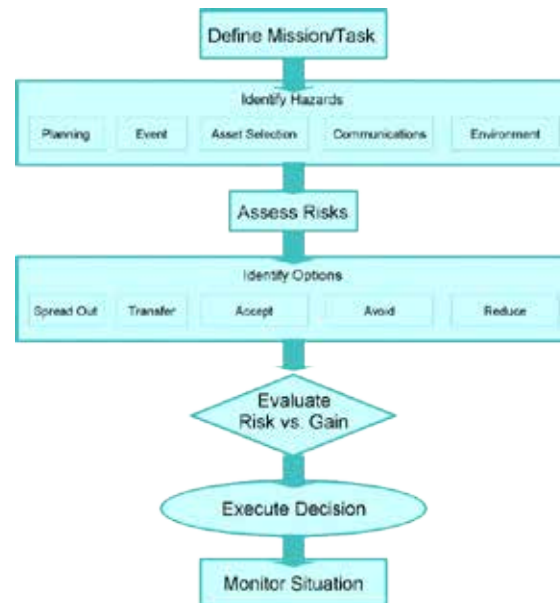


Risk Management As A Quality Enabler



David C. Hall

ESEP/CISSP

Hall Associates

Dave.hall@hallassociateshsval.com

Overview

- **Quality Enablers**
- **Is there Such a Thing as “Too Lean”?**
- **Sources of Risk in Transforming Into a Lean Enterprise**
- **Use of Risk Management in a Lean Enterprise**
- **What Are Your Risk Impacts Now?**

Quality Enablers – Lean Initiatives

Many Enterprises are trying to become more efficient through Quality Initiatives. Most “Lean” efforts have lots of activities...

- Kaizen Events
- 6-Sigma Projects
- ISO Projects
- Suggestion Systems
- Benchmarking
- Problem Solving And Corrective Action

Lean Forces Companies to Challenge Assumptions and Constraints Hard

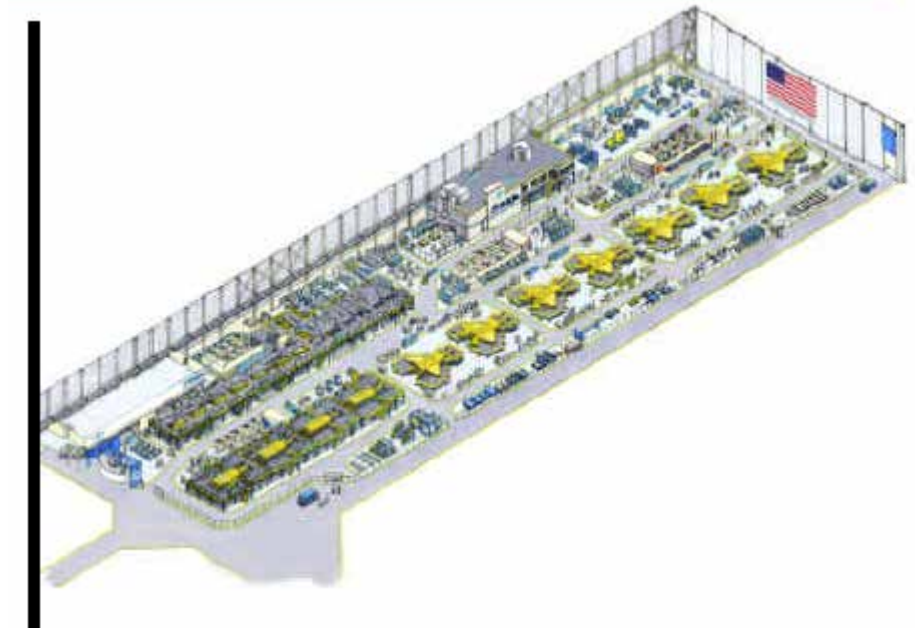
LM Aero Lean Rate Assembly Line

Background

- As implement new rate assembly line based on lean principle of flow, use other lean principles of Point of Use, 6S, Crew Plans, and improved work instructions to finalize the rate implementation

Description

- Restructure whole Assembly Line into a Flow process with Pulse Rail Moving Line in Structures
- Hold Pre-production kaizen events at each work station to assure the tools, materials, and parts are all in the optimum location for the mechanic to do his work.



