Problem Solving is dependent on what you focus on, how you analyze it and how you fix it. Are you wasting your resources?

TapRooT®
Changing the Way the World Solves Problems

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Problem Solving is dependent on what you focus on, how you analyze it and how you fix it. Are you wasting your resources?

Abstract: Time and money are limited in all industries however shared best practices should not be! Using a dynamic FMEA (Failure Mode and Effects Analysis), learn how to target which high risk issues in the Food Retail Industry are applicable to your business specifically that then need to be investigated. Use the same method to target high risk areas that should be proactively audited.

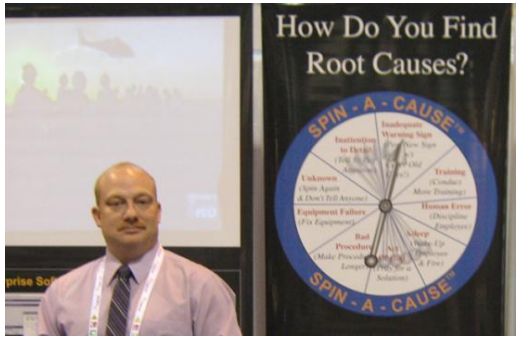
Lecturer: Chris Vallee

As a Veteran with 12 years in the U.S. Air Force, a Manager of the Assembly of Executive Aircraft, a Lean Six Sigma Black Belt with a Human Factors Degree and currently an Instructor and Facilitator in Problem Solving, what am I doing giving a lecture at the 2013 FMI Conference?

Simple, I am a customer of numerous retailers, I have worked in the retail industry and I have clients who work with retailers. As an instructor, I often hear, "our industry is different than other industries" from students during the beginning of our TapRooT® root cause analysis courses. I then hear, "we are not different" at the end of class. I predict this will be the same in my introduction to FMI.

One common theme of multiple industries is a backlog of corrective actions, repeat issues and limited resources to address the other two problems. The goal of this lecture is to help you identify the leading issues that need the most attention company wide by using a Failure Mode and Effects Tool.... a tool not just for engineering and design.

A leading facilitator of problem solving in industries ranging from hospitals, manufacturing, nuclear, transportation, electrical companies and mining, just to mention a few, I will also share best practice tools in root cause analysis and then lead a roundtable discussion to help you figure out where to start.



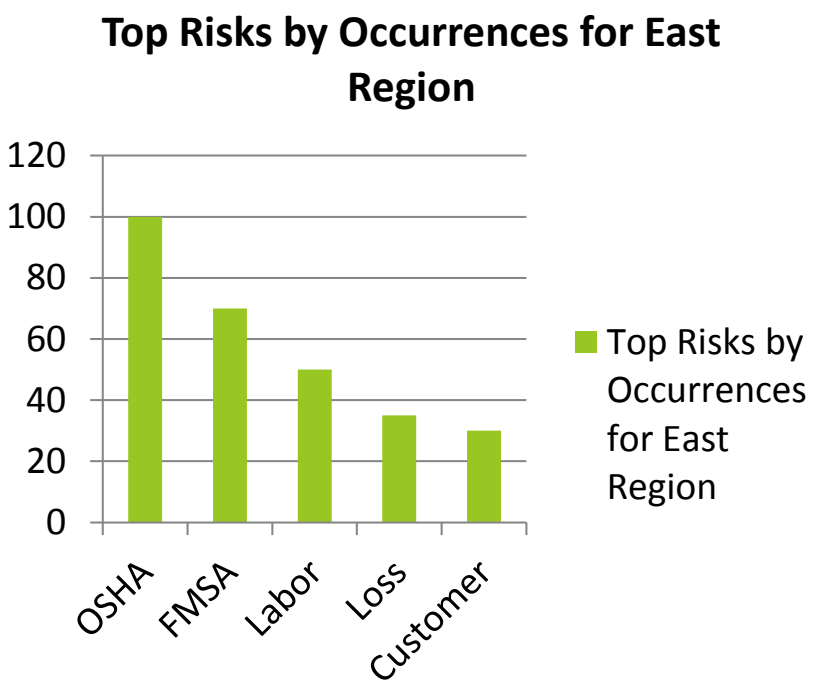
FMI Top Concerns….

Based on recent regulation changes and general trends in FMI, the Top Drivers of Concern appeared to be:

