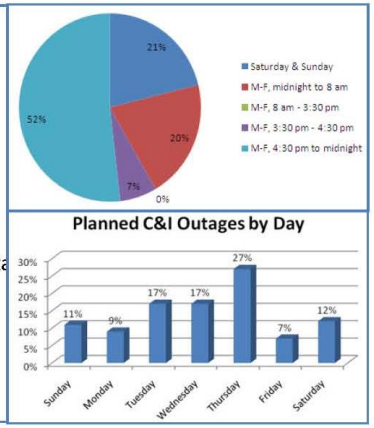
UC San Diego | Extension

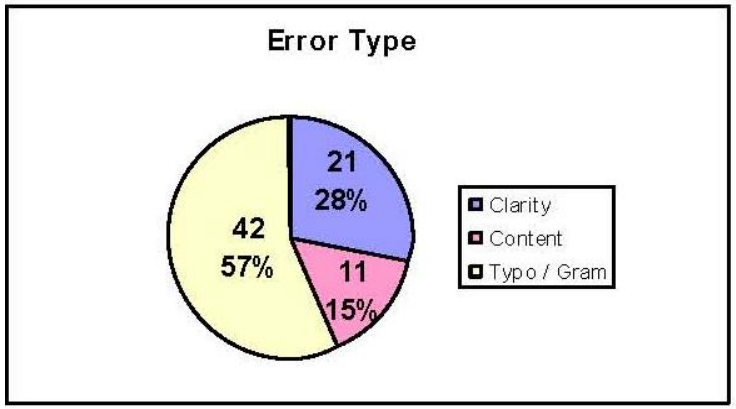
Theme: OPPD initiated Planned Outage Notification Process for small to mid-size C&I customers

Problem Statement: Performing planned C&I outages after-hours adds additional cost

Background:

- Corporate directive to reduce OT by 25% across OPPD
- Assumption that all customers prefer work done afterhours for OPPD driven outages
- Approximately $250,000 in Customer Convenience Overtime per year
- High amount of rest time
- $1265 per outage (based on $50/hr of OT)
  19 hours of OT per outage; 3.5 meals per outage
  3.9 hours of rest time per outage ; 2.2 hours of double time per outa
- Customers & Employees currently happy ☺
- Customers may not understand there is a cost associated with afterhours outages ☹





A3 Management

Lean Enterprise Program

UCSD Extension

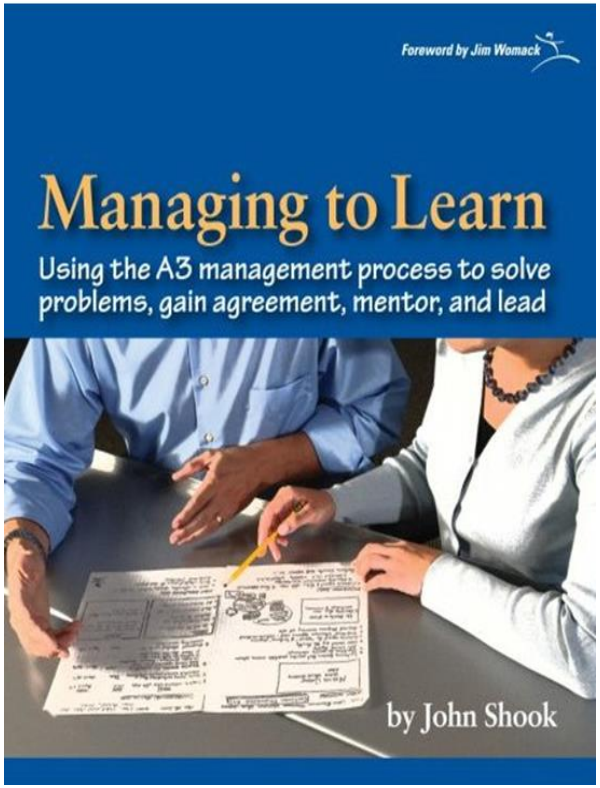
Instructor: Karen Martin

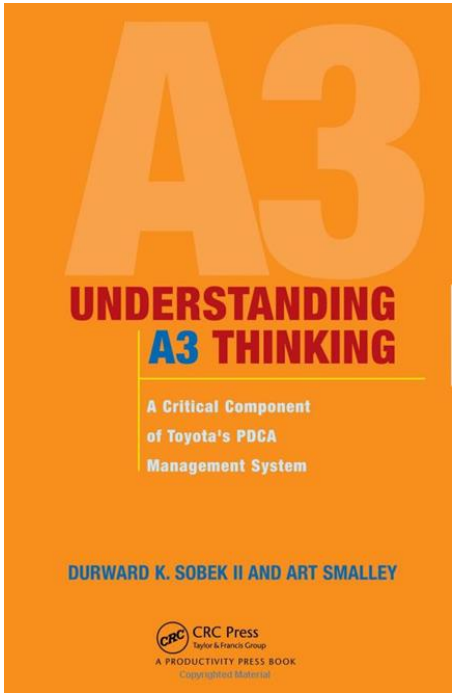
always something new®

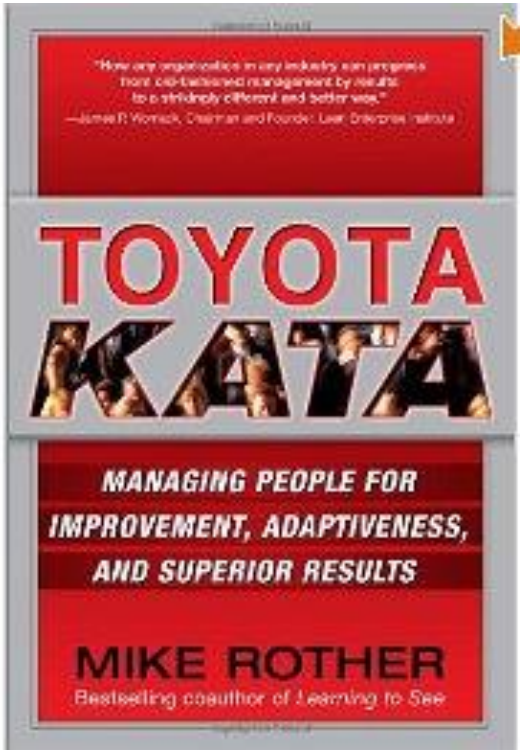
Learning Objectives

- You will learn:
  - The fundamentals of A3 problem-solving.
  - The A3 Report – purpose & common components.
  - Key root cause analysis tools.
  - Common problem-solving pitfalls.
  - How the A3 process shifts culture & develops the workforce.
  - Where the A3 fits into the Lean toolbox.

For Further Study



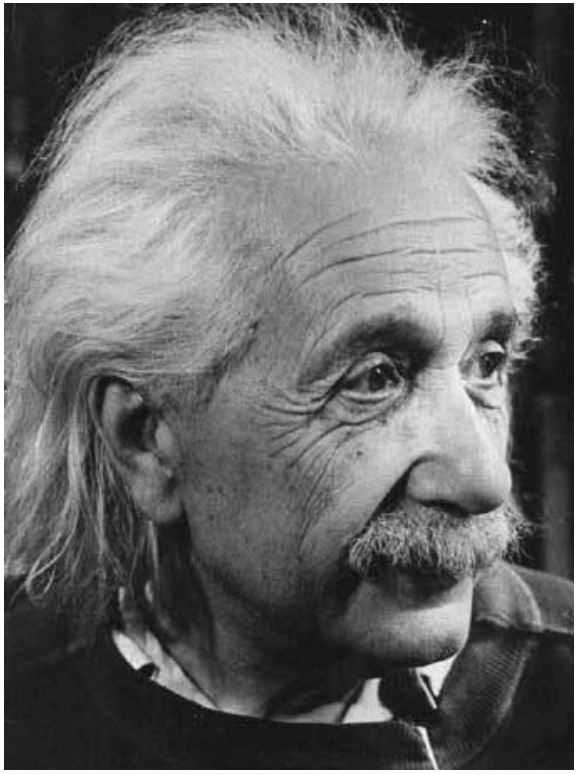




Why is problem-solving so challenging?

It takes a different kind of thinking to solve a problem than the kind of thinking that produced the problem.

-- Albert Einstein



What is A3?

- The core of Toyota's renowned management system.
- A structured method for applying the PDCA (plan-do-check-act) approach to problem-solving.
- International designation for 11 x 17" paper.

