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High Reliability: A road or an endpoint?

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TARGETZERO
ELIMINATING PREVENTABLE HARM

Session Objectives

1. Context and Definitions
2. Process Reliability
3. High Reliability Organizations – Us?
4. Integration Exercises
5. Questions/Discussion

Our expanding toolbox

Kotter, Leading Change

Complexity Theory

Deming- Profound knowledge

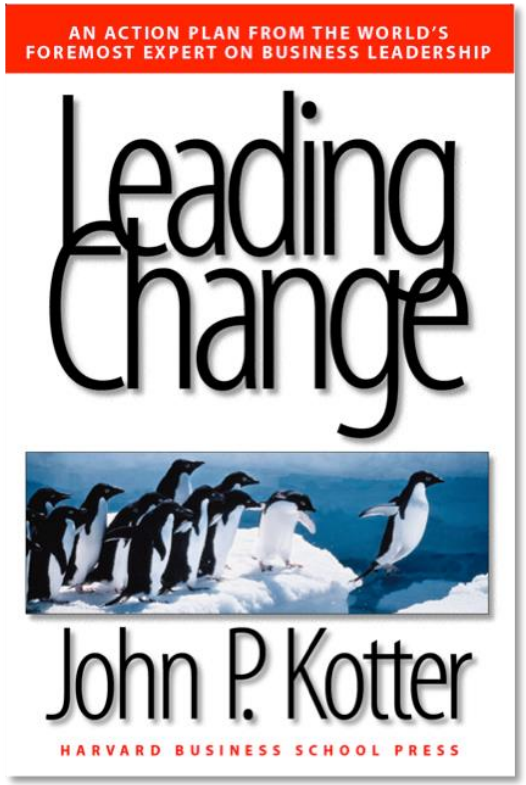
Robust Process Improvement- TJC

IHI Model for Improvement

Baldridge

High Reliability – W and S

Lean, Six-Sigma, Lean-Six sigma



Implement and sustain

Make it Stick

Don't Let Up

Create short term wins

Empower action

Communicate for Buy-in

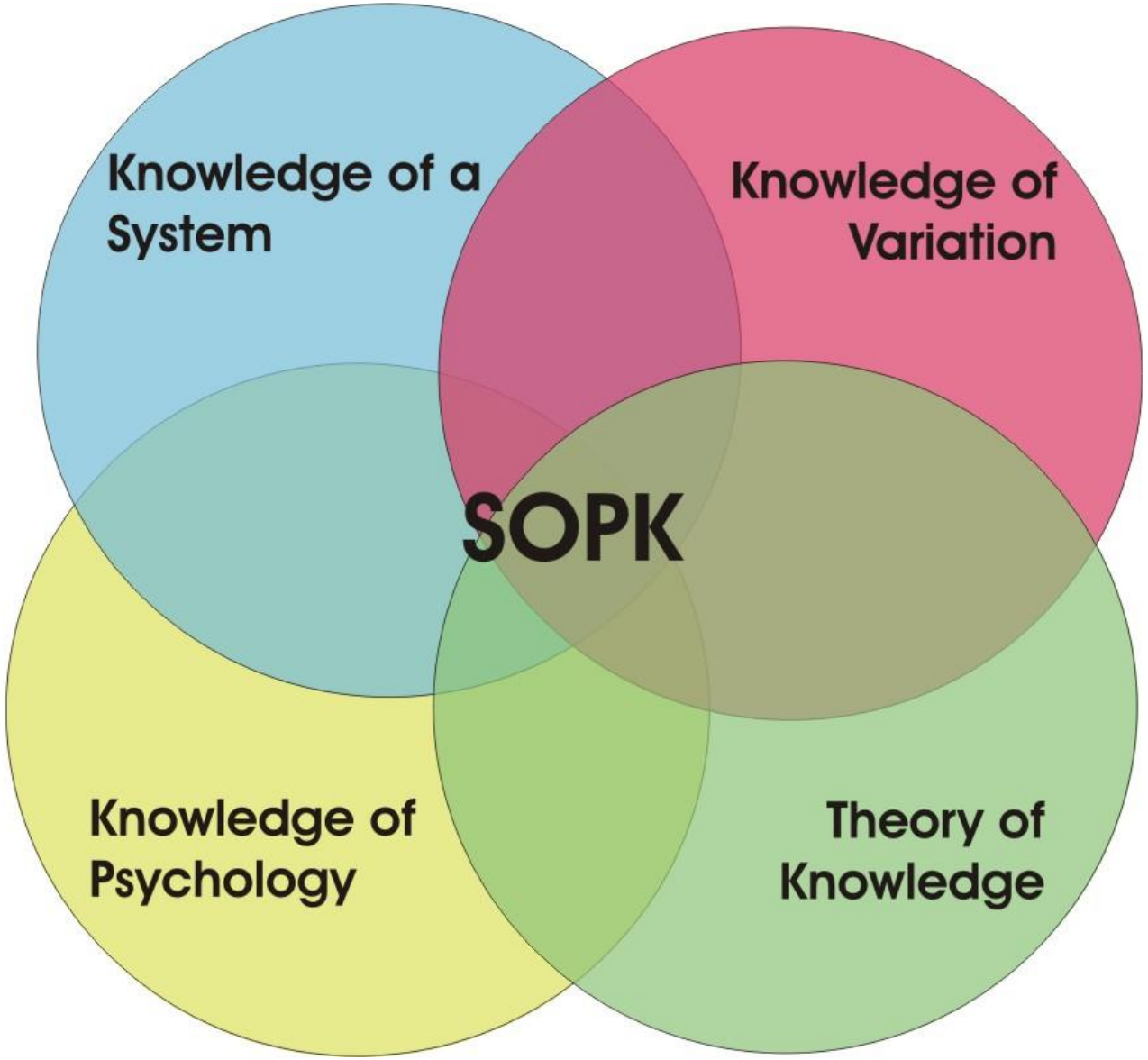
Set the right vision

Build guiding coalition

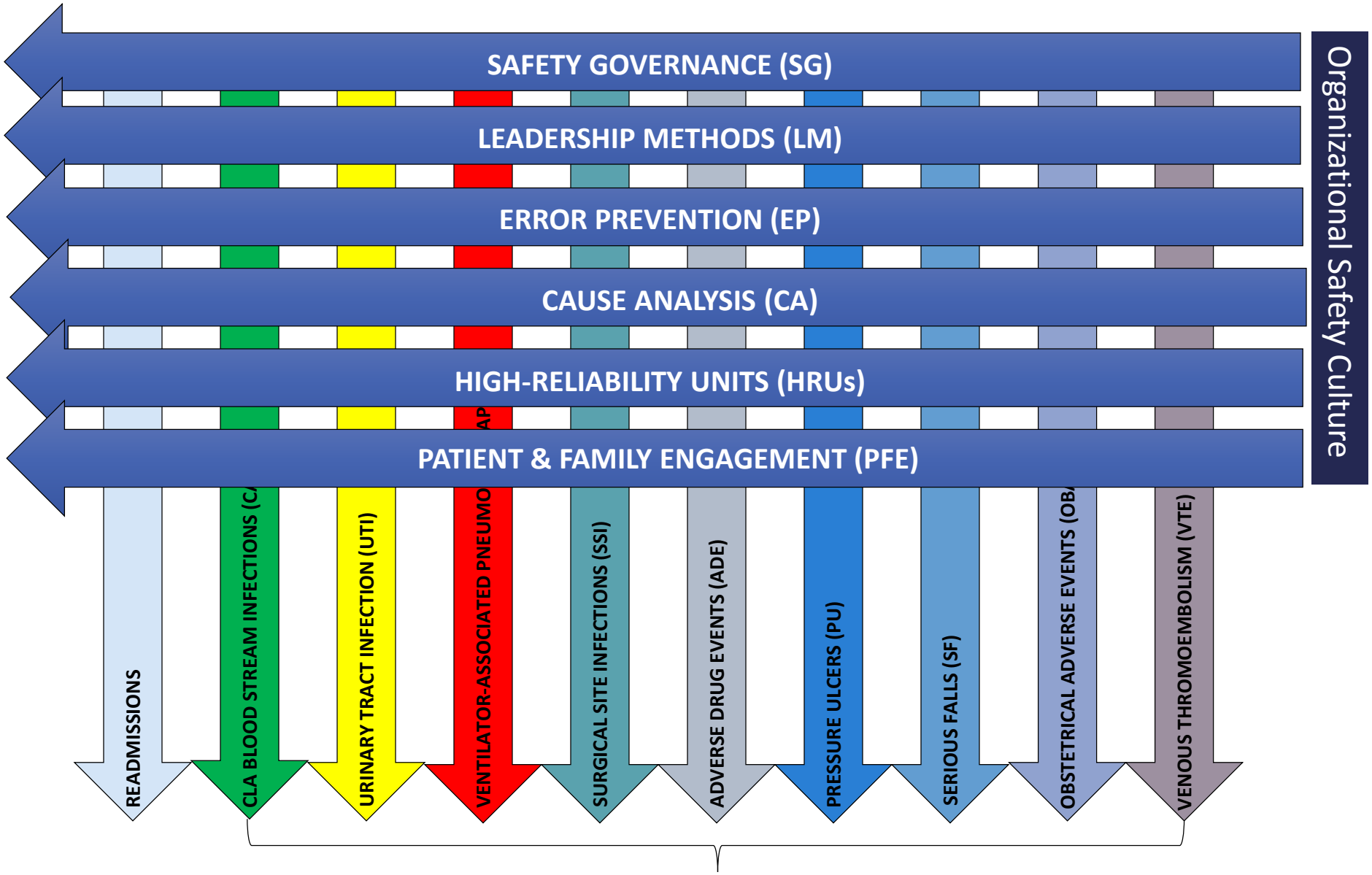
Increase urgency

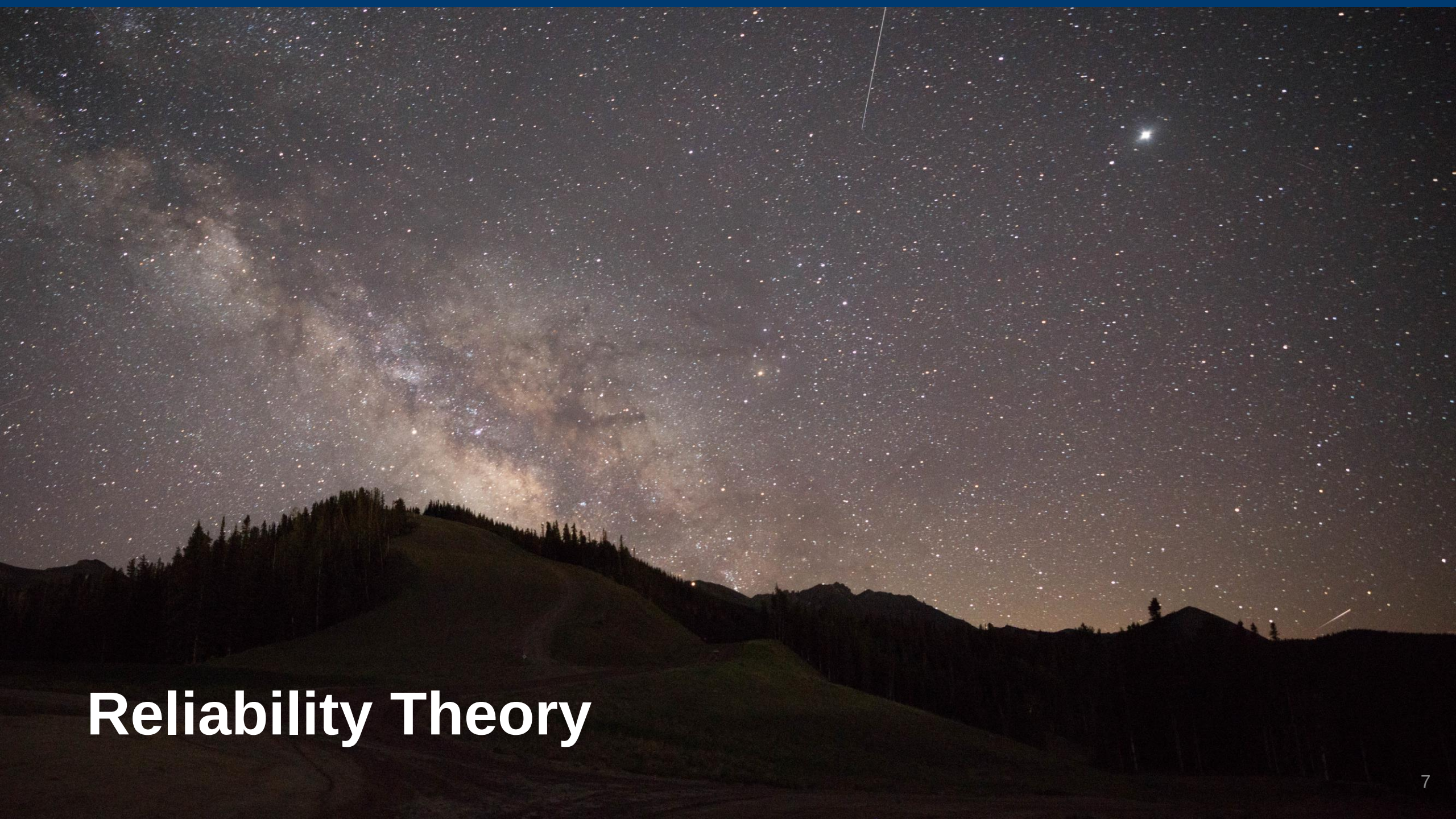
