A1/B1: Organizing for High Reliability

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Session Objectives

- Describe evidence based leadership methods for building and sustaining a high reliability culture
- Design an approach to implement learned principles in their organization

Framework for Reliable Design

- Reliability occurs by design not by accident
- Process is the action point of all improvement methodologies
- Segmentation allows the perfection of the design

Starting Labels of Reliability

- Chaotic process: Failure in greater than 20% of opportunities
- 80 to 90 %: 1 or 2 failures out of 10 opportunities
- 95% or better: 5 failures or less out of 100 opportunities

The Reliability Design Strategy

- “Set-up” for success
- Use the following three step method:
  - Prevent initial failure using intent and standardization
  - Identify defects (using redundancy) and mitigate
  - Measure and then communicate learning from defects back into the design process

The “Set Up” for Reliability

- Select a topic whose outcome you want to improve
- Determine a high volume segment for initial design testing
- Build a high level flow chart for that segment
- Determine where the defects occur in the current system
- Determine where your design work will begin with by identifying where the commonest defects occur
- Verbalize the reliability (hint: it is always 95% or better)

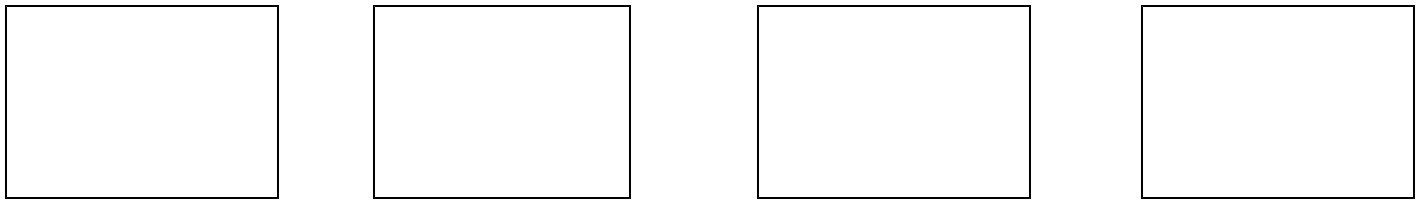
Why Segmentation is Helpful

- Allows for the control of some variables
- Defines the boundaries around which sequential expectations for success can be found
- More likely to test the validity of the design rather than deal with barriers
- Fosters a deeper understanding of the design complexity required for the project
- Forces understanding of the differences between segments as design strategies
- Allows the formation of more predictable timelines

Finding your First Segment

- The segment must represent a reasonable volume
- The segment should have clear cut defined boundaries
- The segment should have willing participants so the barrier of agreeing is not a problem
- The segment should allow for key articulated variables or barriers to be neutralized
- The first segment should establish a design theme

Example



The most pain-Where we work

Our aim achieve a 95% or better reliability at…

The Reliability Design Strategy

- Prevent initial failure using intent, simplification and standardization
- Identify defects (using redundancy) and mitigate
- Measure and then communicate learning from defects back into the design process

Why Standardize?

- Contributes to building an infrastructure (who does what, when, where, how and with what)
- Support training and competency testing to sustain the process
- Makes the process clear to staff
- Allows the appropriate application of evidence consistently
- Feedback about defects and application of learning to design is possible

Current Common Standardization Strategies

- Expert meetings design comprehensive protocol over months of meetings
- The result of the expert meetings is a protocol considered by the team as a finished product
- Changes to the protocol/policy are infrequently tolerated
- Standardized protocols/policies are expected to be stand alone and the end of the design (one size fits all)
- No expectations form leadership regarding reliability of the standardization process

New Standardization Concepts

- Standardize to provide the appropriate infrastructure (the how, what, where, who and when)
- The “what” we are standardizing is based on medical evidence
- The “how” does not need medical evidence but rather systems knowledge
- Initial standardized protocols are developed with small time investment by experts tested at a very small scale
- Changes to the protocol in the initial stages should be required and encouraged
- Defects are studied and used to redesign the process

Three Tier Design Strategy

- Prevent initial failure using intent and standardization
- **Identify and mitigate (Redundancy/contingency function)**
- Critical failure mode function (identify critical failures and then redesign)

Why the Step Is Needed

- Allows less than perfect design in the standardization step (we do not have to plan for every possible contingency)
- Anticipates and allows failure in the prevent failure (standardization function) step
- Allows a better balance of resource use (no need to spend months coming up with the perfect design)
- Fosters the atmosphere of mitigation and recovery

Characteristics of “Redundancy Tools”

- Redundancy: back-up plan, failsafe etc.
- Require careful consideration since they do represent a form of “waste”
- Requires a good prevent failure step (standardization function) before implementing a redundancy
- Need to be truly independent
- Need to be used or will no longer function as a good filter
- Must follow with a mitigation strategy

Human Factor Concepts

Human Factors and Reliability Science:
(Designing sophisticated failure prevention, failure identification and mitigation)

- Decision aids and reminders built into the system
- Desired action the default (based on evidence)
- Redundant processes
- Use fixed current scheduling in design
- Take advantage of habits and patterns
- Standardization of process based on clear specification and articulation

Three Tier Design Strategy

- Prevent initial failure using intent and standardization
- Redundancy function (identify failure and mitigate)
- **Critical failure mode function (identify critical failures and then redesign)**

Critical Failure Mode Essentials

- A measurement of critical failure modes needs to be part of the initial design strategy
- Assesses the defects that occur from the current design
- Should be prioritized in terms of overall affect on the reliability of the process change
- Should be used to redesign the process

Measurement

- Small samples over time should be use to determine if the process is improving
- Data should be collected by the team with strict attention to the agreed upon tempo
- Data should be collected for segments
- Process measurements should be the primary team measures
- Outcome measures are needed but do not need to be collected by the team
- Outcome aims can be set at 0 or 100%, but your process aims should be 95% or better

Key Questions To Analyze Testing and Implementation

Key Question	Your Evaluation
Is the connection between goals and process clear?	
Is the design strategy primarily vigilance and hard work?	
Has some degree of segmentation been used to test the design?	
Is standard work with testing been part of the design?	
Is a design methodology being used?	
Are small tests of change being used in a rapid cycle?	
Is data collection rapid enough?	

Key Questions To Analyze Spread

Key Question	Your Evaluation
Have you repeated the small test cycles as you spread from the initial site?	
Is the process of spread dependent on one person?	
Has some degree of segmentation been used to spread?	
Has customization been allowed or encouraged?	
Is the same team who developed the pilot now responsible for spread?	
Have you shifted your focus from process reliability to outcomes too early?	