Sample A3 Report

Plan | **Do, Check, Act**

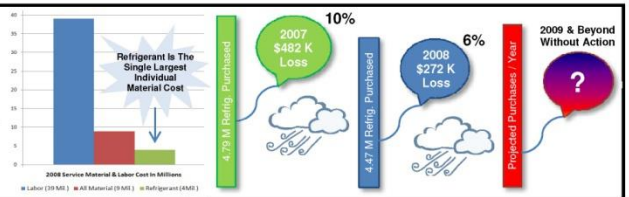
Theme: Flawed Refrigerant Control Processes (Service Department)

Owner: A-Team
Coach: Karen Martin

Date: 05-08-2009
Rev: 06

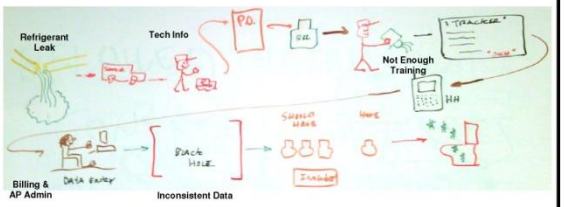
Background

- Refrigerant Cost Is The Second Single Highest Annual Cost To Labor
- Result In Excessive & Growing Annual Inventory Adjustments
- Additional Tech, Admin, Manager Labor
- State Has EPA, DOT Requirements (No Federal Risk From EPA)
- At Risk With Public Image



Current Condition

- Rolling Refrigerant Inventory at 119,408 Lbs.
- Current System For Auditing Refrigerant On Vans Only Used By 3 Branches
- Only 78 Techs out of 417 Audited = 19%
- Current Audit Takes 240 Minutes / Van
- Van Tracking Process Distributed With Minimal Site Training For Techs, Admins & Managers
- Single Van Audit Shows Errors Of Over 300 Lbs.
- Inaccurate System Data

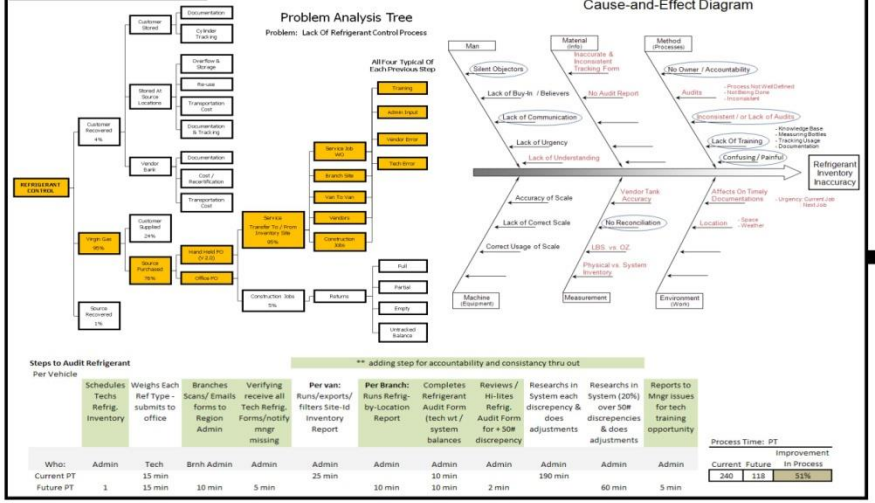


Target Condition / Measurable Objectives

- Refrigerant Adjustments / Write Offs Reduced to 2%
- 100% Of Branches Performing Quarterly Audits On All Service Inventory Sites
- Reduced Current Condition Audit Process To 104 Minutes

Year	Refrigerant Purchased	Improvement % Year To Year	Write Off "$"	Write Off "%"
		ACTUAL		
2007	4.79 Mil.		($481,965)	10.06%
2008	4.47 Mil.		($271,574)	6.07%
		PROJECTED GOALS		
2009	4.2 Mil.	23%	($210,000)	5%
2010	4.4 Mil.	37%	($132,000)	3%
2011	4.9 Mil.	26%	($98,000)	2%

Root Cause & Gap Analysis



Steps to Audit Refrigerant Per Vehicle

** adding step for accountability and consistancy thru out

	Schedules Techs Refrig. Inventory	Weighs Each Ref Type - submits to office	Branches Scans/ Emails forms to Region Admin	Verifying receive all Tech Refrig. Forms/notify mngr missing	Per van: Runs/exports/ filters Site-Id Inventory Report	Per Branch: Runs Refrig-by-Location Report	Completes Refrigerant Audit Form (tech wt / system balances	Reviews / Hi-lites Refrig. Audit Form for +50# discrepency	Researchs in System each discrepency & does adjustments	Researchs in System (20%) over 50# discrepencies & does adjustments	Reports to Mngr issues for tech training opportunity
Who:	Admin	Tech	Brnh Admin	Admin	Admin	Admin	Admin	Admin	Admin	Admin	Admin
Current PT		15 min			25 min		10 min		190 min		
Future PT	1	15 min	10 min	5 min		10 min	10 min	2 min		60 min	5 min

Process Time: PT

Current	Future	Improvement In Process
240	118	51%

Countermeasures / Implementation Plan

Task	Accountable	Due Date	% Cmplte		Complete Date
Improved Technician's Refrigerant Tracking form that includes directions	Hugh		100	25	04/17/09
			75	50	
Surveys done with Service Managers: cycle counting/auditing	Ramona/Shawn/ Bryan		100	25	04/20/09
			75	50	
Cycle count of refrigerant on 3 vans: using old and new form	Landon/Ramona		100	25	04/21/09
			75	50	
Surveys done with Service Admins/Dispatch on current auditing process & forms	Ramona		100	25	04/24/09
			75	50	
Technician Visual Aide on Refrigerant: types; cylinder wt gross/empty; charge orientation; Refrigerant Safety; Disposal /Weighing Procedures	Bryan / Hugh /Shawn		100	25	05/07/09
			75	50	
Refrigerant Control and Tracking section in the Tech Guide	Bryan		100	25	05/07/09
			75	50	
Selected Branch in each Region for Pilot Tracking Program -approved by Regional Director - 5 Site ID's for each Region	A-Team		100	25	05/01/09
			75	50	
Revised Current Existing Source Pallet Refrigerant Report for Auditing Purpose	IT - Ramona	05/08/09	100	25	
			75	50	
Created Refrigerant Audit Form per Region	Ramona / Hugh	05/15/09	100	25	
			75	50	
Select Admins for each Region for tracking and auditing function	Regional Director /	05/20/09	100	25	
			75	50	
Created Detailed Refrigerant Control Procedures	Ramona	05/21/09	100	25	
			75	50	
Determine Owner of Refrigerant Tracking Process	TBD / owner	05/21/09	100	25	
			75	50	
Training Program for Service Managers and Techs for cycle count - 'Go-To-Meeting' : 1st Phase: managers in Pilot Program 2nd Phase: all remaining mngrs.	A-Team	05/27/09	100	25	
			75	50	
Training Program for Admins for Auditing Process - 'Go-To-Meeting' : 1st Phase: admins in Pilot Program 2nd Phase: all remaining admins	A-Team	05/27/09	100	25	
			75	50	
Individual Branch Performance Score Card for Refrigerant of Write-Offs	Shawn	06/01/09	100	25	
			75	50	
Run Pilot Program for 3 months; track progress; reports to Regions/Branches> start 6-1-09	1-A-Team member per region	09/01/09	100	25	
			75	50	
Company Wide Implementation	TBD / owner	09/28/09	100	25	
			75	50	
Exception Reports for Managers/Admin: 1) >150# on trucks and Negative Balances 2) $ per Lb. discrepency on PO's per	IT / Shawn/Ramona	07/01/09	100	25	
			75	50	
Hand Held 2.0v - Purchases of Refrigerant thru Hand Held to eliminate 80% PO/Vendor/Admin error >> cycle count;	IT / A-Team	TBD	100	25	
			75	50	

Effect Confirmation

Task	Accountability	Frequency/Due Date
• Quarterly monitoring and adjustment	TBD - Owner	Through 10-15-2010
• Annual write off at end of fiscal year, > 3%	Regional Director	10-15-2010
• Branch audit compliance from 10% to 100%	Regional Director	End Q1-2010
• Technician compliance from 19% to 100%	Service Manager	End Q1-2010
• Audit accuracy from 0% to 98%	TBD - Owner	End Q1-2010
• Process monitoring	TBD - Owner	10-1-2010

Follow-up Actions

Task	Accountability	Frequency
• Monitoring all processes and inventory variances	TBD- Owner	Quarterly
• Update Metrics for Branch Score Card	TBD- Owner	Quarterly

The A3 Report

- A concise “story board” that reflects the problem solver’s discoveries and thought process along the way.
- A “living document” that reflects the iterative nature of problem-solving and enables organizational learning.
- Highly visual – graphics, charts, maps, drawings, etc.
- “Making it pretty” isn’t the goal.
  - Hand drawn A3s are honored at Toyota.
- Neither the format nor the specific sections are set in stone.
  - Beware of using “templates.”
  - Serve the iterative nature of the problem-solving process.