Engaging and enabling the teams

Creating a climate for change



CHSPS's "Theory of Knowledge"





Reliability Theory

Definition Of “Reliability”

Reliability is failure free operation over time.

Can reliability principles be applied effectively to improve the consistent delivery of high-quality health care?

How does the definition of reliability connect to the IOM’s six dimensions of quality for the health care system? What does unreliability result in?

1-
2-
3-
4-
5-
6-

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How does the definition of reliability connect to the IOM’s six dimensions of quality for the health care system? What does unreliability result in?

- **effectiveness** (where failure can result from not applying evidence),
- **timeliness** (where failure results from not taking action in the required time)
- **patient/family-centeredness** (where failure results from not meeting patients/families’ values and preferences).
- **safety** (where failure results in harm)
- **efficiency** (where failure results in waste)
- **equity** (where failure results in health disparities)

Quantifying “Reliability”

- “Reliability” = Number of actions that achieve the intended result ÷ Total number of actions taken
- “Unreliability” = 1 minus “Reliability”
- It is convenient to use “Unreliability” as an index, expressed as an order of magnitude (e.g. 10^{-2} means that the action fails to achieve its intended result 1 time in 100)
- Related measure: Time or counts between failures (e.g., Number of transplant cases between organ rejections)

Levels of Reliability

Level	Reliability	Success Rate	Failures in 10,000 actions
1	10^{-1}	80%-95%	1500-2000
2	10^{-2}	96%-99.5%	50-1499
3	10^{-3}	99.6% - 99.95%	5-49
4	10^{-4}	99.96%-99.995	0.5-4
5	10^{-5}	99.996 – 99.9995	0.1-0.4
6	10^{-6}	>99.9996	<0.1