Lean Forces Companies to Challenge Assumptions and Constraints Hard

TRW F-22 Task Description

- **5S work area**
- **Dedicated feeders & P&P trays**
(set-up time reduction)
- **Establish single vs. batch flow**
(planned)
- **Establish parts staging trays**
- **Establish product workcell**



Before



After



Lean Forces Companies to Challenge Assumptions and Constraints Hard

Fostering Innovation Across Aerospace Supplier Networks

- **Greatest potential for innovation lies in initial design phase - early involvement of suppliers essential**
- **Innovation often involves streamlining or eliminating unnecessary performance and testing requirements; this means customer, prime, major suppliers & subtiers must work together**
- **Requirements and testing tend to be over-prescribed initially due to uncertainty about performance & integration**

Elements Of A Lean Vision

Eliminate waste and reduce variability

- People: Unnecessary processing and motion, waiting.
- Quantity: Inventory, unnecessary moving goods and services, making too much, making unnecessary goods and services.
- Quality – fixing defects.

Is There Such a Thing As Too Lean?



You've done it a thousand times. You know what you're doing, it's what you've been trained to do your whole life.

Nothing could possibly go wrong, right ? ? ?

Think again.

*** No beavers were injured making this slide.**

Risk In The “Lean” Environment

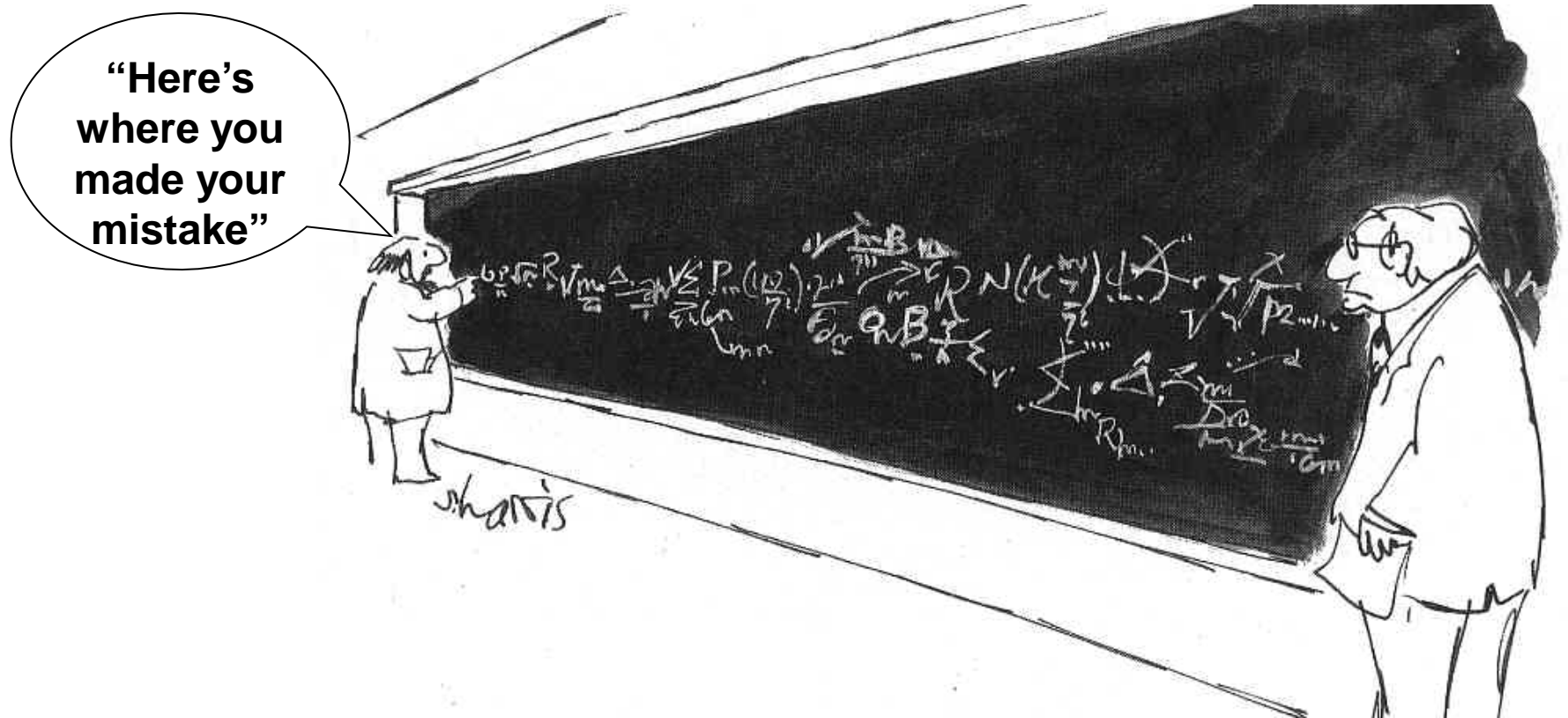
As overhead is reduced in the lean environment, the *impact* of existing risk begins to increase and new risks are incurred.