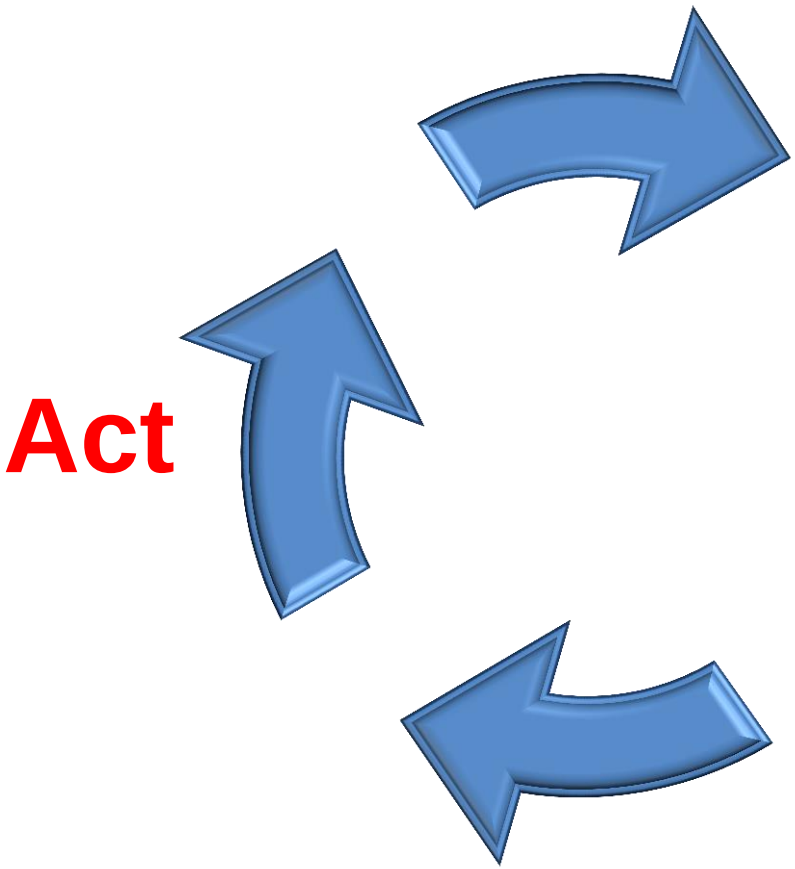
Benefits of the A3

- Creates consistency in how the organization goes about solving problems.
- Forces a holistic/comprehensive view of the problem and solutions; requires collaborative problem-solving.
  - Reduction in "silo-ism"
- Thorough root cause analyses reduce the risk of "band-aid" solutions.
- Ownership role reduces risk of "it's everything else's problem."

Benefits of the A3 (continued)

- Stimulates data-driven decisions.
- Fairness and accountability replace blame and deceit.
- Transparency re: problems spawns a commitment to action.
- Develops deep organizational capabilities.

Deming's PDCA Cycle



Problem-Solving Steps

At least 50% of the total time

Plan

Do

Check

Act

1. Identify the problem
2. Explore the problem
   - What's the true root cause?
3. Consider potential solutions
   - Hypothesize
4. Test solutions
   - Confirm hypothesis
5. Implement solution(s)
6. Measure results
   - Did the hypothesis prove out?
7. Adjust as needed

Common Components of the A3 Report

Plan

Do, Check, Act

Theme: _____

Owner: _____

Background

Current Condition

Target Condition / Measurable Objectives

Root Cause & Gap Analysis

Countermeasures / Implementation Plan

Effect Confirmation

Follow-up Actions

Common Components of the A3 Report

Plan → Do, Check, Act

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The A3 Process: Define the Theme

- What is our area of focus?
- Articulating the right theme will force you to focus on the right problem.
- Should be closely aligned with organizational goals to avoid spending limited time and resources on trivial issues.
- Avoid judging or offering solutions.
- Discussion: Sample A3s

Common Components of the A3 Report

Plan → Do, Check, Act

Theme: _____ Owner: _____

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A3 Roles & Responsibilities

- Problem owner
  - Individual who's accountable both for the results and the ***process*** for achieving results.
  - Problem owners have the ***authority*** to engage anyone needed and the ***responsibility*** to engage all relevant parties.
- Coach
  - Person teaching the owner the problem-solving process.
  - Typically the owner's direct supervisor.

Common Components of the A3 Report

Plan → **Do, Check, Act**

Theme: "What is our area of focus?"

Owner: Person accountable for results.

Background
- Problem statement
- Context - why is this a problem? (visual)

Current Condition
- Diagram of current situation or process
- What about it is not ideal?
- Extent of the problem (metrics)

Target Condition / Measurable Objectives
- Diagram of desired state
- Measurable targets – how will we know that the improvement has been successful?

Root Cause & Gap Analysis
- Graphical depiction of the most likely direct (root) causes

Countermeasures / Implementation Plan
- What?
- Who?
- When?
- Where? (if relevant)

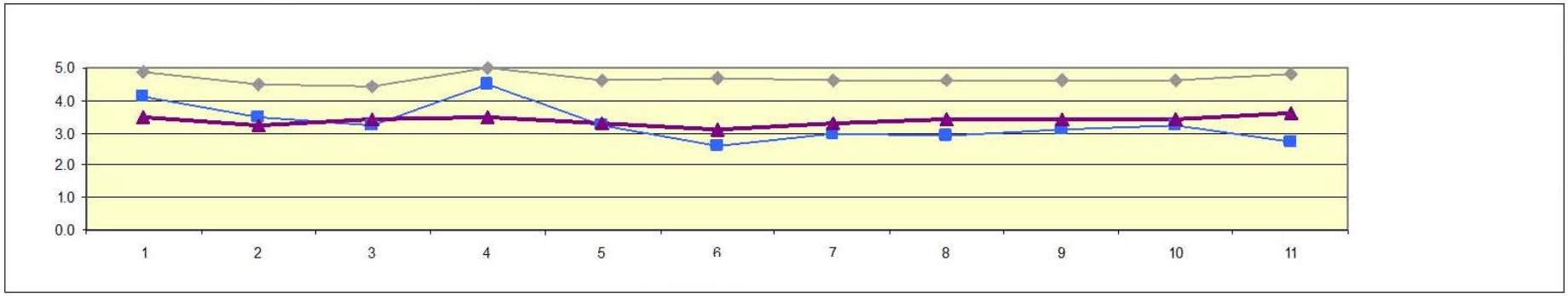
Effect Confirmation
- What measurable results did the solution achieve (or will be measured to verify effectiveness)?
- Who's responsible for ongoing measurement?

Follow-up Actions
- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

The A3 Process: Background

- Include a problem statement
  - State the problem; do not offer a solution
- Background – information for understanding the importance and extent of the problem.
  - How does the problem relate to company goals?
  - How was the problem discovered? How long has it been a problem?
  - What evidence demonstrates that there's a problem?
  - What degree of variation exists currently compared to a previous state?
- Tailor information for the audience.
- Present information visually.
- "Sell" the need for improvement; create a sense of urgency.

Background Sections



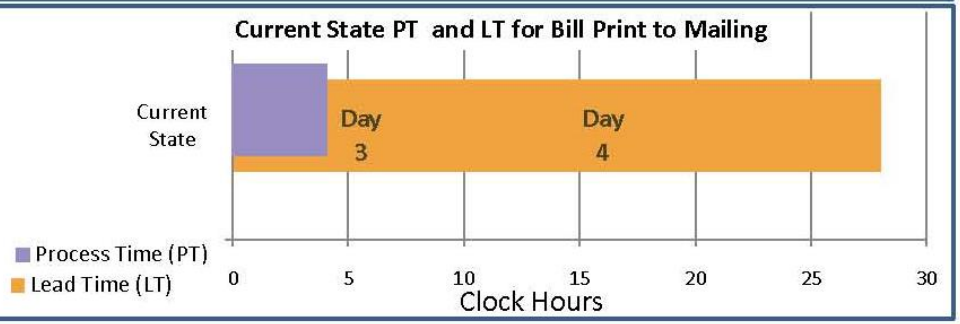
Gray – highest industry quality scores
Purple – average industry quality scores (benchmark)
Blue – client quality scores

Background Sections

Theme: Customer Billing & Distribution

Background

- Process and lead time allowances from bill print-to-bill mailing are excessive
- Takes up to 1 ½ days for bill print-to-post office mailing
- Paper bills require too much handling time



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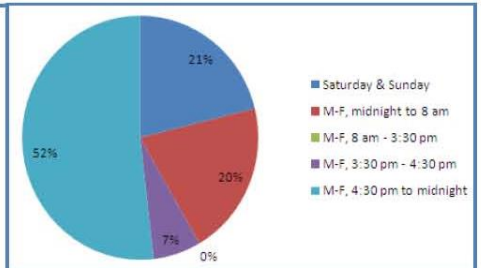

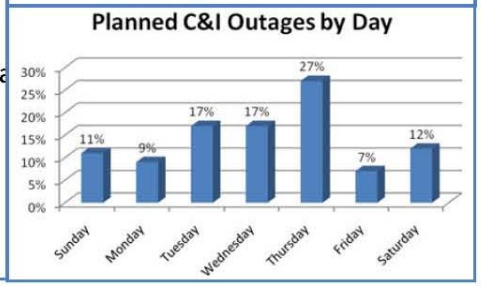

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Target Condition / Measurable Objectives

- Diagram of desired state
- Measurable targets – how will we know that the improvement has been successful?