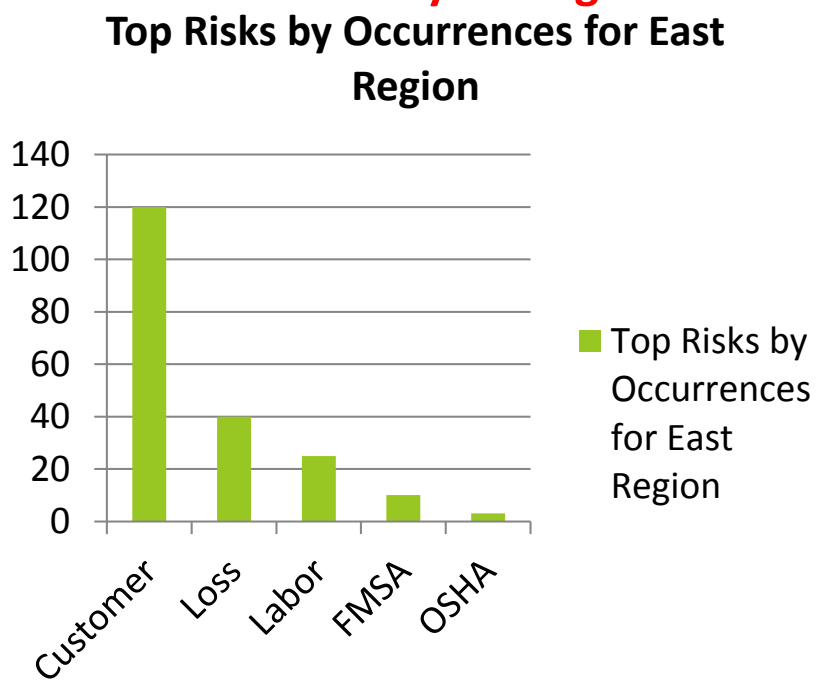
- OSHA Findings and Penalties
- Food Safety Modernization Act (FMSA) Findings
- Losing Customers
- Labor Issues
- Loss of Product through theft or scam

…. But are these your issues? In what order of risk?

Is this your region?



Or is this your region?



STOP… unless you like throwing $$$ away!

- While an Issue may be a Top Driver for FMI as an Industry, **it does not mean** that you have it as a Top Driver!

- Assign your resources as required per Regulations (i.e. OSHA, Labor and FMSA), but focus the majority of your resources to your current needs and future growth.

- Understand how to assess your current high risk Top Drivers, assess the Impact to the Business and Customer and when an issue is found:
  1. Identify the Risk Potential
  2. Identify the Company Tasks tied to the Risk
  3. Analyze the Root Causes with a Structured Process
  4. Apply Effective Corrective Actions
  5. Continue to Audit and Assess your Risks (They tend to change for various reasons!)

Don’t tell anyone, that you are going to use an engineering tool for FMI to Identify Risk Potentials……

Why reinvent the wheel? Use an FMEA (Failure Mode and Effects Analysis)

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
1	Lowering Landing Gear	Left Gear Position Sensor Fails	Loss of 1 of 6 Detectors	3	C	Substitute Part Number not correct	9	Purchasing checks against design criteria	3	91
2	Lowering Landing Gear	Left Gear Hydraulic Hose Fails	Gear can not lower under power	9	C	Aged Braided Hydraulic Hose not replaced	3	300 PSI Hoses replaced every 500 hours of flight.	1	27

N - Noise (Out of your Control… but can still be mitigated with better controls)
C - Controllable
Severity - Impact to what you are trying to control or impact
Occurrence - Frequency of Failure
Detectability - Ability to detect when the failure will or did occur
RPN - Risk Priority Number (SEV x OCC x DET); the higher the number, the higher the risk.

Don’t tell anyone, that you are going to use an engineering tool for FMI to Identify Risk Potentials……

Why reinvent the wheel? Use an FMEA (Failure Mode and Effects Analysis)

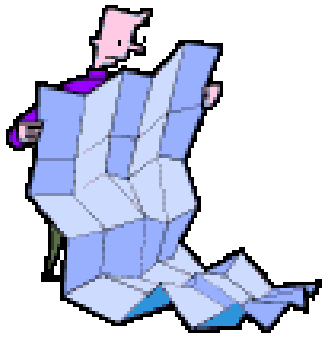
- What do engineers use the FMEA for?

    1. Evaluate failures and contingency controls during a product design phase
    2. Evaluate risks to an existing design when design changes are made
    3. Evaluate transactional process failures and potential risks

- What could FMI Leaders use the FMEA for?

    1. Identify the current risks and their potential impact to the business
    2. Identify the areas of the company with the highest potential to fail or become a vulnerability
    3. Track RPN’s to see if you are getting better or worse

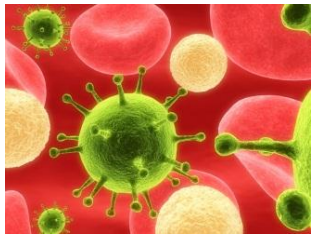
How? Where do we start?



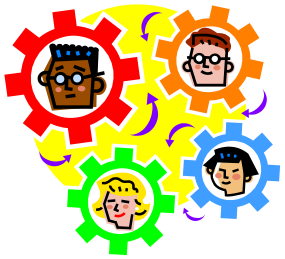
You have a lot of the information about your business already?

Start the FMEA at the 20,000 foot view looking down

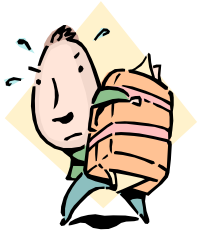
OSHA Findings and Penalties



FMSA Findings and Penalties



Labor Issues



Loss of Customer

Asset Loss

List your Top Drivers and determine your Occurrences

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
1	Employee Safety		OSHA Findings				?			
2	Food Health		FMSA Findings				?			
3	Customer Satisfaction		Loss of Customer				?			
4	Motivated Labor Force		Labor Issues				?			
5	Assets Protection		Asset Loss				?			