For example – Quality may be reduced without a Quality Department – unless you require the employees to manage quality. **BUT**, they must be properly trained and motivated.

As companies push to minimum steps and maximum efficiency, the amount of risk *IMPACT* increases. Risk Management is an absolute to be successful.

Example: Key Objective of Lean: Push responsibility far down organizational ladder.

The risk? Costly mistakes if the wrong decision(s) is made early in the process.



Risk Definition

A risk is a future event or condition that would result in unexpected or unanticipated consequences. Each reference document consulted gives a different definition for risk, but all definitions share the following three elements.

- **A risk is a future event or condition.**
- **The probability of the future event or condition occurring is greater than 0 but less than 100 percent.**
- **The consequence of the future event or condition will be adverse, unfavorable, or negative.**

Note that the *importance of the consequence* of a *Risk* can vary based on the *Stakeholder*

Stakeholder: an individual or entity that can be negatively affected by a risk.

What is Risk?



**Risk Is About Possible Future Events
or Conditions;
Problems Have Already Occurred.**

From Webster's:

Risk is the possibility of suffering loss.

Two components: Likelihood and Consequence.

Definition

Risk Management is the act or practice of controlling risk. This process includes planning, assessing, handling, monitoring and communicating about risks in a continuous process.

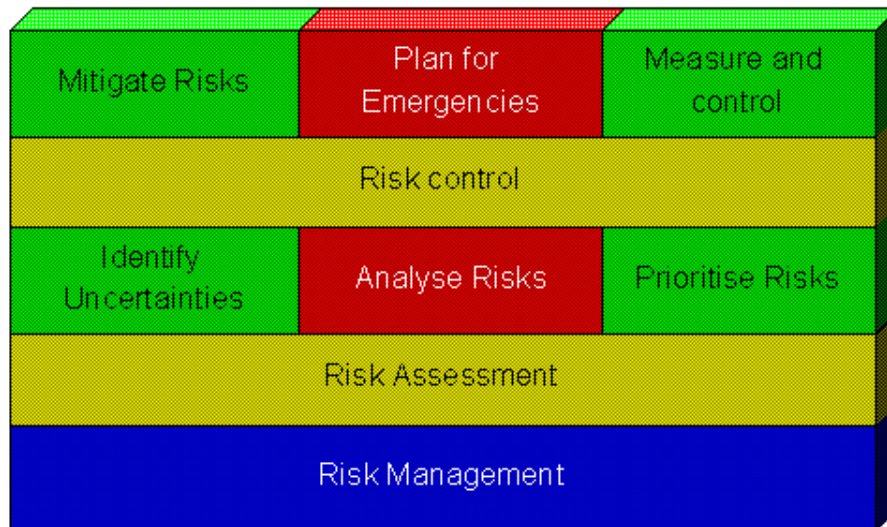
Continuous Risk Management—Continuous Risk Management is an engineering practice with *processes, methods, and tools* for managing risks in *a program*. It provides a disciplined environment for proactive decision-making to:

- Assess continuously what could go wrong (risks).
- Determine which risks are important to deal with.
- Implement strategies to deal with those risks.
- Monitor to ensure that your strategies are effective.

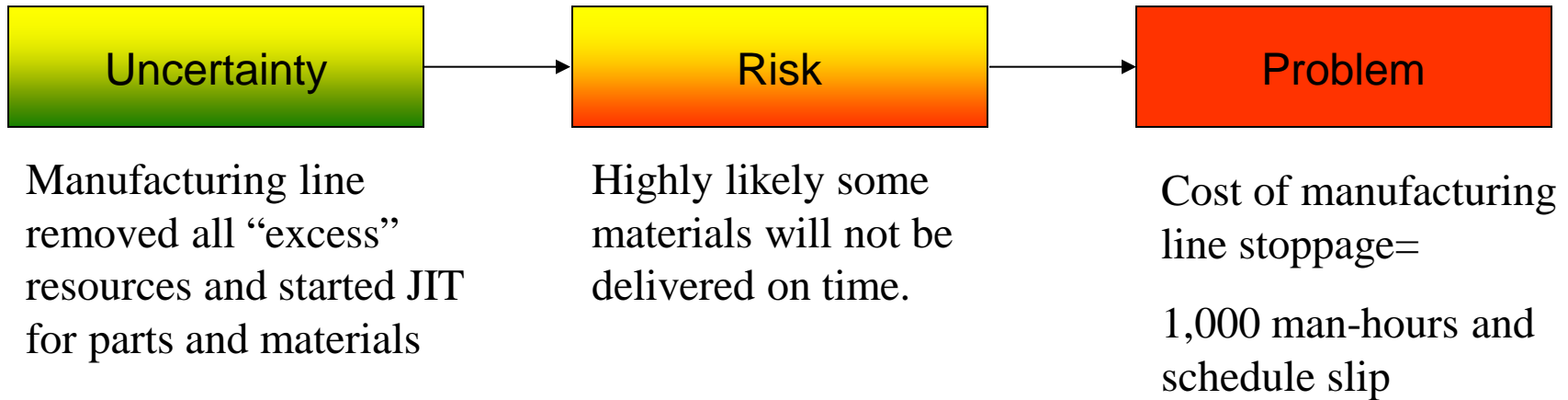
“Successful project managers are good risk managers.” Barry Boehm, 1989

