

Human Performance Improvement

An Overview for RCT Training

$$P = B + R$$

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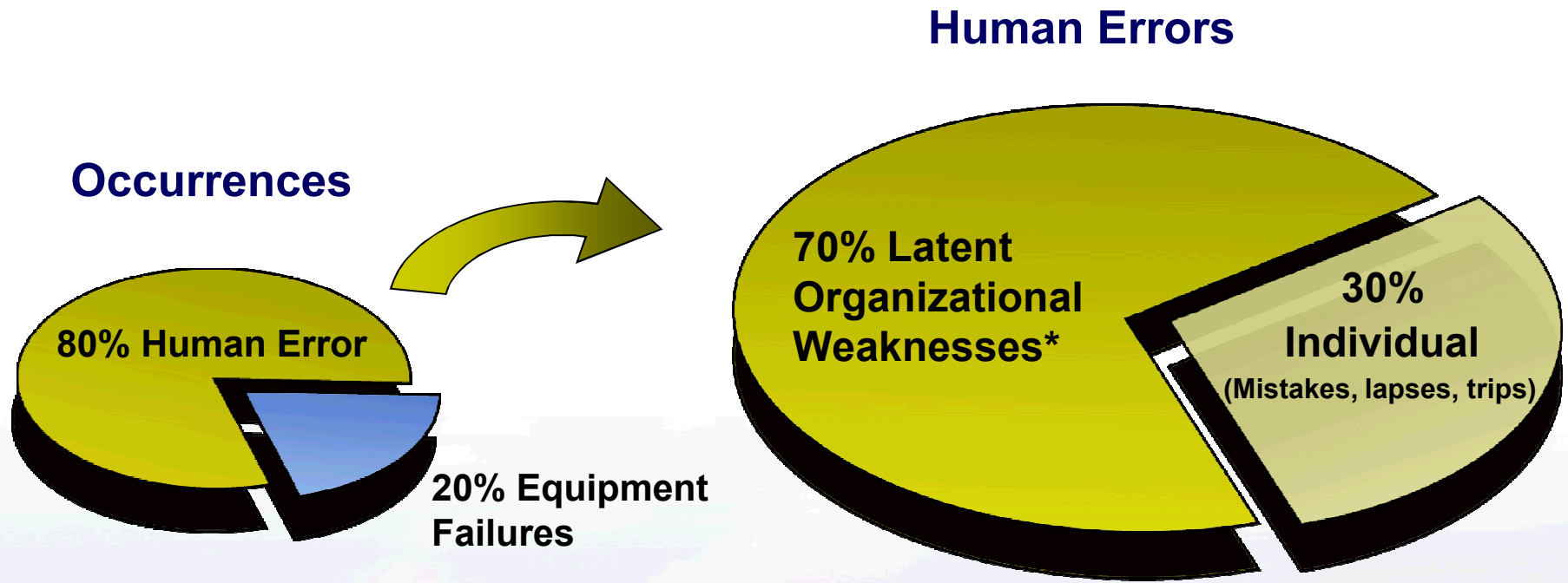


Human Fallibility

“... human fallibility is like gravity, weather, and terrain, just another foreseeable hazard. Error is pervasive ... What is not pervasive are well-developed skills to detect and contain these errors at their early stages.”