SEV Ratings
1 - Little Business Impact
3 - Moderate Business Impact
9 - Severe Business Impact

OCC Ratings
1 - Low Frequency of Occurrence
3 - Moderate Frequency of Occurrence
9 - High Frequency of Occurrence

DET Ratings
1 - Easy to Detect/Predict Occurrence
3 - Needs more focus to Detect/Predict Occurrence
9 - Extreme delay in the ability to Detect Occurrence

Start the FMEA at the 20,000 foot view looking down

Let's start with these Top Driver's

OSHA Findings and Penalties

Using the OSHA website:

1. Grocery Store in 2012 (Code 5411):
   - 42 Citations
   - $82,000 in agreed upon final penalties
2. Food and Beverage Stores in 2010 (2,830,000 employees):
   - A rate 2.9 per 1,000 people with days off
   - A rate of 2.3 per 1,000 people with other recordables

Looks like a moderately occurring problem if this is your company.

List your Top Drivers and determine your Occurrences

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
1	Employee Safety	MSDS Injury, First Aid	**OSHA Findings**				**3**			
2	Food Health	Foodborne Illness	**FMSA Findings**				**9**			
3	Customer Satisfaction		**Loss of Customer**				**?**			
4	Motivated Labor Force		**Labor Issues**				**?**			
5	Assets Protection		**Asset Loss**				**?**			

48 million people (1 in 6 Americans) get sick, 128,000 are hospitalized, and 3,000 die each year from foodborne diseases

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Identify your ability to detect the occurrence when it occurs

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC	Current Controls	DET X	= RPN
1	Employee Safety	MSDS Injury, First Aid	**OSHA Findings**						**9**	
2	Food Health	Foodborne Illness	**FMSA Findings**						**9**	
3	Customer Satisfaction		**Loss of Customer**				**?**			
4	Motivated Labor Force		**Labor Issues**							
5	Assets Protection		**Asset Loss**							

Acute Injury identified onsite. Long time injury could take years

Sickness does not occur until the customer leaves and consumes the food

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Identify the Impact to the Business

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC	Current Controls	DET X	= RPN
1	Employee Safety	MSDS Injury, First Aid	**OSHA Findings**	**3**					**9**	
2	Food Health	Foodborne Illness	**FMSA Findings**	**9**					**9**	
3	Customer Satisfaction		**Loss of Customer**				**?**			
4	Motivated Labor Force		**Labor Issues**							
5	Assets Protection		**Asset Loss**				**?**			

Workman Compensation and loss work time can impact the business

Could shut down the business

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Calculate the Risk Priority Number and Prioritize the Issues

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
4	Employee Safety	MSDS Injury, First Aid	**OSHA Findings**	**3**	**C**		**3**		**9**	**81**
1	Food Health	Foodborne Illness	**FMSA Findings**	**9**	**C**		**9**		**9**	**729**
3	Customer Satisfaction	Poor Complaint Handling	**Loss of Customer**	**9**	**C**		**3**		**9**	**243**
5	Motivated Labor Force	Poor Complaint Handling	**Labor Issues**	**3**	**C**		**9**		**3**	**81**
2	Assets Protection	Product Theft	**Asset Loss**	**9**	**C/N**		**9**		**9**	**729**

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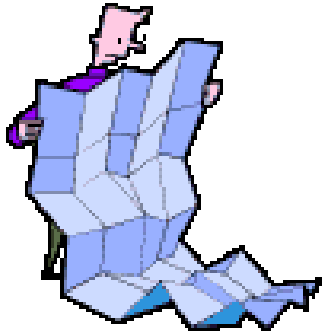
Now What?



Take your Highest RPN Issues and take them to the 1,000 foot view looking down

Asset Loss
729 RPN

Identify vulnerable failure modes from either internal (controllable) theft or external (noise) theft that can be mitigated with better controls if we understand why the existing controls failed.

1,000 foot view of Product Theft (Interactive Exercise)

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
1	Product Theft	Store Security failed to catch shoplifter								
2	Product Theft									
3	Product Theft									
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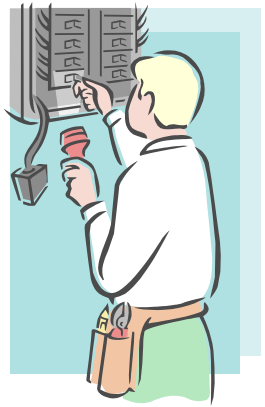
Once we identify issues and potential failed controls, we now need to understand why the controls failed to be effective.



STOP… unless you like throwing $$$ away!

- There are many root cause processes and tools out there, but if they depend on the investigator's knowledge only, bias can hurt the outcome.

- The notion of one root cause is the root of all evil, is mistaken. Takes more than one issue to create a high RPN.

- In the next few slides, we will go over a few investigation barriers and introduce a best practice root cause process used my many industries.

Root Cause Analysis Traps

- The tail wagging the dog
- It's not changeable
- "Word-Smith" to make it look better than it is
- The answer is obvious

Root Cause Analysis Traps

The tail wagging the dog:

Why does the dog wag its tail?