Risk Management is a Process, Not an Event

Effective Risk Management



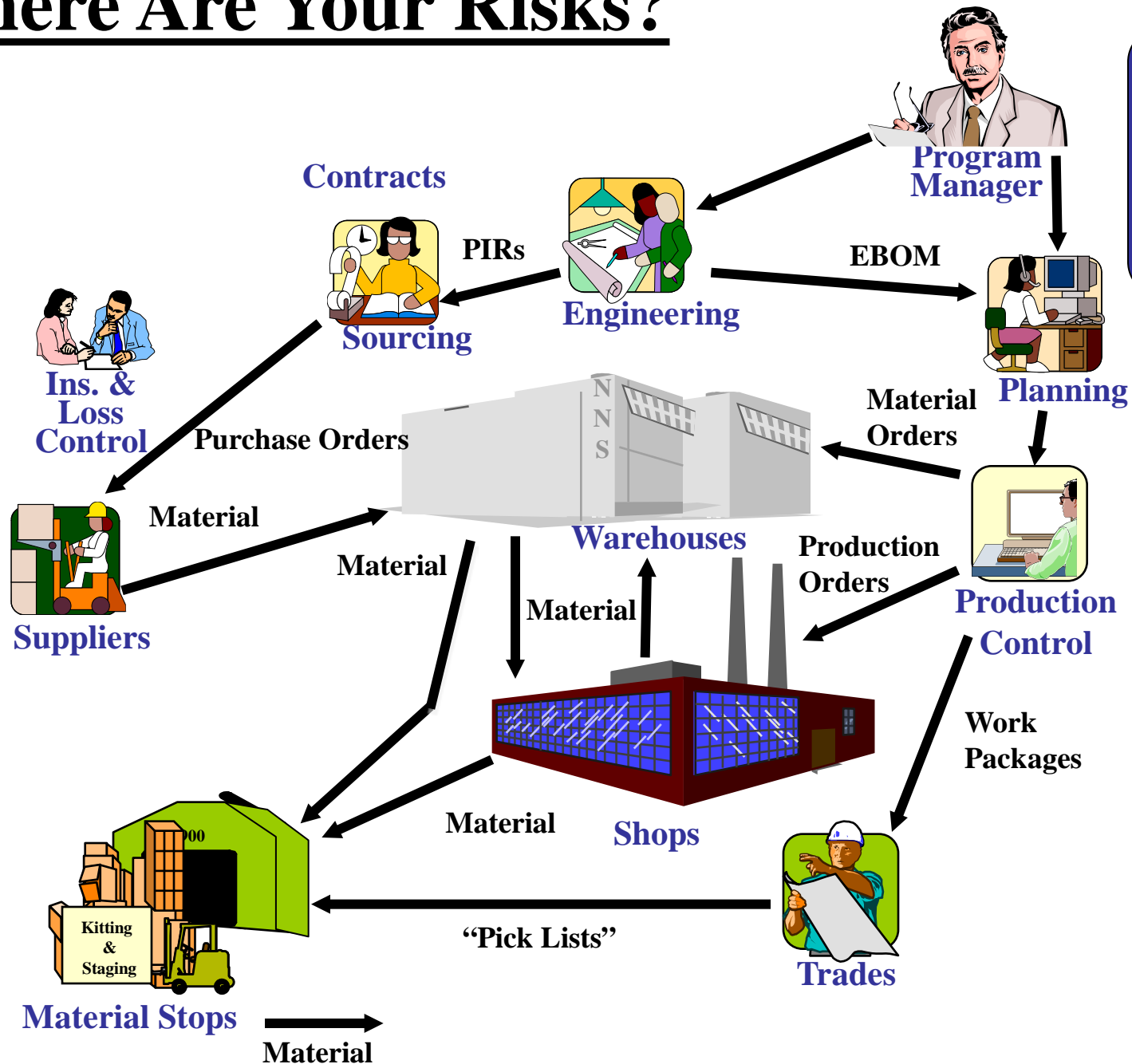
Risks That Occur = Problems



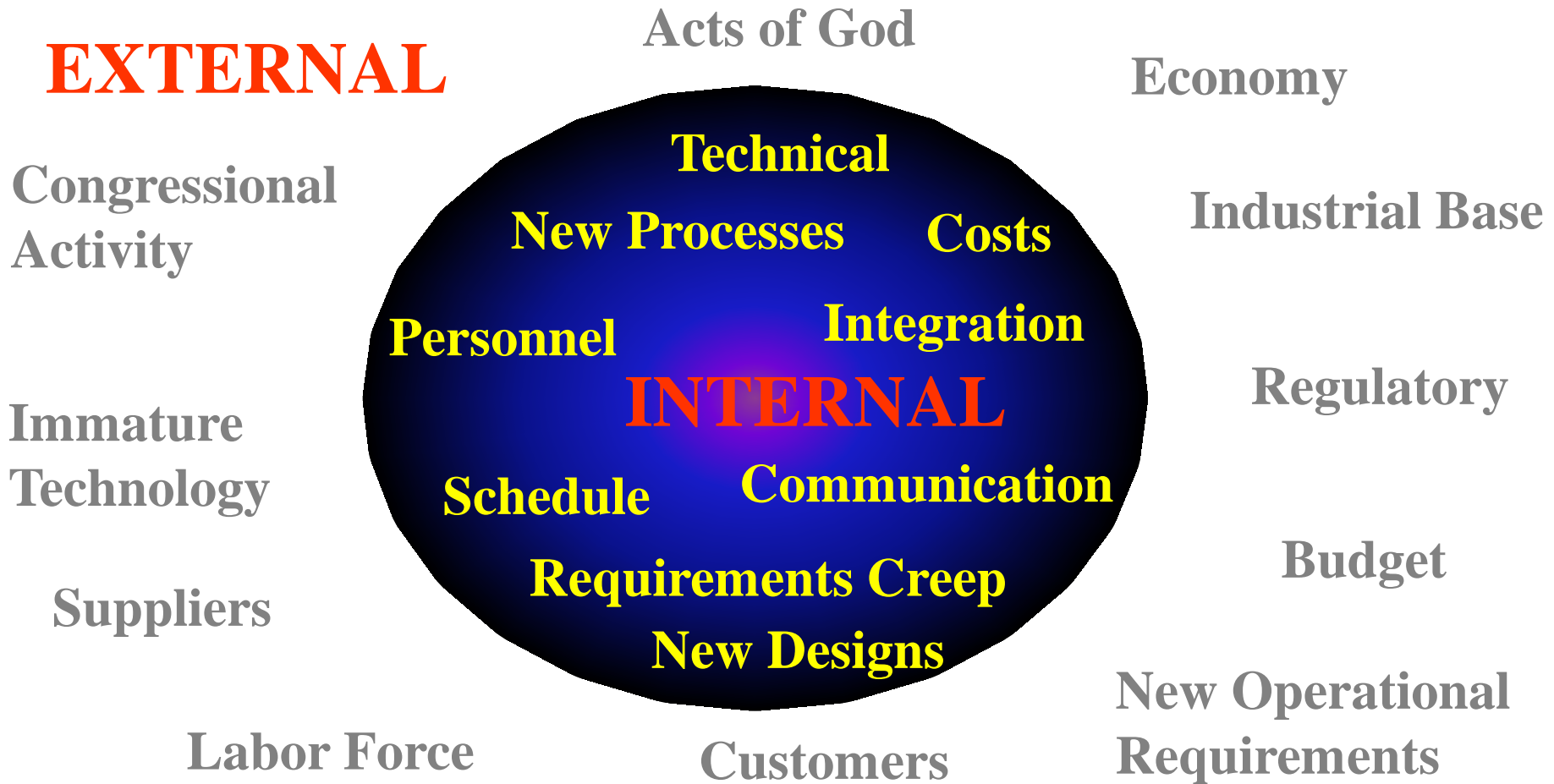
***During any operation, a number of risks will occur becoming problems that must be dealt with. Because these problems result in the need for additional resources, rework, and re-planning, These problems can now stop the operation, resulting in large losses.**

An effective risk management process will identify many of these risks early in the operation and can mitigate their likelihood of occurrence and/or reduce the consequence should they occur.

Where Are Your Risks?



Sources of Risk in Manufacturing and Development Operations



Mitigation efforts work to INFLUENCE the External and CONTROL the Internal

Lean and Risk are Simplified in a Million Order Quantity



Seek Out and Manage Risk in Any Enterprise Transformation

In the Lean Enterprise, the Value Stream Becomes the Primary Driving Force

Risk – communication. Who provides the Value Stream?