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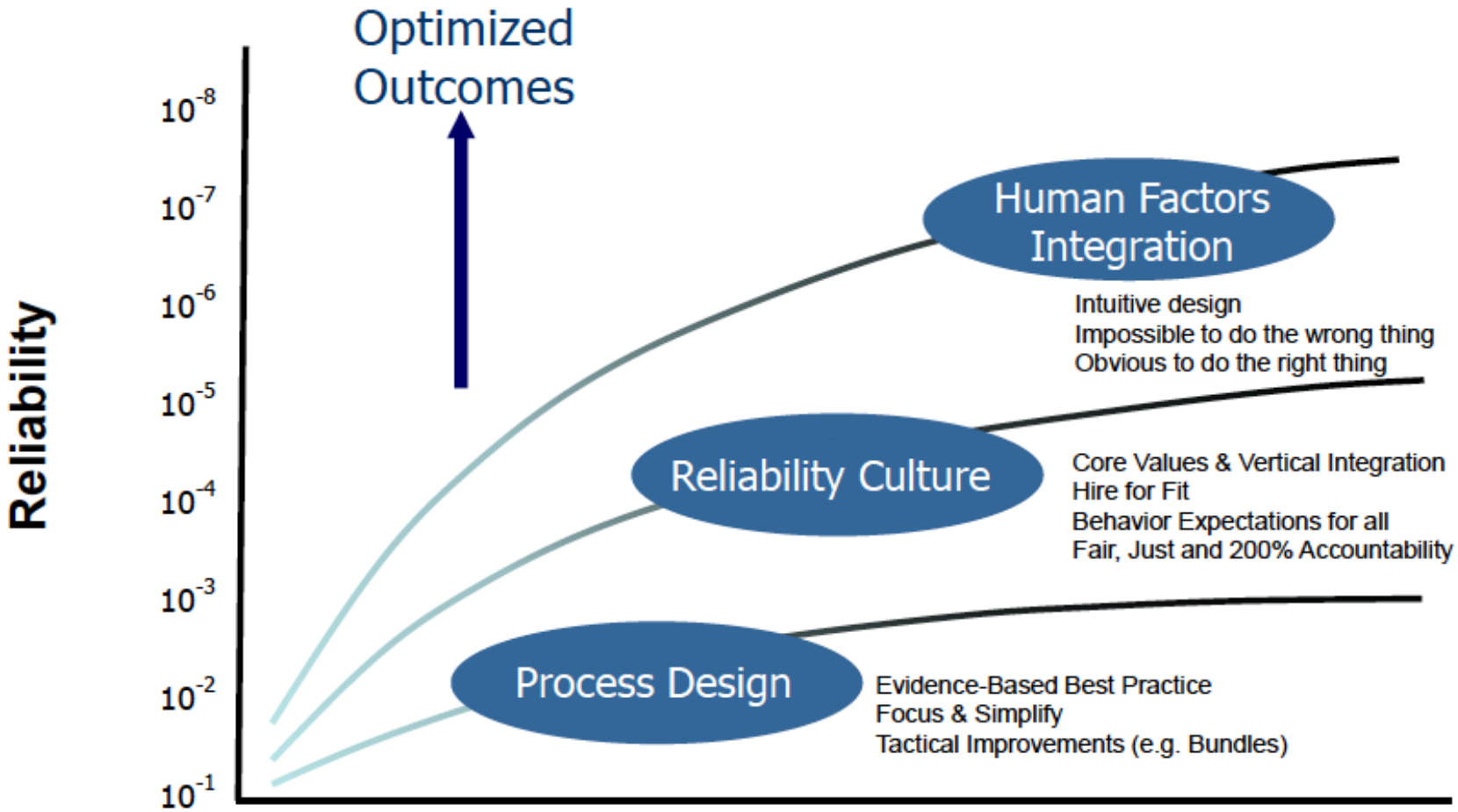