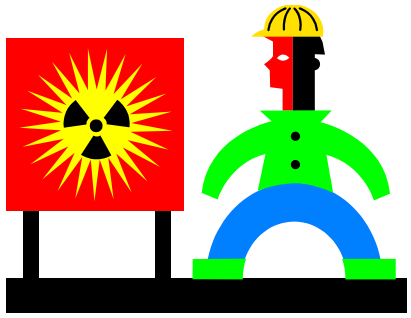
Because the dog is smarter than the tail. If the tail were smarter, it would wag the dog.

- An item of minor importance dominating
- Troubleshooters going in the wrong direction based on a false hypothesis too early.

Root Cause Analysis Traps

It is not Changeable

- Why analyze it?
- We already know it works that way?
- It is just part of the job?
- What other option do we have?



Root Cause Analysis Traps

“Word-Smith” to make it look better than it is

- Called damage control
- It is not as bad as it looks.
- Less serious/ Less need for attention

Root Cause Analysis Traps

The answer is obvious

“Elementary… Watson!”

- The facts were in front of the troubleshooters but the 80/20 rule bit them this time.
- It is so “obvious”, why troubleshoot?

Seven Secrets to Good Root Cause Analysis

1. Your root cause analysis is only as good as the info you collect.

2. Your knowledge (or lack of it) can get in the way of good root cause analysis.

3. You have to understand what happened before you can understand why it happened.

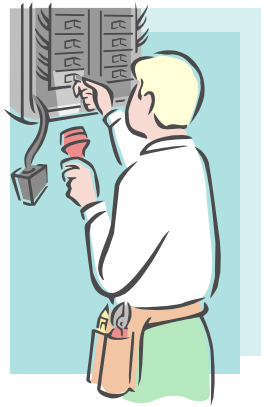
4. Interviews are not about asking why it happened.

5. You can't solve all human performance problems with discipline, training or procedures.

6. Often, people can't see effective corrective actions even if they can find the root causes.

7. All investigations do not need to be created equal (but some investigations steps can't be skipped.)

What are other industries using as their Root Cause Process to reduce the root cause traps?



System Improvements, Inc.

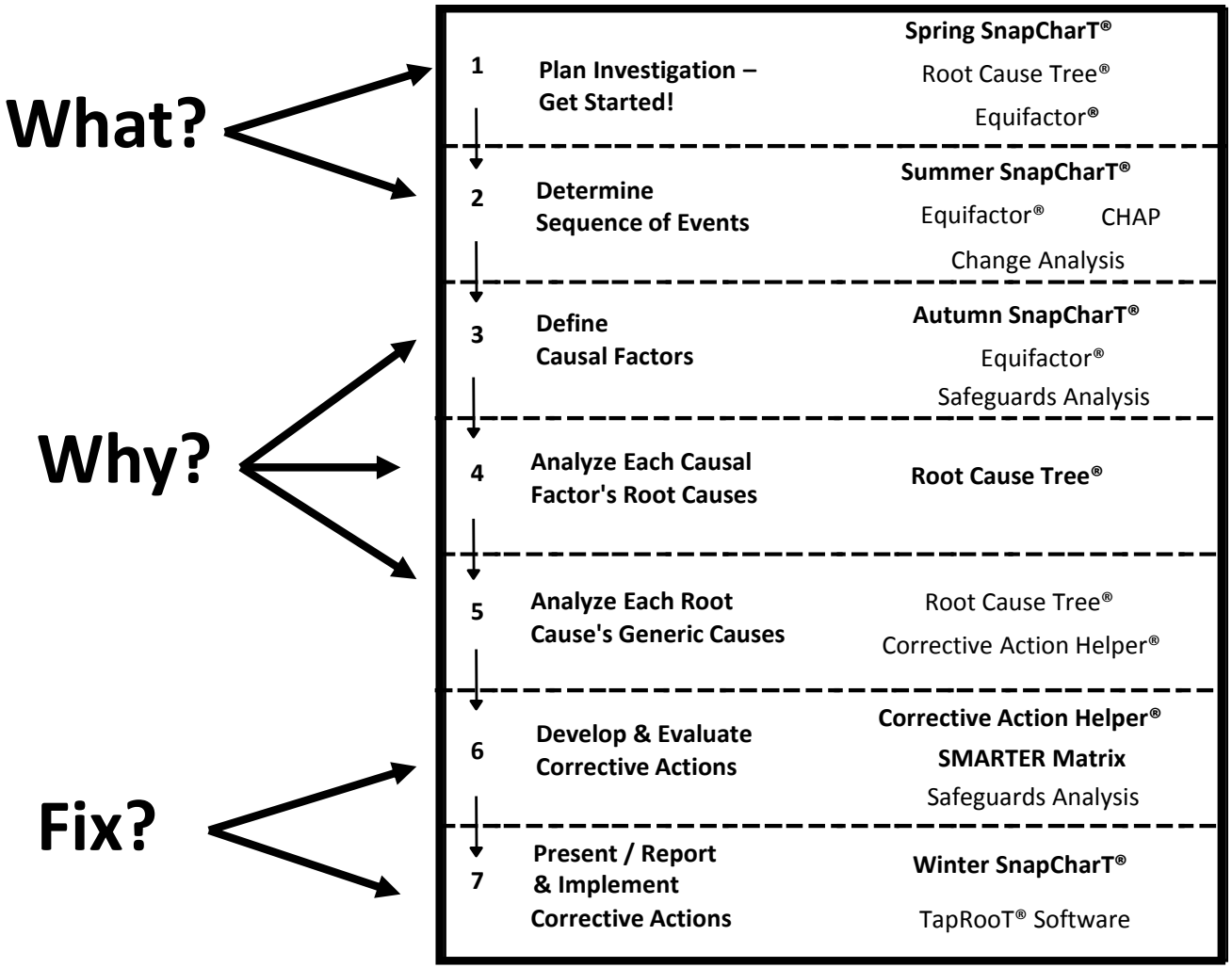
For over 20 years, SI has provided industry-leading Root Cause Analysis tools, training, and consulting on the patented TapRooT® System and Software, enabling industry leaders to:

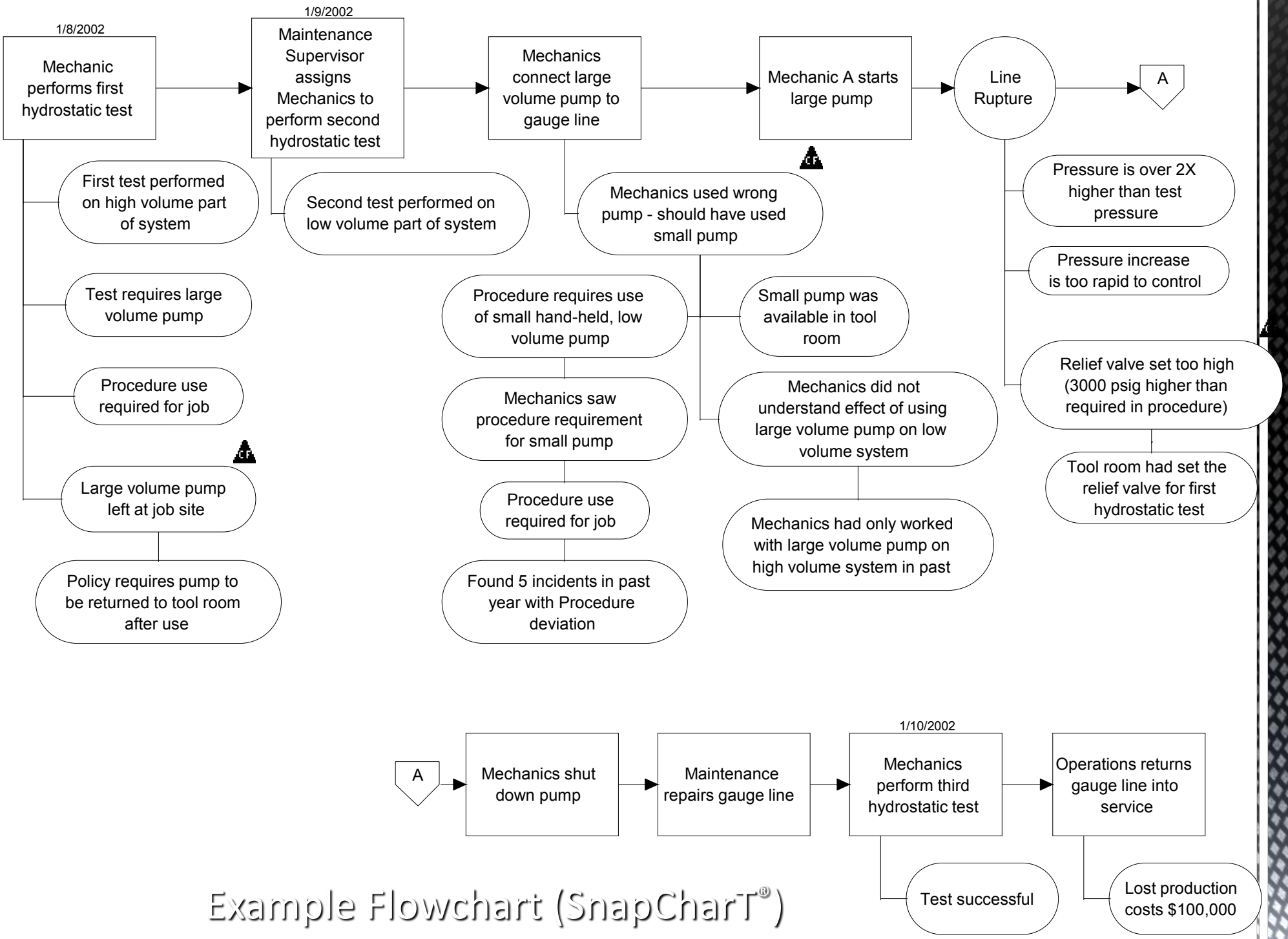
- Improve human performance
- Understand and reduce equipment related failures
- Improve effectiveness and impact of corrective actions

This is exemplified by our Corporate Mission Statement:

“Changing the way the world solves problems”