In the Lean Enterprise, One Piece Flow Becomes the Goal

Risk – work stoppage due to incorrect/inadequate buffers. What is your cost of downtime? (damaged reputation, downtime, productivity, overtime, etc.)

Implementing Lean Requires KNOWLEDGE

Risk – not understanding what risk impacts you are increasing with Lean changes

Seek Out and Manage Risk in Any Enterprise Transformation (cont'd)

The Lean Enterprise Develops Long Term Supplier Relationships

Risk – reduction in the number of available suppliers

In the Lean Enterprise, Incoming Inspections Are Eliminated

Risk – Unacceptable defects found late in construction

Lean Enterprise May Involve Employee Reduction, Must Make Sincere Effort to Reassign Employees

Risk – Loss of credibility with employees, etc.

Seek Out and Manage Risk in Any Enterprise Transformation (cont'd)

The Lean Enterprise Emphasizes Teaming / IPT approaches

Risk – Increased Interpersonal Behavior Problems (between people).

Employees are Empowered to Make Their Own Decisions

Risk - Mistakes, rework, etc.

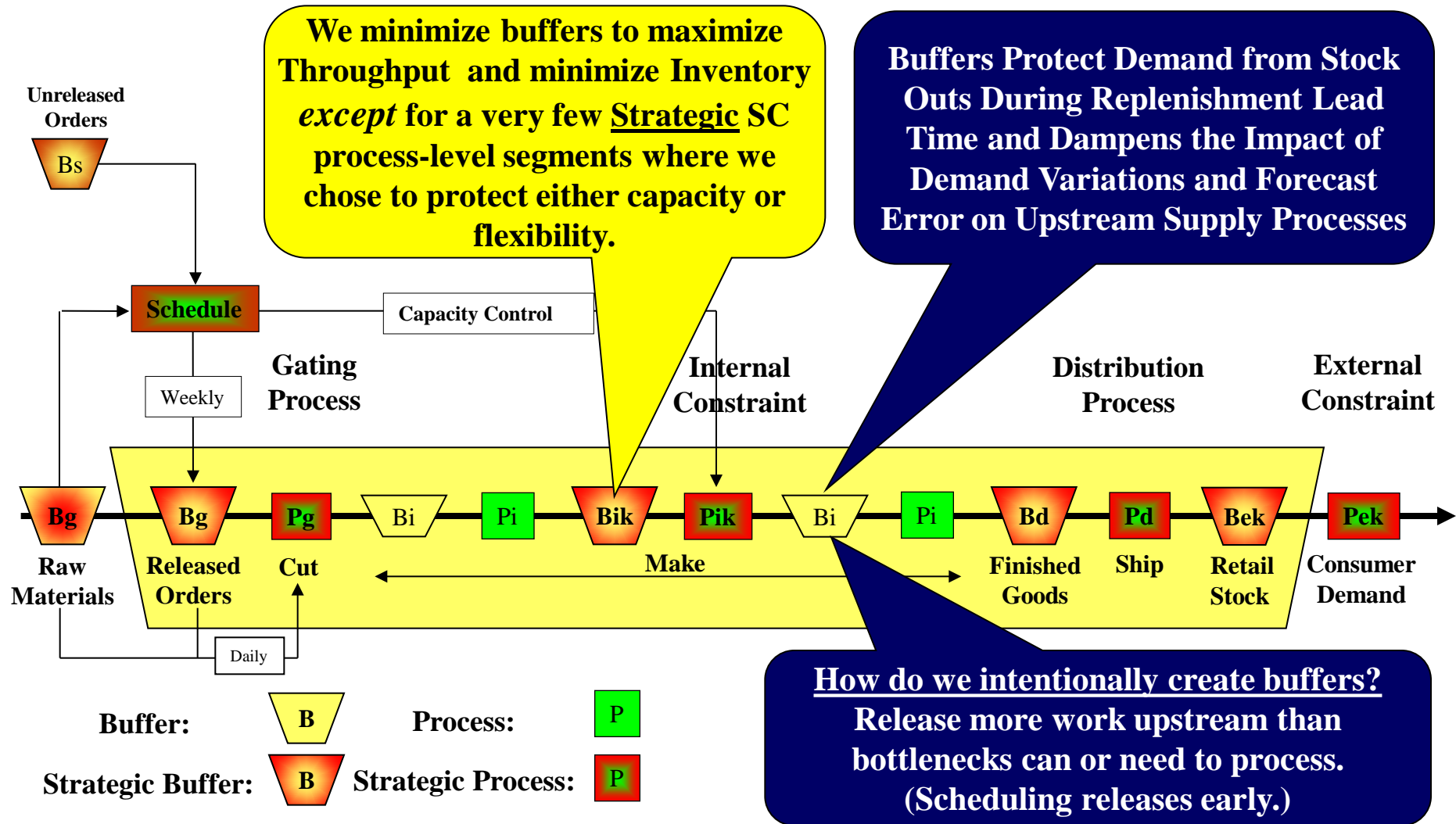
Lean is CHANGE

Risk - Dealing with change, and making change effective, often requires considerable technical, cost, and other investment, and thus potential risk for failure.

Like Risk Management, Enterprise Transformation Requires the active participation of all stakeholders