Root Cause & Gap Analysis

- Graphical depiction of the most likely direct (root) causes

Countermeasures / Implementation Plan

- What?
- Who?
- When?
- Where? (if relevant)

Effect Confirmation

- What measurable results did the solution achieve (or will be measured to verify effectiveness)?
- Who's responsible for ongoing measurement?

Follow-up Actions

- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

The A3 Process: Current Condition

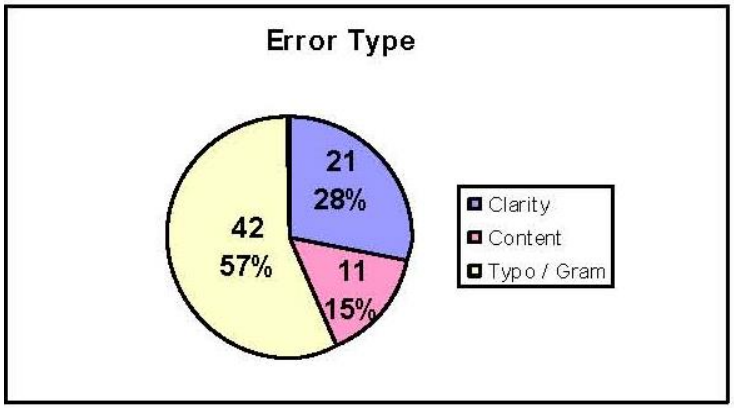
- Two primary goals
  - Provide the audience with an overview of the current process.
  - Demonstrate a fact-based understanding of the problem.
- Content
  - Provide a visual overview of the current state process or system (strong use of charts, maps, graphs, tables, photos, etc.).
  - Highlight key factors in the current state.
  - Provide evidence of the problem (data)
    - Avoid qualitative opinions.
  - Avoid suggesting solutions or judging.

Current State Documentation Options

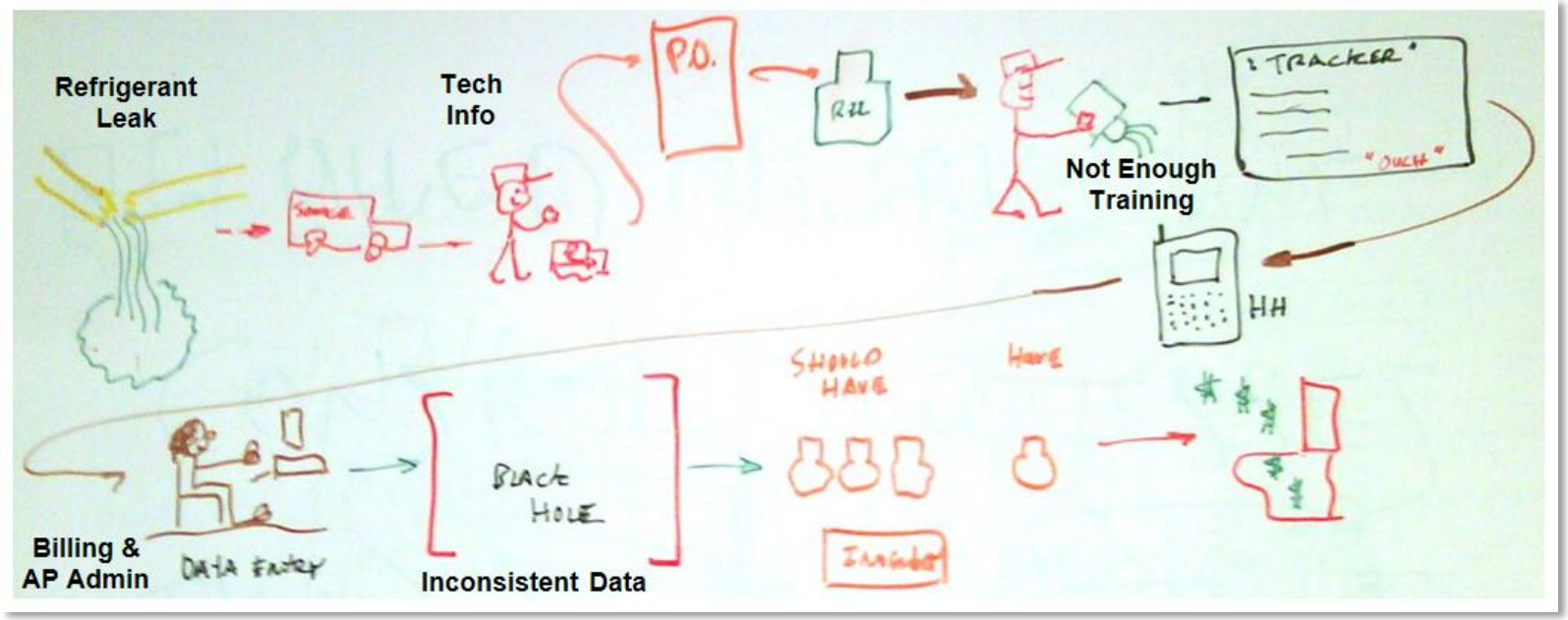
- Go to the gemba! – OBSERVE
- Performance data
- Spaghetti diagrams
- Documentation / job aid review
- Videotape / photos
- Worker interviews
- Work samples
- Mapping
  - Value Stream Maps (VSM) - strategic
  - Metrics-Based Process Mapping (MBPM) – tactical

Sample A3s – Current State

Poor correspondence quality



Missing inventory resulting in write-offs



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Follow-up Actions

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The A3 Report: Targets / Measurable Objectives

- Purpose
  - How will we know that the improvement has been successful?
  - What standard or basis of comparison will be used?
- Pointers
  - Use measurable objectives when possible.
  - Consider how data will be collected and shared to evaluate the effectiveness of the implemented solution(s).

I.T.R. Process
Projected Summary Metrics
Customer Request to Close-Out

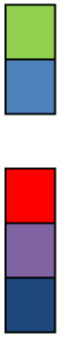
Metric	Current State	Projected Future State	Project % Improvement
Timeline Lead Time	36 Days	16.5 Days	54%
Timeline Process Time	5.75 Hrs	4 Hrs	30%
% Activity	2%	3%	52%
Rolled First Pass Yield	21%	69%	229%
Total Process Time	14.75 Hrs	5 Hrs	66%
Labor Requirements	2.0 FTEs	1.7 FTEs	15%
Freed Capacity *	-	.23 FTEs	-

*** Freed Capacity when rolled out to all Software I.T.Rs ≈ 6 FTEs**

Sample A3
Target Condition / Measurable Objectives

- Refrigerant Adjustments / Write Offs Reduced To X%

Year	Refrigerant Purchased	Improvement % Year To Year	Write Off "$"	Write Off "%"
		ACTUAL		
2007	Mil.			
2008	Mil.			
		PROJECTED GOALS		
2009	Mil.	23%		
2010	Mil.	37%		
2011	Mil.	26%		



- 100% Of Branches Performing Quarterly Audits On All Service Inventory Sites.

- Reduce Audit Process from monthly at 226 minutes to quarterly at 104 Minutes.

Cost of Audits
Site per year

Today		Tomorrow
226 min / Site	Audit Time	104 min / Site
X 12	Audit's per year	X 4
2712 min	Minutes	416 min
45.2 hr	Hours	6.93 hr
X $22.00	Admin Cost	X $22.00
$994	Approx. Audit Cost / Site	**$153**

Common Components of the A3 Report

Plan → **Do, Check, Act**

Theme: "What is our area of focus?"

Owner: Person accountable for results.