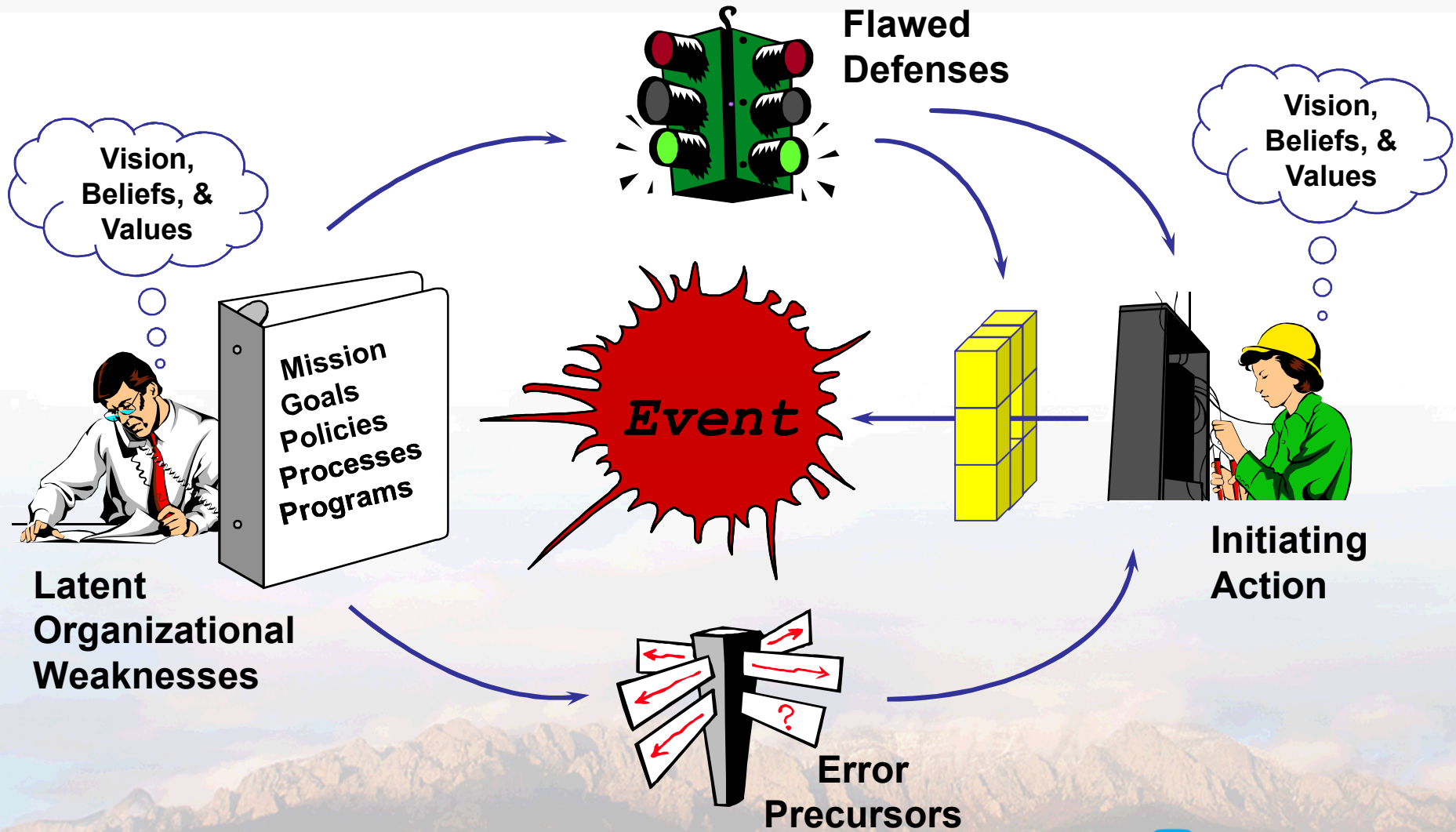
***- Weick and Sutcliffe
Leading with Resilience in the Face of the Unexpected***

What Cause Occurrences?



* Latent Organizational Weakness = Hidden deficiencies in management control process or values

Anatomy of an Event





Significance of an Event

The significance (or severity) of an event depends upon the consequences suffered, and not on the error that initiates it. The error that triggers a serious accident ... and the error that is one of hundreds with no consequences ... can be the same error.

Common Traps of Human Nature

- Stress
- Mental Strain
- Avoidance
- Inaccurate Mental Models
- Limited Working Memory
- Limited Attention Resources
- Mind-Set
- Difficulty Seeing One's Own Error
- Limited Perspective
- Susceptibility to Emotional / Social Factors
- Motivated Toward Goal Accomplishment
- Fatigue



Common Error Precursors

(Conditions that Provoke Error)

Task Demands	Individual Capabilities
<input type="checkbox"/> Time pressure (in a hurry)	<input type="checkbox"/> Unfamiliarity w/ task / First time evolution
<input type="checkbox"/> High Workload (high memory requirements)	<input type="checkbox"/> Lack of knowledge (mental model)
<input type="checkbox"/> Simultaneous, multiple tasks	<input type="checkbox"/> New technique not used before
<input type="checkbox"/> Repetitive actions / Monotony	<input type="checkbox"/> Imprecise communication habits
<input type="checkbox"/> Irrecoverable acts	<input type="checkbox"/> Lack of proficiency / Inexperience
<input type="checkbox"/> Interpretation requirements	<input type="checkbox"/> Indistinct problem-solving skills
<input type="checkbox"/> Unclear goals, roles, & responsibilities	<input type="checkbox"/> "Unsafe" attitude for critical tasks
<input type="checkbox"/> Lack of or unclear standards	<input type="checkbox"/> Illness / Fatigue
Work Environment	Human Nature
<input type="checkbox"/> Distractions / Interruptions	<input type="checkbox"/> Stress
<input type="checkbox"/> Changes / Departures from routine	<input type="checkbox"/> Habit patterns
<input type="checkbox"/> Confusing displays or controls	<input type="checkbox"/> Assumptions
<input type="checkbox"/> Workarounds / OOS instruments	<input type="checkbox"/> Complacency / Overconfidence
<input type="checkbox"/> Hidden system response	<input type="checkbox"/> Mind-set
<input type="checkbox"/> Unexpected conditions	<input type="checkbox"/> Inaccurate risk perception
<input type="checkbox"/> Lack of alternative indication	<input type="checkbox"/> Mental shortcuts (biases)
<input type="checkbox"/> Personality conflicts	<input type="checkbox"/> Limited short-term memory