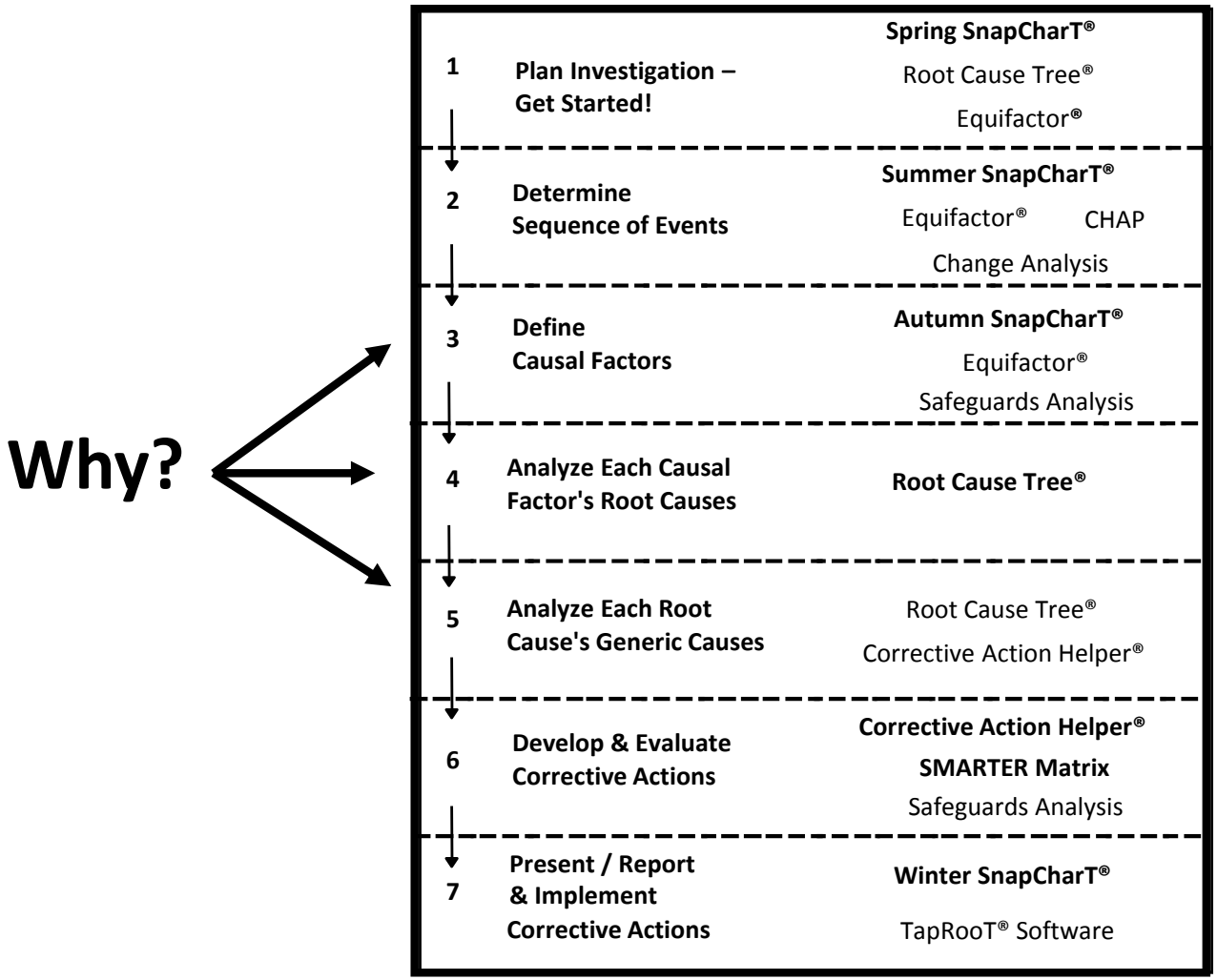
What Does a TapRooT® Investigation Look Like?





Example Flowchart (SnapCharT®)

Determine “Why” Problems Occur



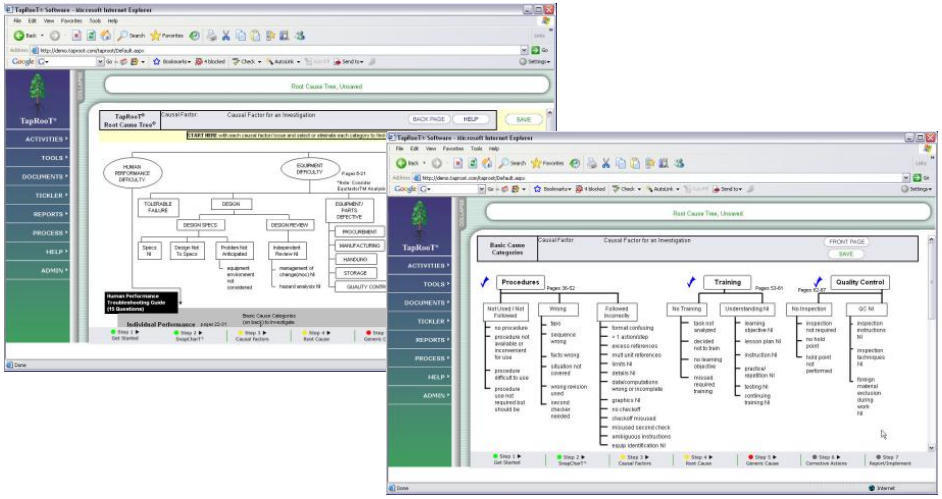
Our Definition of "Root Cause"