Background

- Problem statement
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Current Condition

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Root Cause & Gap Analysis

- Graphical depiction of the most likely direct (root) causes

Countermeasures / Implementation Plan

- What?
- Who?
- When?
- Where? (if relevant)

Effect Confirmation

- What measurable results did the solution achieve (or will be measured to verify effectiveness)?
- Who's responsible for ongoing measurement?

Follow-up Actions

- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

The A3 Report: Root Cause Analysis

- Show the root cause of the problem(s) identified in the current state.
- Separate symptoms and opinions from cause-and-effect determination.
- Consider which techniques will be most useful in gaining root cause insight.
- Identify add'l tests, if needed, to establish level of certainty re: cause and effect.
- Summarize your findings visually.

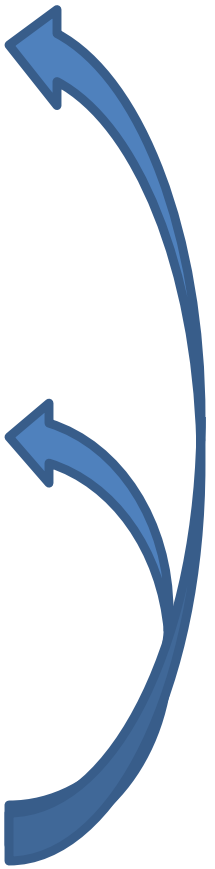
Root Cause Analysis

Root Cause Analysis (RCA)

- RCA is necessary to:
  - Avoid jumping to conclusions.
  - Avoid creating “band-aid” fixes (addressing only the symptoms).
  - Select proper countermeasures.
  - Design and implement lasting solutions that truly eliminate the problem.

Root Cause Analysis Tools

- Simple problems
  - Five Why's
  - Problem Analysis Tree
- More complex problems
  - Brainstorm causes (fishbone)
  - Tally frequency of most likely causes (check sheet)
  - Identify relevant few (Pareto analysis) for countermeasure development



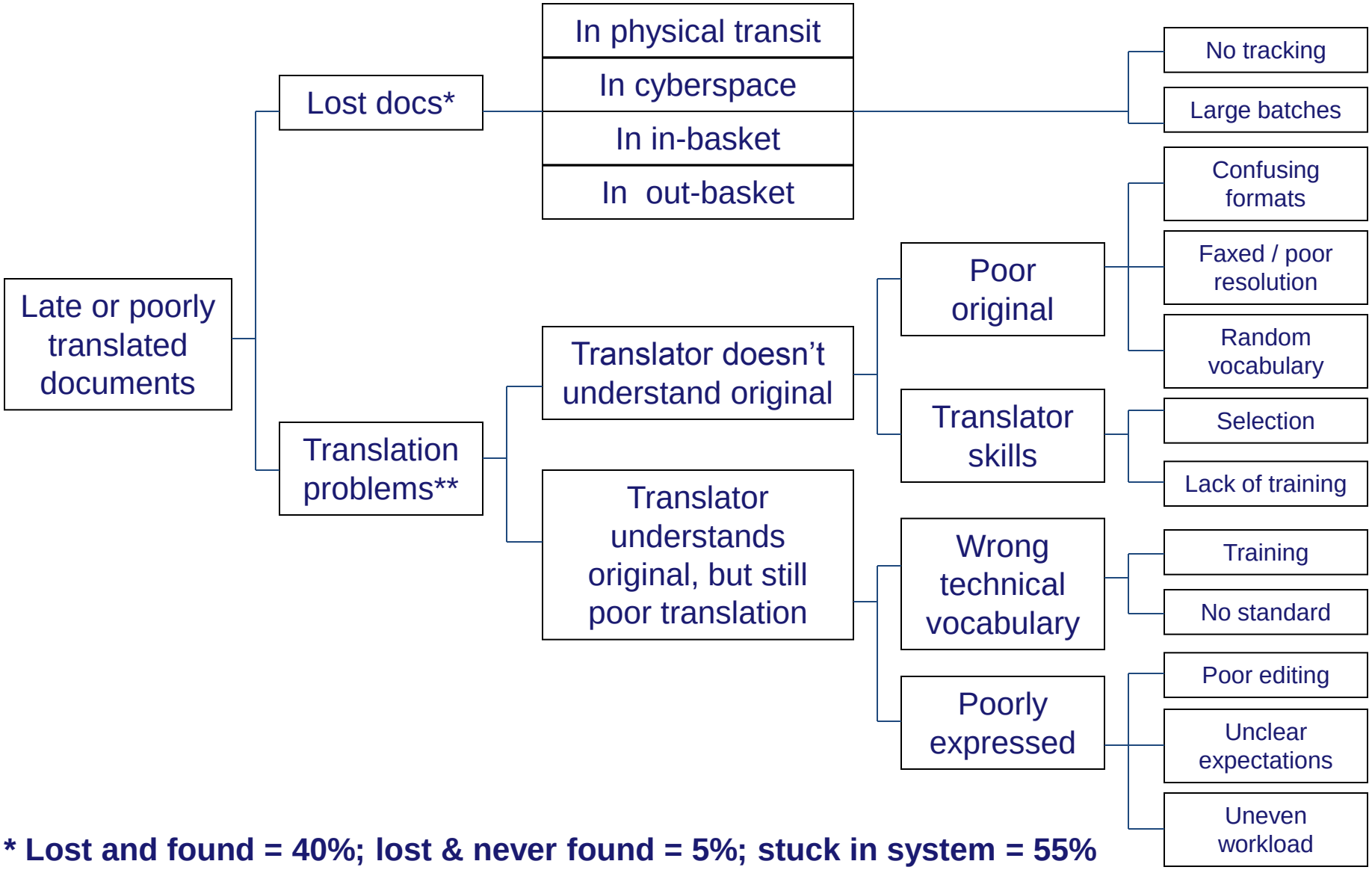
Five Why's Example

Problem: Report is taking too much of an employee's time; team questions whether the report is needed

1. Why is the error report being prepared?
   - My supervisor told me to.
2. Supervisor – Why are you asking for this report?
   - One of the standard reports to be prepared per my predecessor – I have yet to determine its usage.
3. Predecessor – Why did you initiate this report?
   - Report was required in the past because personnel in order entry were making data input errors.
4. Data entry – Why were orders being input with errors?
   - Orders received via fax were blurry and hard to read.
5. Data entry - Why were the fax orders hard to read?
   - Fax machine was old and of low quality. It was replaced 10 months ago and errors no longer are occurring.

Problem Analysis Tree

Problem: Documents are not being translated well and on time



*** Lost and found = 40%; lost & never found = 5%; stuck in system = 55%**

**** Rework on over 50% of documents**

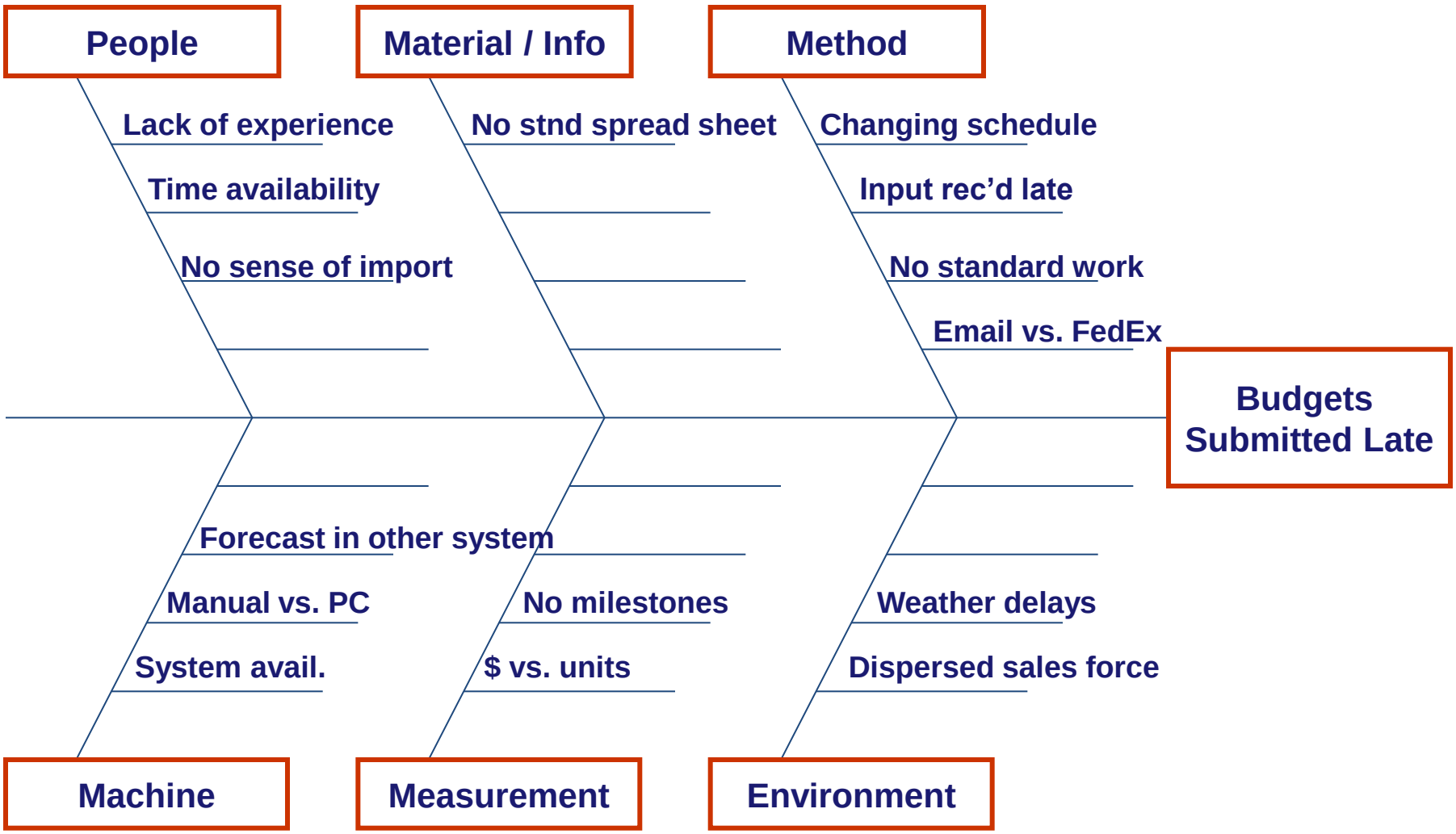
Cause-and-Effect Diagram
(aka Fishbone, Ishikawa)