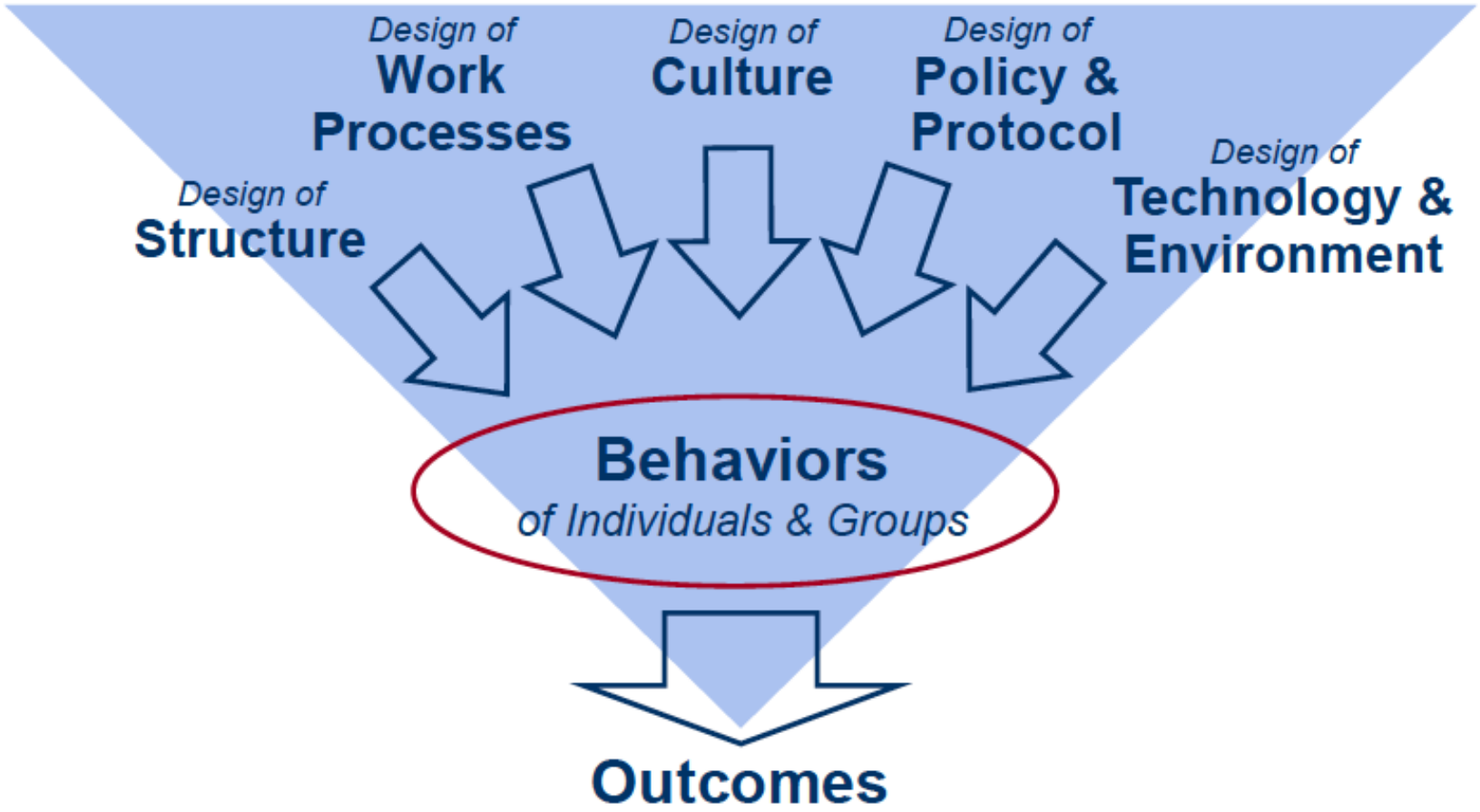
Journey to improving reliability – the next zero