Root Cause Tree® was based on this definition:

*A **Root Cause** is*
*the absence of **best practices***
*or the failure to apply **knowledge***
*that would have **prevented the problem***

Determine “Why” Problems Occur

- TapRooT® Root Cause Tree®
  - Focus on **Systems** not Individuals and determine if system failures occurred
  - Stress **Objectivity** not Subjectivity
  - **Remove** Investigator Bias



All items are defined in the **Root Cause Tree® Dictionary** promoting consistency from person to person

Root Cause Tree® Dictionary

Labels NI (Page 96)

Do no labels exist on components and equipment that must be located, identified, or operated to complete the task(s)?

Are the labels hard to read? That is:

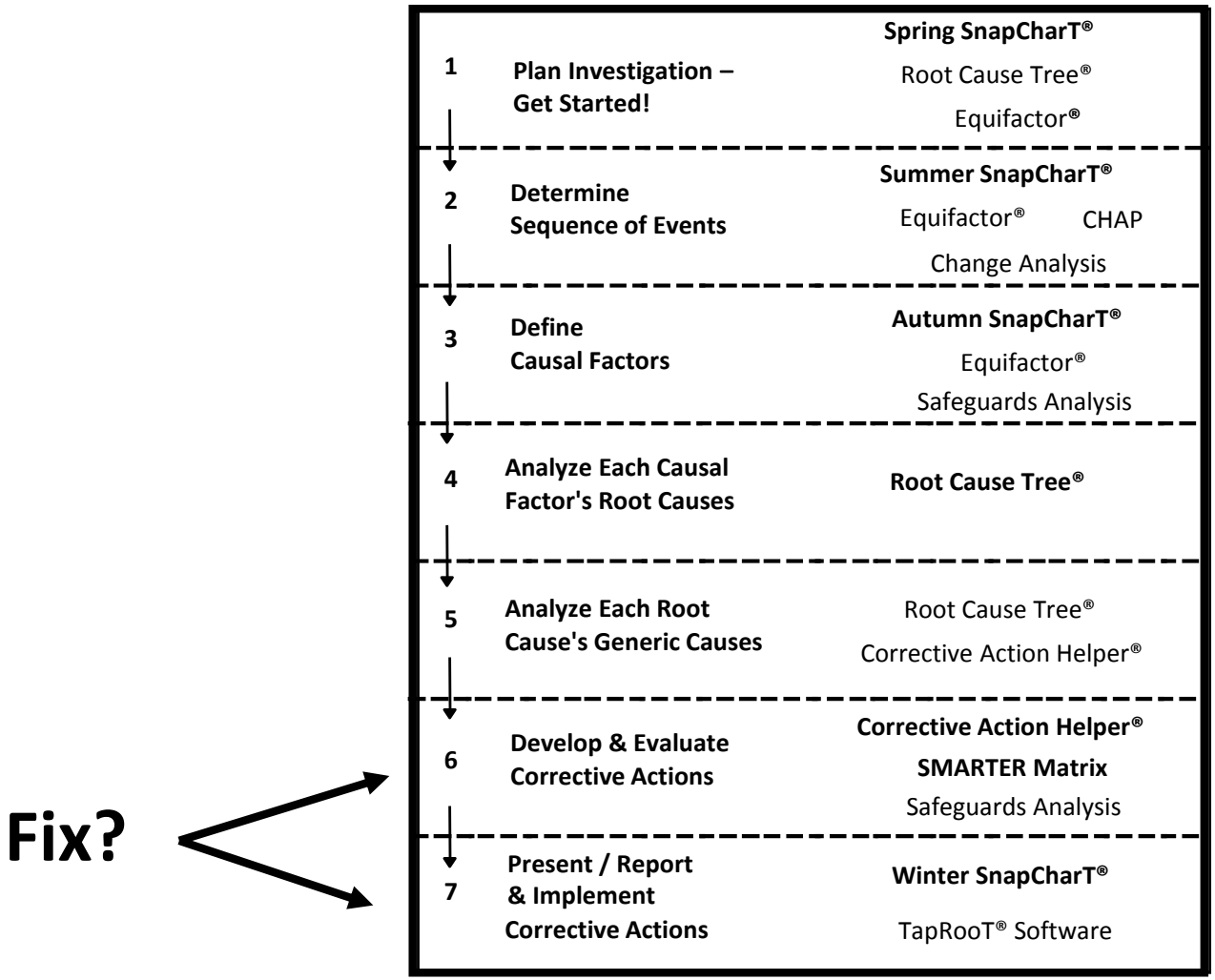
- Not easily read under operations and maintenance conditions.
- Obscured by other equipment.
- Not visible when moving a control.
- Of a color that blends in with the equipment background.
- Poor contrast between the letters and the label background.