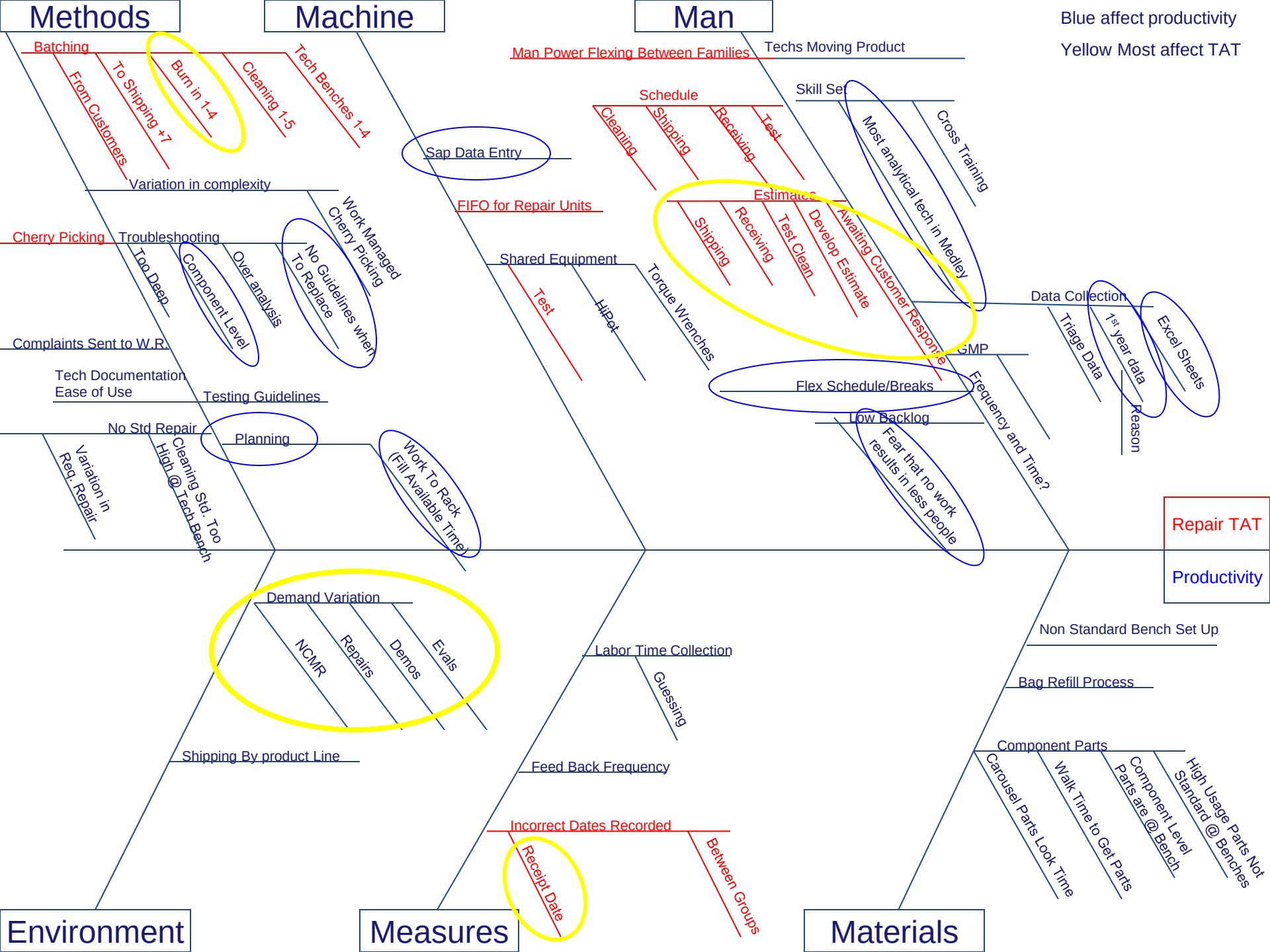
- Brainstorming tool used to identify most likely causes for an undesirable effect
- Explores potential causes in 6 categories (6 M's):
  - People ("Man")
  - Material/Information - Inputs used in the process
  - Method - Procedures, work instructions, processes
  - Machine - Equipment, computers, tools, supplies
  - Measurement - Techniques used for assessing the quality/quantity of work, including inspection
  - Environment ("Mother Nature") - External & internal
- Use other categories if appropriate

Cause-and-Effect Diagram (continued)

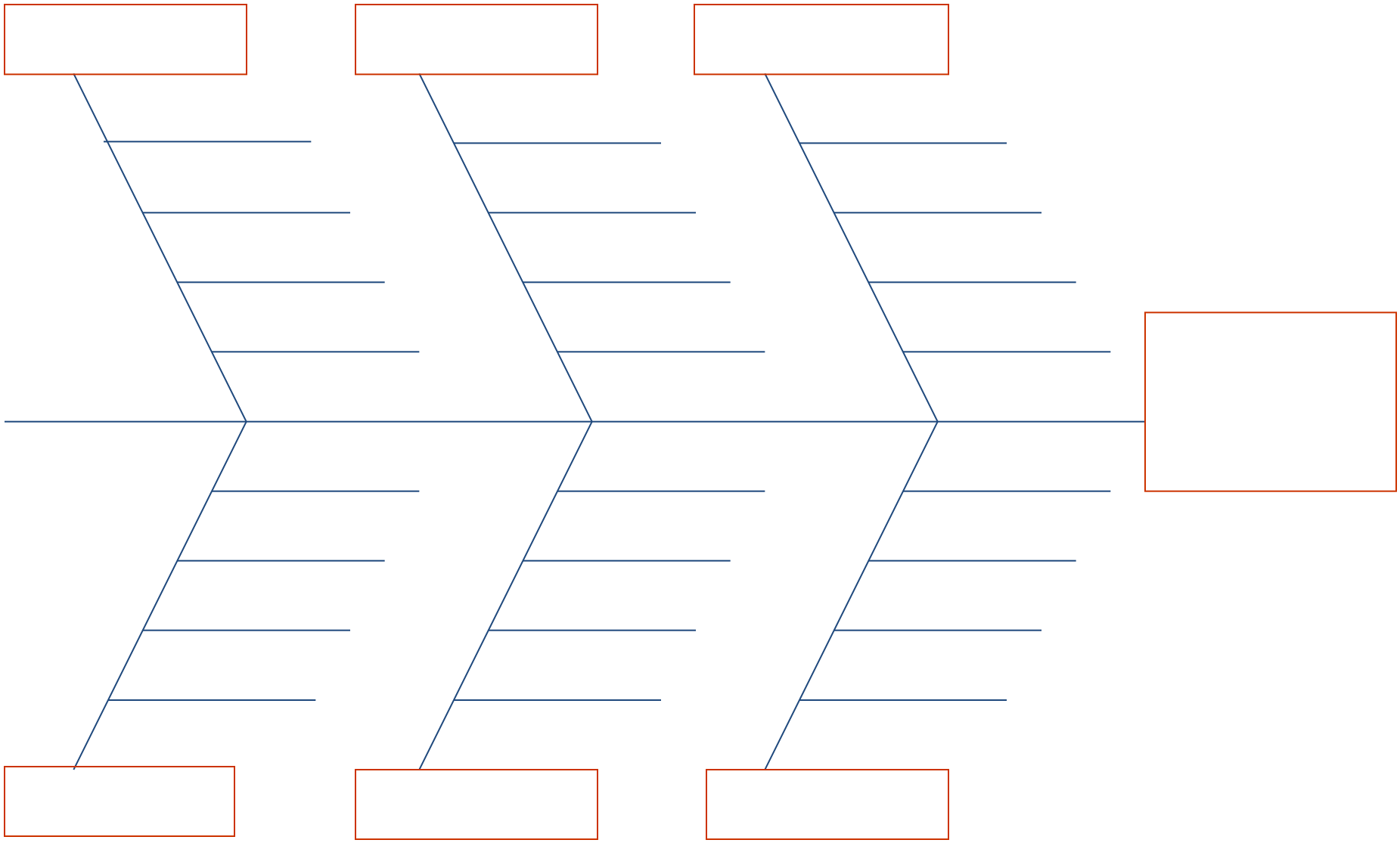
- Effective brainstorming tool
  - Forces teams to consider *all* possible causes
- Decreases the likelihood that something is being overlooked
- Shows us the possible causes, but not how much each contributes, if at all, to the problem
- Does not provide solutions / countermeasures