HPI

Shaping Behaviors at the Sharp End



Adapted from R. Cook and D. Woods, *Operating at the Sharp End: The Complexity of Human Error* (1994)

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Strategies to improve process reliability

Level 1 (10^{-1}):

"Intent, Vigilance and Hard Work" Design Concepts

- Awareness and training ("education)
- Common equipment (and other structural standardization)
- Standard orders sheets
- Personal check lists
- Feedback of information on compliance

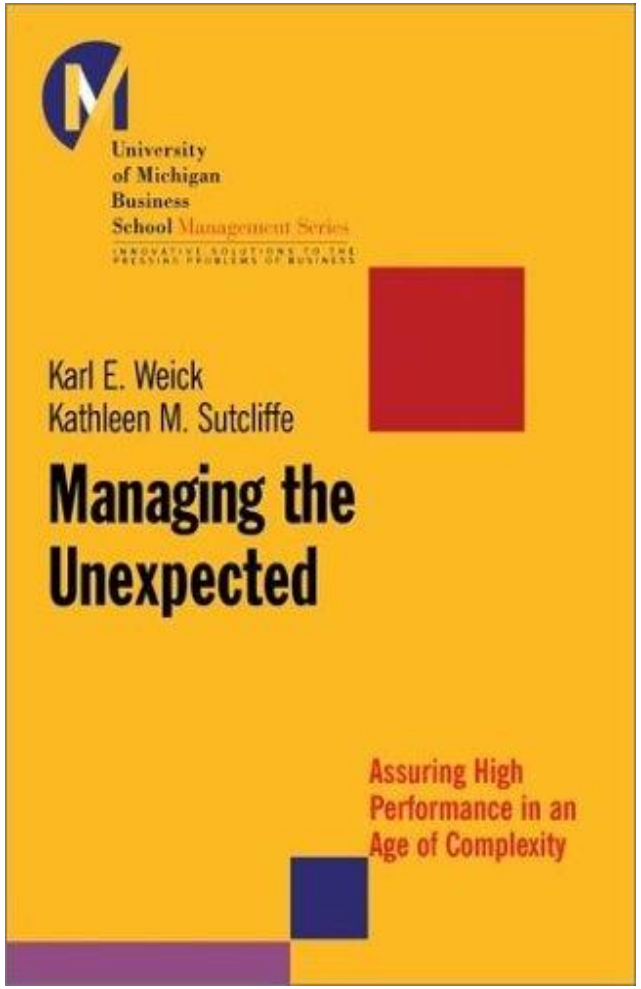
Level 2 (10^{-2}):

Design Concepts

- Standardization of processes
- Building decision aids and reminders into the system
- Taking advantage of existing habits and patterns
- Making the desired action the default (based on evidence)
- Creating redundancy
- Scheduling using proper operations theory

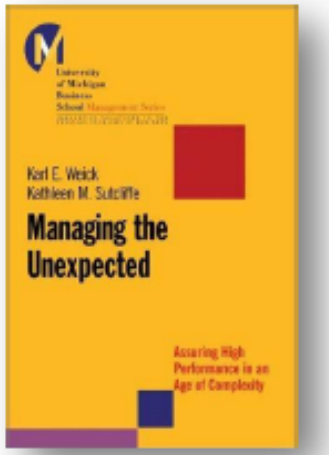
What about 10^{-3} Reliability and better??
High Reliability Organizations

High Reliability Theory



- Environment rich with potential for errors
- Unforgiving social and political environment
- Learning through experimentation difficult
- Complex processes
- Complex technology

Weick, KE and Sutcliffe, KM 1999



High Reliability Organizations

HROs "operate under very trying conditions all the time ***and yet manage*** to have fewer than their fair share of accidents."