Example of Selective Risk Mitigation in a Lean Enterprise Process



The Lean Enterprise Requires a Cultural Transformation

Management creates a culture where:



Risks are recognized as challenging opportunities

- Risks are exposed BEFORE they become problems because of increased trust
- It's okay to recognize possible mistakes

Employees are not problems - they are risk identifiers

- Cultural Shift: emphasis is placed on finding risks and mitigating them instead of placing waiting for them to become problems and the placing blame

Quality / Risk Paradigm

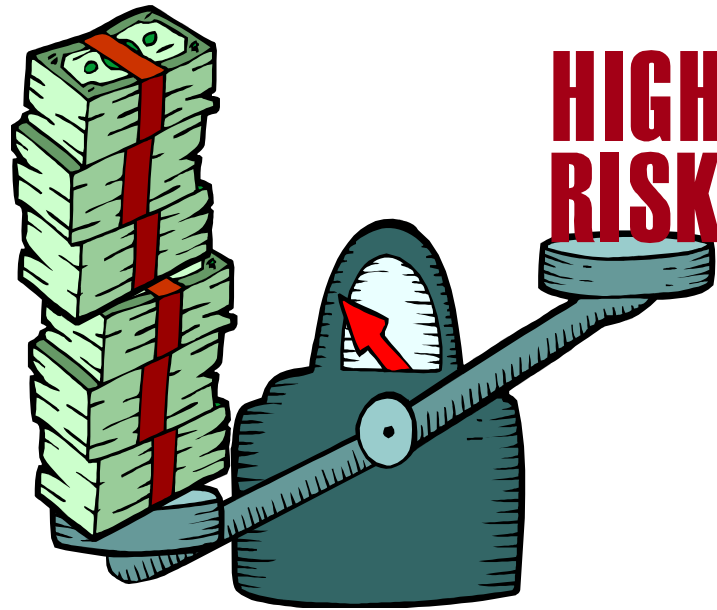


What looks like an opportunity to improve... may increase your risk!

How Do We Improve the Chances of Success?

- **Implement a strong risk management process**
- **Start early and manage risk throughout the project and subsequent operation.**
- **Make both lean efforts and risk efforts visible in employee performance agreements**
- **Address the tough issues first! Don't procrastinate!**
- **Apportion risk carefully – put management spotlight on high risk issues**

The Biggest Risk Is Not Taking One



No Risk = No Reward

Risk Taking is Essential to Compete for the Future

**“You Never Do Risk Management Unless
You See the Hangman’s Noose”**



**What Has
Your Lean
Innovations
Done To Your
Risks?**