OOS – out of service

At-Risk Attitudes

- **Inaccurate Risk Perspective:** Guided by the heart, not by the head
- **Pride:** *“Don’t insult my intelligence.”*
- **Heroic:** *“I’ll get it done, by hook or by crook.”*
- **Invulnerable:** *“That can’t happen to me.”*
- **Fatalistic:** *“What’s the use?”* or *“Que será será”*
- **Bald Tire:** *“I’ve gone 60K miles without a flat yet.”*
- **Summit Fever:** *“We’re almost done.”*
- **Pollyanna:** *“Nothing bad will happen.”*

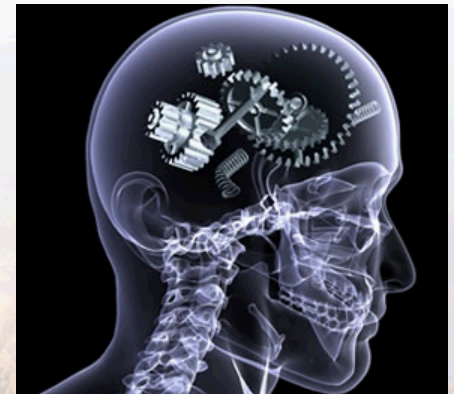


Fundamental Human Performance Tools

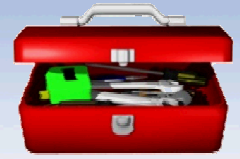


- Task Preview
- Job-Site Review
- Questioning Attitude
- Stop (& collaborate) when unsure
- Self-Checking
- Procedure Use and Adherence
- Validate Assumptions
- Effective Communications
- Place-Keeping
- “Do Not Disturb” Sign

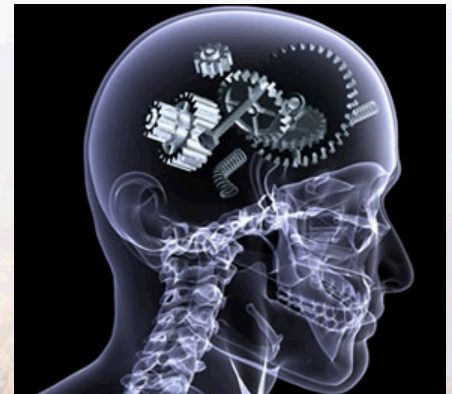
INDIVIDUALS



Conditional Human Performance Tools



- Pre-job Briefing
- Peer-Checking
- Concurrent Verification
- Independent Verification
- Flagging
- Placekeeping
- Turnover
- Post-job Review



Questioning Attitude

Fosters thought before action and helps individuals maintain an accurate understanding of work conditions.

- Used along with Self-Checking
- Promotes a preference for facts over assumptions and opinions





Stop When Unsure

Unsure

= **unchartered territory**

= **knowledge-based performance mode**

= **High Error Rate (1/2 to 1/10)**

1. **Stop** (pause or time-out) the activity
2. **Place** the equipment and the job site in a safe condition
3. **Notify** your immediate supervisor
4. **Get help** from more knowledgeable person(s)

Stop and collaborate with an expert!

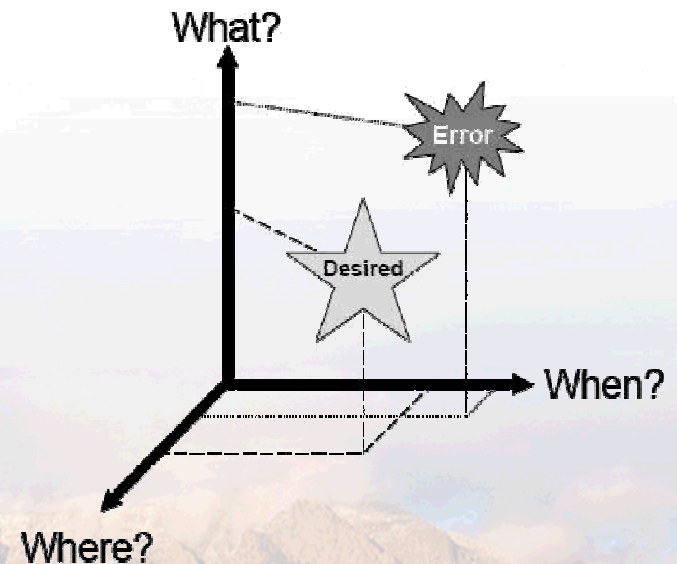
Self-Checking

Promotes a preference for facts over assumptions and opinion.

Pause and think before acting when vital points (critical junctures) are reached

- **When** to use?
- **What** to pay attention to?
- **Where** to pay attention

Promotes a questioning attitude



Self-Checking (Cont.)

Self-checking reduces inappropriate actions by helping personnel methodically focus on the task at hand.

A consciously & deliberately initiated work practice

STOP



THINK

ACT



REVIEW

Pre-Job Briefings



To prepare for what is to be accomplished and for what is to be avoided!

- Discuss specifics, including **CRITICAL STEPS**
- Discuss error traps, consequences, defenses, and error-prevention techniques
- Encourage active engagement by **all** members
- Ensure key participants are present
- Discuss actions for work scope changes
- Encourage a questioning attitude and self-checking