3 Principles of Anticipation

"Stay Out of Trouble"

Sensitivity to Operations
Preoccupation with Failure
Reluctance to Simplify

2 Principles of Containment

"Get Out of Trouble"

Commitment to Resilience
Deference to Expertise

HPI®

Characteristics of HRO's

1. Preoccupation with failure
2. Sensitivity to operations
3. Reluctance to simplify
4. Commitment to resilience
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Characteristics of HRO's

1. Preoccupation with failure

   Regarding small, inconsequential errors as symptoms that something is wrong; finding and learning from latent risks, and near miss and no-harm events … examples?

2. **Sensitivity to operations**
3. Reluctance to simplify
4. Commitment to resilience
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1. Preoccupation with failure

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2. Sensitivity to operations

   What's happening on the front-line?

3. **Reluctance to simplify**

4. Commitment to resilience

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   What's happening on the front-line?

3. **Reluctance to simplify**

   Asking the next questions…. Why? Where else? .. Examples?

4. Commitment to resilience

5. Deference to expertise

Characteristics of HRO's

1. Preoccupation with failure

   Regarding small, inconsequential errors as a symptom that something is wrong; finding the half-event

2. Sensitivity to operations

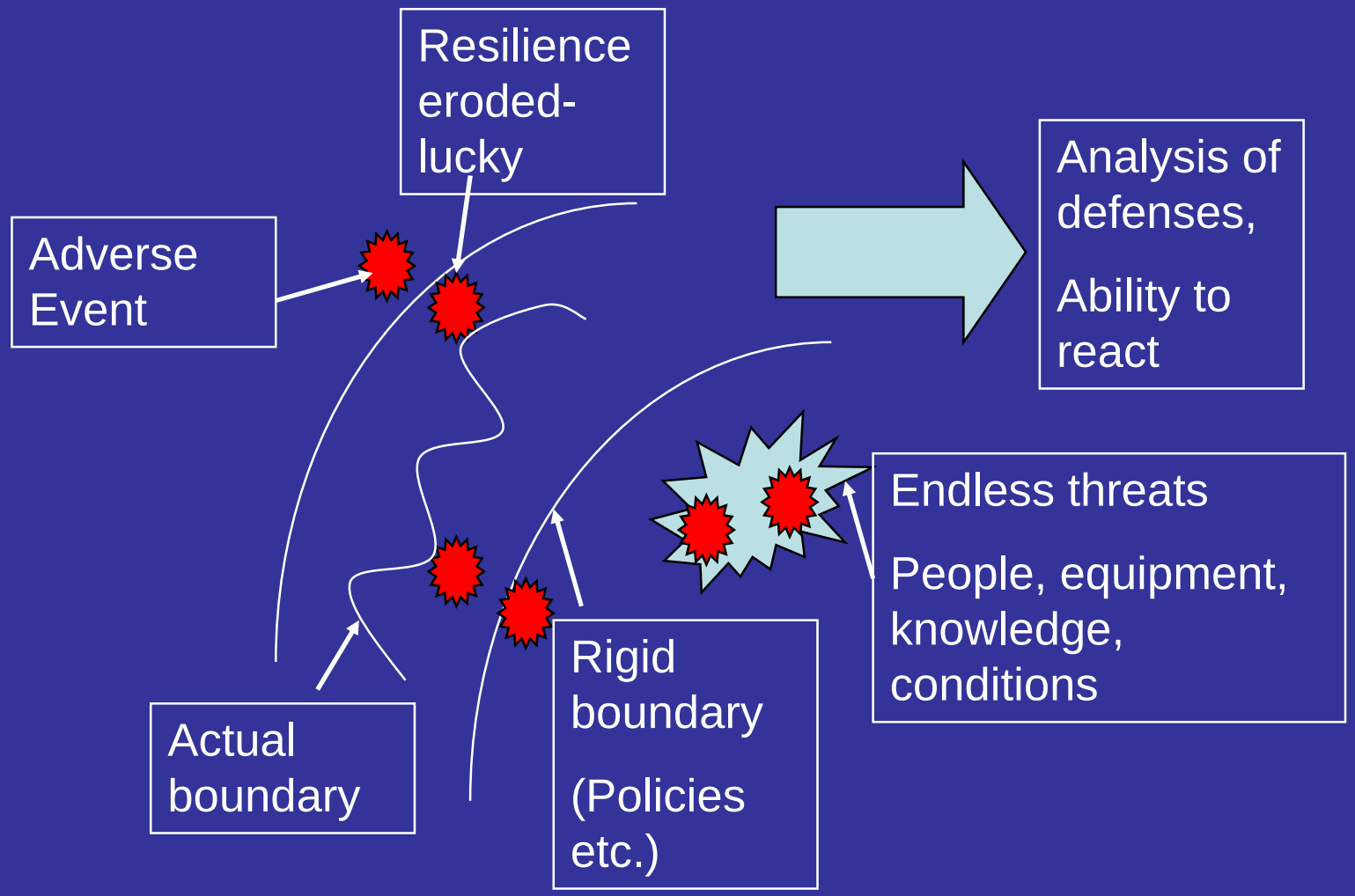
   Paying attention to what's happening on the front-line

