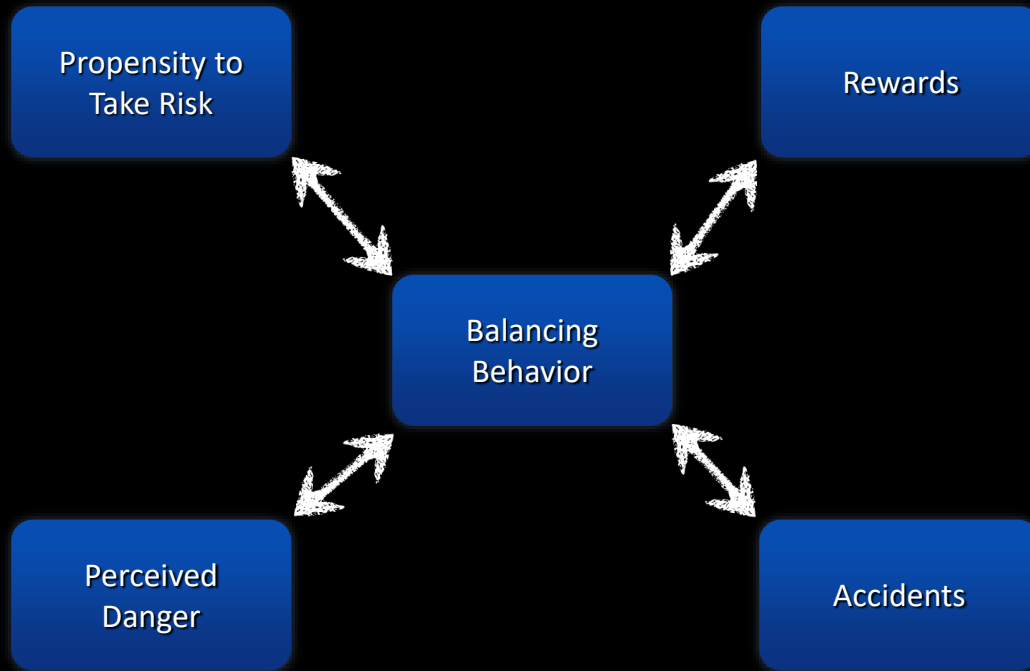
Questions?

“Information is the currency of safety.”

Pupulidy

Contact Ivan Pupulidy, pupulidy@uab.edu

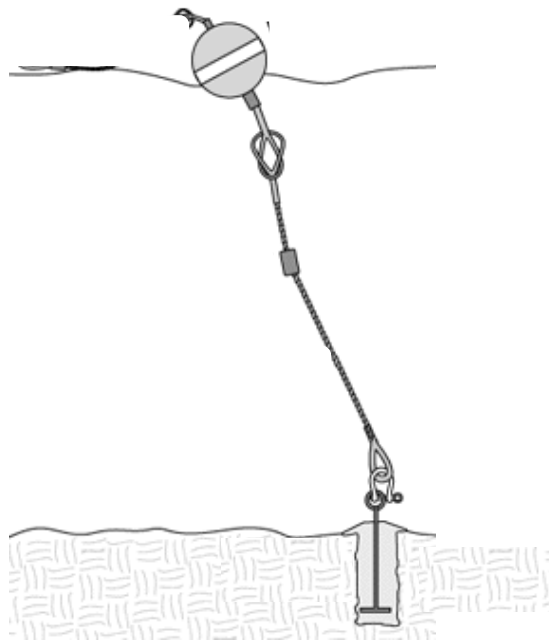
Extra Slides for Q&A



Adams 1995

System Name	Components	Frame	Pathway	Characteristic
Complex	The parts are interconnected, interactive, diverse and <u>adaptive</u> Complex systems are characteristically emergent and unpredictable.	Organic – These systems cannot be broken down without losing the ability to understand interactions.	Sensemaking, improvisation and learning – developing adaptations in real time.	Unlimited number of questions with an equally unlimited number of answers. Requires sensemaking.
Complicated	The parts are interconnected, interactive and <u>diverse</u> .	Systemic - These systems are composed of nested sub-systems.	Directional Flow Relationships – Cause and Effect connections exist with a limited set of outcomes.	Each question has a limited number of discrete answers. Reacts well to analysis.
Simple	The parts are interconnected and interactive .	Mechanical.	Cause & Effect connections are strong – problems can be solved.	Each question has one discrete answer. Reacts well to analysis.

Organizational Culture



The anchor is difficult to move!

Artifacts

Visible organizational structures and processes:

- *Objects*
- *Language*
- *Stories*
- *Rituals*
- *Behaviors*

Espoused Beliefs and Values

Strategies, goals, philosophies and justifications

Deep Assumptions

Unconscious, taken for granted beliefs, perceptions, thoughts and feelings (ultimate source of values and action)