Cause-and-Effect Diagram




Blue affect productivity
Yellow Most affect TAT
Methods
Machine
Man
Environment
Measures
Materials
Repair TAT
Productivity
Batching
From Customers
To Shipping +7
Burn in 1-4
Cleaning 1-5
Tech Benches 1-4
Variation in complexity
Cherry Picking
Troubleshooting
Too Deep
Component Level
Over analysis
No Guidelines when To Replace
Work Managed Cherry Picking
Complaints Sent to W.R.
Tech Documentation Ease of Use
Testing Guidelines
No Std Repair
Planning
Variation in Req. Repair
Cleaning Std. Too High @ Tech Bench
Work To Rack (Fill Available Time)
Sap Data Entry
FIFO for Repair Units
Shared Equipment
Test
HiPot
Torque Wrenches
Man Power Flexing Between Families
Techs Moving Product
Schedule
Cleaning
Shipping
Receiving
Test
Skill Set
Most analytical tech in Medley
Cross Training
Estimates
Shipping
Receiving
Test Clean
Develop Estimate
Awaiting Customer Response
Data Collection
Triage Data
1st year data
Excel Sheets
Reason
GMP
Flex Schedule/Breaks
Frequency and Time?
Low Backlog
Fear that no work results in less people
Demand Variation
NCMR
Repairs
Demos
Evals
Shipping By product Line
Labor Time Collection
Guessing
Feed Back Frequency
Incorrect Dates Recorded
Receipt Date
Between Groups
Non Standard Bench Set Up
Bag Refill Process
Component Parts
Carousel Parts Look Time
Walk Time to Get Parts
Component Level Parts are @ Bench
High Usage Parts Not Standard @ Benches

Cause-and-Effect Activity



Check Sheets

- Help collect and record process data in an organized way (how often are certain events occurring?)
- Provides factual data to help analyze process (transition from subjective to objective)
- Detects patterns
- Includes “likely candidates” from Cause-and-Effect Diagram (the relevant few)
- Basis for Pareto Analysis
- NOTE: Make it easy & collect data for limited period of time only