3. Reluctance to simplify

   Asking the next questions…. Why? Where else?

4. Commitment to resilience
5. Deference to expertise

Risk Resilience Model



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5. Deference to expertise

   Pushing decision making to the person with the most related knowledge and expertise– may be patient and family. Not always the most senior person!

How we are thinking about HRO theory

- "It's about the journey, not about reaching a destination"
- Activities consistent with HRO theory
  - Sensitivity to Operations (Daily Brief, Leader rounding, VMBs)
  - Preoccupation with failure (Incident reporting and follow-up)
  - Reluctance to simplify (DxE efforts; approach to QSRS, cause analysis)
  - Commitment to resilience (…)
  - Deference to expertise (Speak up culture; Patient/Family Engagement)
- Still, a long way to go to do this all well and consistently
  - What should we teach, and to what groups of people?

THE MILBANK QUARTERLY
A MULTIDISCIPLINARY JOURNAL OF POPULATION HEALTH AND HEALTH POLICY

High-Reliability Health Care: Getting There from Here

MARK R. CHASSIN and JEROD M. LOEB

The Joint Commission

Context: Despite serious and widespread efforts to improve the quality of health care, many patients still suffer preventable harm every day. Hospitals find improvement difficult to sustain, and they suffer "project fatigue" because so many problems need attention. No hospitals or health systems have achieved consistent excellence throughout their institutions. High-reliability science is the study of organizations in industries like commercial aviation and nuclear power that operate under hazardous conditions while maintaining safety levels that are far better than those of health care. Adapting and applying the lessons of this science to health care offer the promise of enabling hospitals to reach levels of quality and safety that are comparable to those of the best high-reliability organizations.

2013, Vol. 91 No. 3, pp. 459-490

TABLE 2
Leadership and High Reliability: Stages of Organizational Maturity

Leadership	Beginning	Developing	Advancing	Approaching
Board	Board's quality focus is nearly exclusively on regulatory compliance.	Full board's involvement in quality is limited to hearing reports from its quality committee.	Full board is engaged in the development of quality goals and approval of a quality plan and regularly reviews adverse events and progress on quality goals.	Board commits to the goal of high reliability (i.e., zero patient harm) for all clinical services.
CEO/management	CEO/management's quality focus is nearly exclusively on regulatory compliance.	CEO acknowledges need for plan to improve quality and delegates the development and implementation of a plan to a subordinate.	CEO leads the development and implementation of a proactive quality agenda.	Management aims for zero patient harm for all vital clinical processes; some demonstrate zero or near-zero rates of harm.
Physicians	Physicians rarely lead quality improvement activities; overall participation by physicians in these activities is low.	Physicians champion some quality improvement activities; physicians participate in these activities in some areas but not widely.	Physicians often lead quality improvement activities; physicians participate in these activities in most areas, but some important gaps remain.	Physicians routinely lead clinical quality improvement activities and accept the leadership of other appropriate clinicians; physicians' participation in these activities is uniform throughout the organization.

Continued

Discussion

- What organization-wide or microsystem initiatives have been designed around reliability principles?
  - What were some of the factors that made them successful?
  - What methodologies were used?

Open Dialog and Questions