Are the labels unclear or ambiguous? That is:

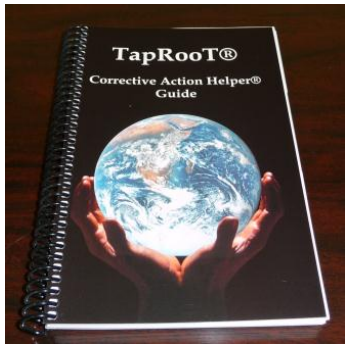
- Not located close to the items they identify.
- Do not use unique names, acronyms, abbreviations, and part/system numbers created using company or industry standard nomenclature.
- Inconsistent with the words used in the procedures.
- Not distinguishable between units in multi-unit plants.
- Discrete functional control positions (on/off) are not identified.
- Direction to move a control for a desired outcome (for example, increase/decrease) is not identified.

Corrective Action Helper®

TapRooT® 7-Step Process



Corrective Action Helper®



Corrective Action Helper®

Labels NI

Check:

You have decided that a lack of labels or warning signs or poor labels or signs on components or equipment that must be located, identified, maintained, or operated to complete the task(s) led to the problem.

Ideas:

1. You should consider recommending improved labeling.
2. If no labels are on components, valves, equipment, gauges, displays, controls, or other items that need to be located, identified, operated, or maintained, you should consider recommending that they be clearly and permanently labeled.
3. You need to be specific about the way that the items are labeled. To be effective, a label must be noticed, read, and understood. Often poor labels are either not noticed or are misunderstood. Therefore you should ensure that your labels are:
   a. Easy to recognize, see, and read. That is:
      - Of a color that stands out from the equipment background and that is easy to read. (Example: A white label with black printing on a dark blue piece of equipment.)
      - Not obscured by other equipment or the procedure user's hand during operation or work.
      - Uses an easy-to-read font using appropriate upper and lower case letters with characters that are large enough to see with less than perfect eyesight in the worst lighting that a procedure user is likely to encounter. In some cases easily recognized symbols might be better than words. You should also consider language barriers if plant personnel speak a variety of languages. In this case you may consider bilingual or multi-lingual labels.

   b. Clear and unambiguous. That is:
      - Near and obviously related to the item that it is labeling.
      - Includes a well understood name that is unique and is not just an acronym, abbreviation, or part/system number. For additional information on the naming of equipment so that the name is functionally significant, see the *Functional Naming Guide* available from System Improvements. Call (865) 539-2139.

1,000 foot view of Product Theft (from the Interactive Exercise)

#	Issue/ Task/ Activity	Potential Failure Mode	Potential Failure Effects	SEV X	CLASS	Potential Cause of Failures	OCC X	Current Controls	DET X	= RPN
1	Product Theft	Store Security failed to catch shoplifter				**These will be root causes that allowed the Causal Factor to Occur**		**This will end up being a Causal Factor**		
2	Product Theft									
3	Product Theft									
4	Product Theft									
5	Product Theft									

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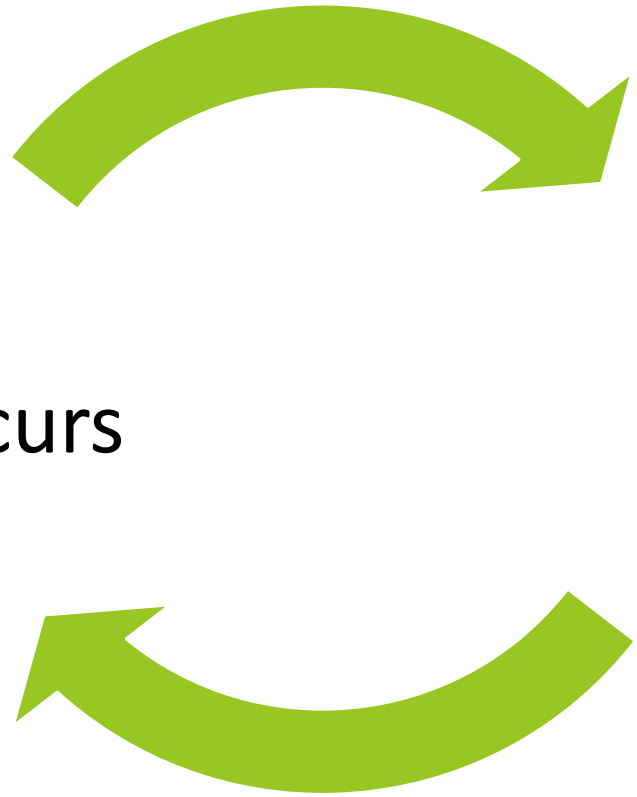
Once we find the root causes and implement good corrective actions, then you reassess your RPN for that task to ensure that you have either:

1. Reduced Occurrence

2. Improved Detectability

3. Reduced Severity if it occurs



Questions?

Join me and Rob Peter as we moderate in the Roundtable Session titled:

Discuss, Identify, Target and Mitigate your High At-Risk Business Issues

The goal being to moderate small teams to help you apply the FMEA tool you just learned. We can help you set up your action plan to take home and act on.

If you are stuck on issue that appears to have no root causes, we can also dig into it with my TapRooT® Process as needed.