Risk Management As A Quality Enabler

Define Mission/Task

Identify Hazards
- Planning
- Event
- Asset Selection
- Communications
- Environment

Assess Risks

Identify Options
- Spread Out
- Transfer
- Accept
- Avoid
- Reduce

Evaluate Risk vs. Gain

Execute Decision

Monitor Situation

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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 Organizations 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 Organizations 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
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.
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 minimize steps and maximize efficiency, the amount of risk *IMPACT* increases. Risk Management is a methodology to increase the likelihood of success.
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.

“Here’s where you made your mistake”
How Important is Early Quality?

The cost to fix a defect found during operation phase may be as high as 1000 times* the cost to fix it during requirements phase.

Risk Definition

A risk is a potential future event or condition that would result in a deviation from the expected or planned. Risk has 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.

“Risk Management is Project Management for Adults”
Risk Management 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 Continuous Process, Not an Event

- Plan entire strategy
- Choose an approach
- Anticipate what can go wrong
- Decide what is important
- Correct deviations
- Determine necessary actions
- Continuously communicate
- Monitor
- Track results
Risks That Occur = Problems

Manufacturing line removed all “excess” resources and started JIT for parts and materials

Highly likely some materials will not be delivered on time.

Cost of manufacturing line stoppage = 1,000 man-hours and schedule slip

*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?

- HR
- IT
- Corp
- Legal
Sources of Risk in Manufacturing and Development Operations

EXTERNAL
- Congressional Activity
- Immature Technology
- Suppliers

INTERNAL
- Technical
- New Processes
- Costs
- Integration
- Personnel
- Schedule
- Management
- Communication
- Requirements Creep
- New Designs

Acts of God
- Economy
- Industrial Base
- Regulatory
- Budget
- New Operational Requirements

Mitigation efforts work to INFLUENCE the External and CONTROL the Internal
Intangible Risk!

Difficult to see, calculate, and realize, yet very real!
The Key is To Strike the Balance

The Goal is to achieve the optimal balance.
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 people sometimes fear change.
Example of Selective Risk Mitigation in a Lean Enterprise Process

We minimize buffers to maximize Throughput and minimize Inventory except for a very few Strategic SC process-level segments where we chose to protect either capacity or flexibility.

Buffers Protect Demand from Stock Outs During Replenishment Lead Time and Dampens the Impact of Demand Variations and Forecast Error on Upstream Supply Processes

How do we intentionally create buffers?
Release more work upstream than bottlenecks can or need to process. (Scheduling releases early.)

*Bill Kernodle; Balanced Flow High Velocity Supply Chain
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 then placing blame
Quality / Risk Paradigm

What looks like an opportunity to improve... also is an opportunity for 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 in the Future
Is this Your Organization??????

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

Do You Know What Your Lean Innovations Have Done To Your Risks?
Change is the only constant.