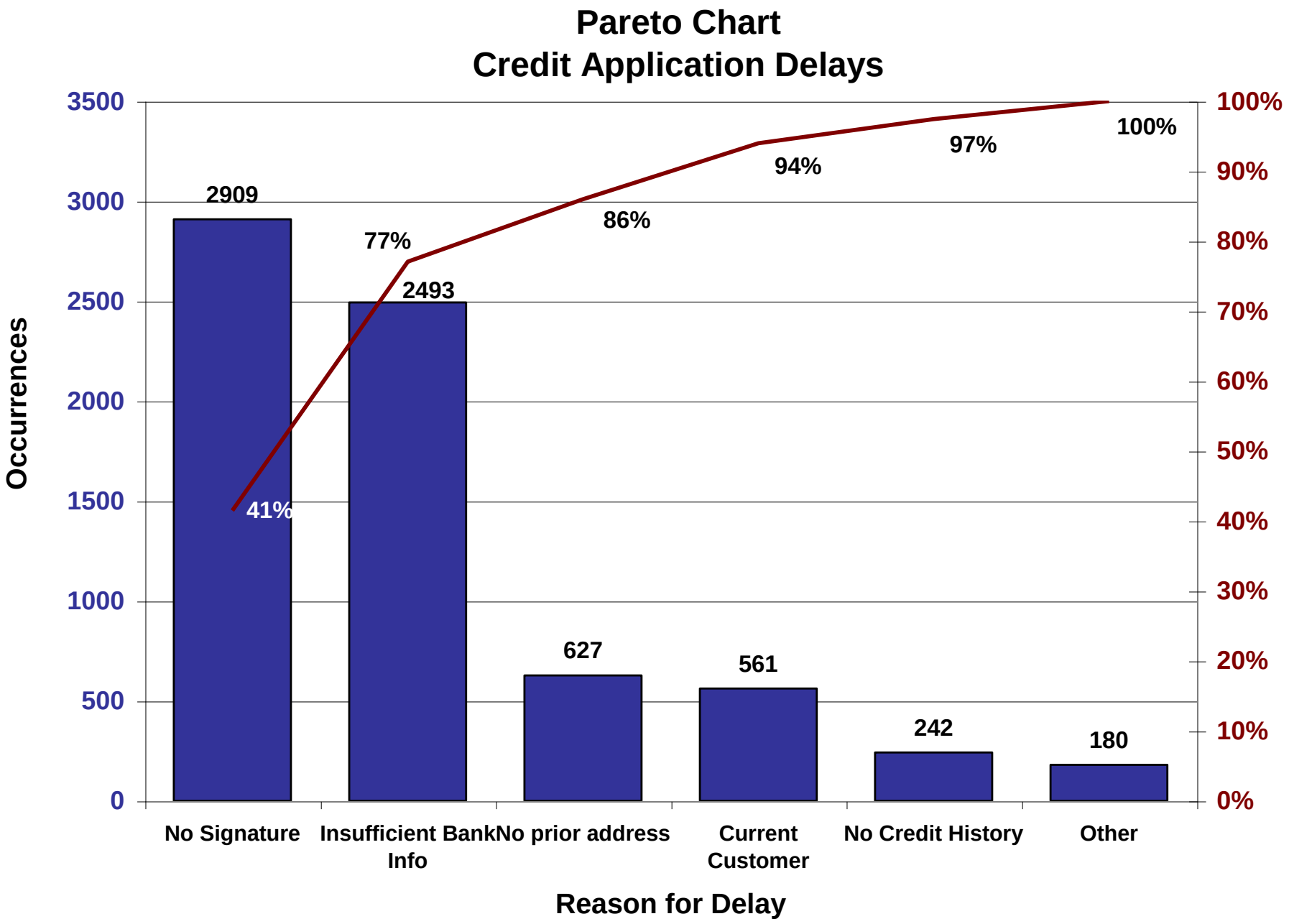
Root Cause Analysis: Late Shipments

Check Sheets Quantify Occurrences

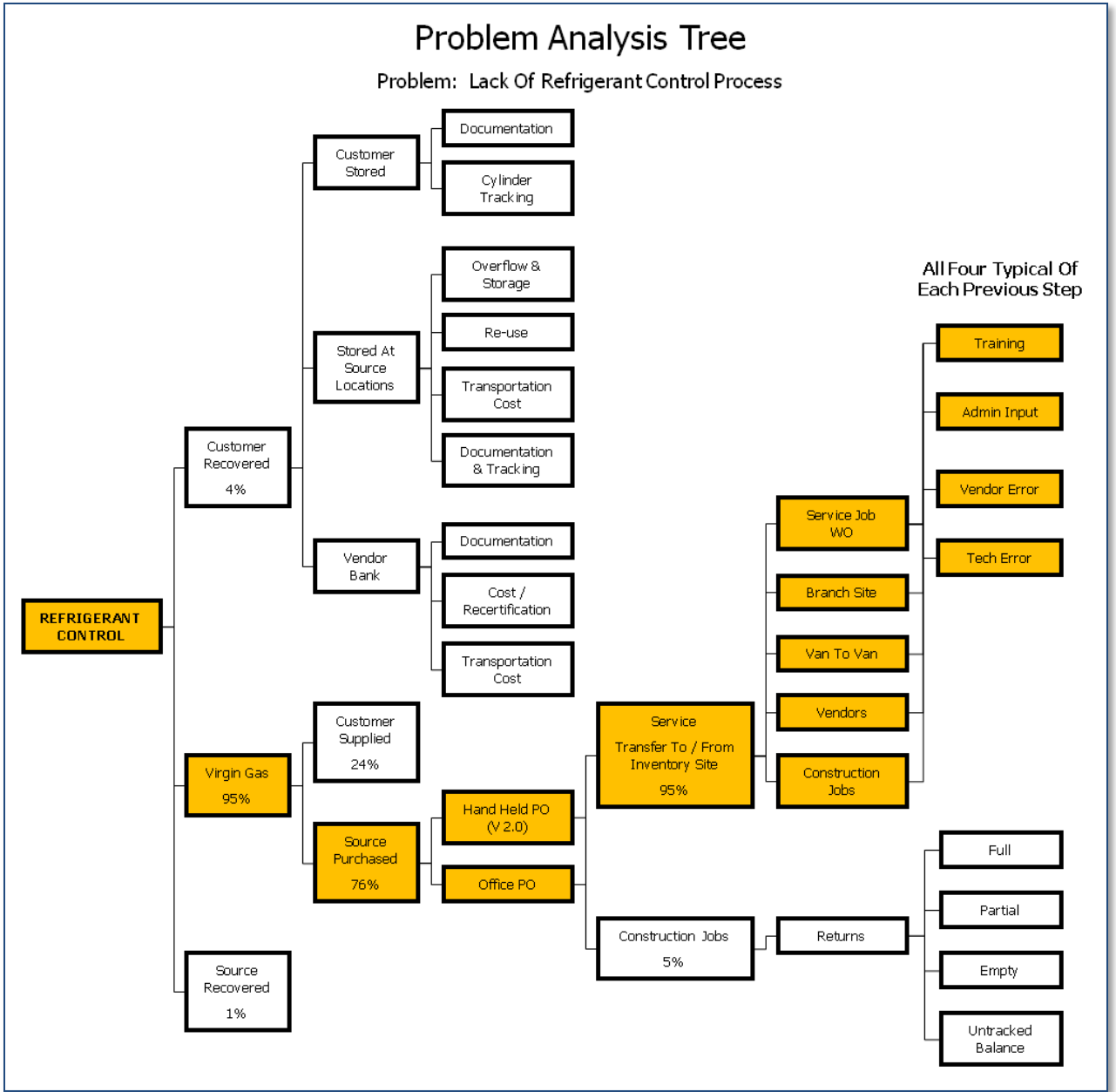
Reason	Tally						
Material shortage	IIIII	II					
Quality issue requiring rework	IIIII						
Staffing/absenteeism	III						
Order entry error	IIIII	IIIII					
Changing customer requirements w/ no adjustment to expected delivery	IIIII	IIIII	III				
Equipment failure	I						

Pareto Analysis

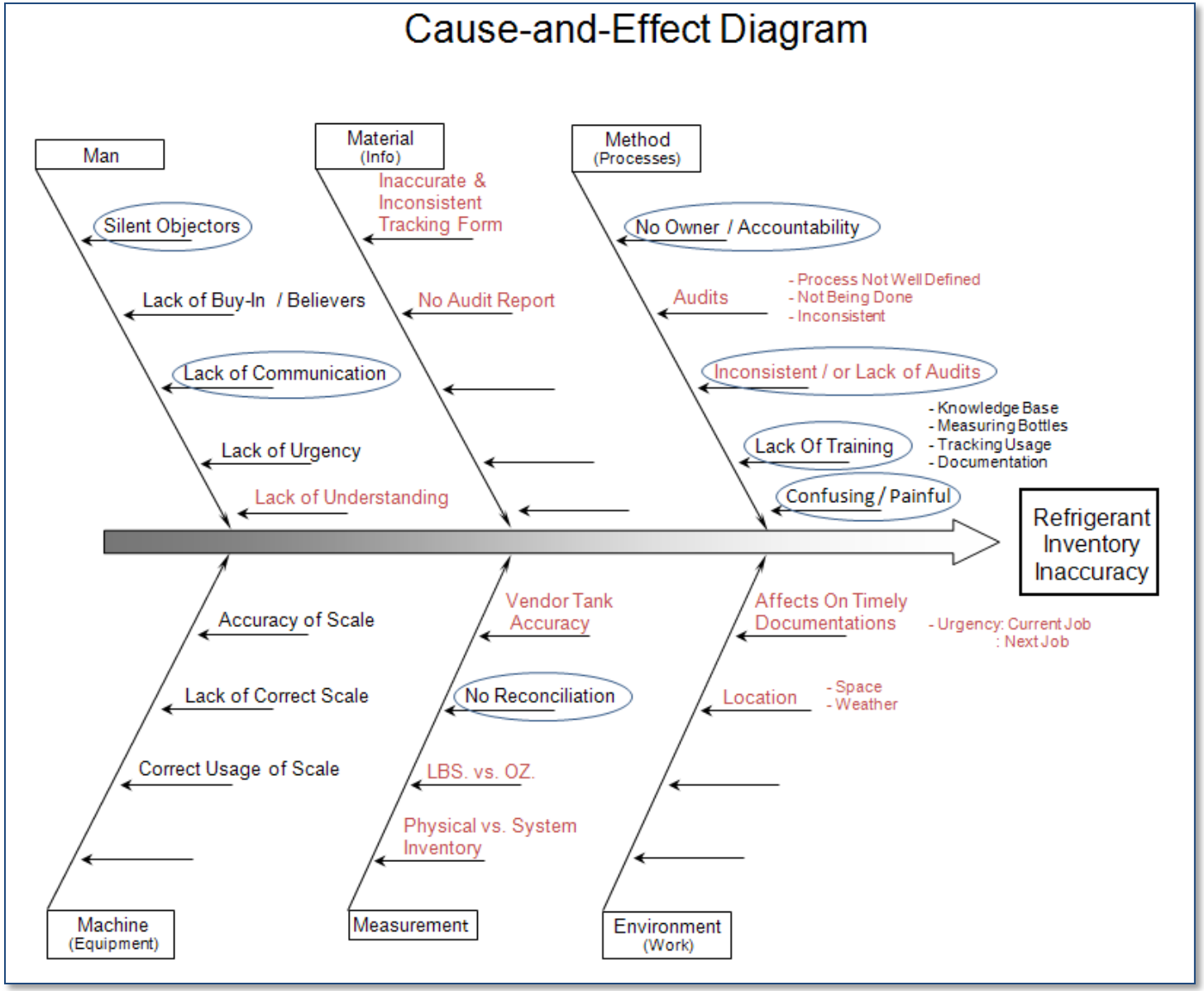
- Named after Wilfredo Pareto (18th century Italian economist/statistician) who discovered the 80-20 principle.
  - 20% of the people held 80% of the wealth
- Focuses our attention on the VITAL FEW issues that have the greatest impact to avoid spending energy on the TRIVIAL MANY.
- A type of bar graph that displays information/data in order of significance.
- A visual aid for defining & ***prioritizing*** problems.


Pareto Chart
Credit Application Delays
Occurrences
3500
3000
2500
2000
1500
1000
500
0
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2909
2493
627
561
242
180
41%
77%
86%
94%
97%
100%
No Signature
Insufficient Bank Info
No prior address
Current Customer
No Credit History
Other
Reason for Delay

Sample A3
Root Cause & Gap Analysis



Sample A3
Root Cause & Gap Analysis



Class Activity

Begin performing root cause analysis for your class project (or determine which tools are relevant)

15 mins to work

Nailing the left side of the A3 report is the most important element in the entire process.

Left Side Reminders

- Background
  - Need to ***quantify*** the problem to reduce subjective / emotional responses
    - Financial
    - Labor effort (which can be monetized)
    - Lead time / responsiveness (which can be monetized)
    - Market share
    - Compliance-related
  - Problem definition – proper scoping is vital!
    - Recommendation: Include one very specific problem statement in background section.

Left Side Reminders (continued)

- Target Condition / Desired state
  - Targeted performance metric, not the solution!
  - Must include measurable objectives
    - Include both % improvement and the raw numbers (from what to what)
- Root cause
  - You cannot solve a problem without knowing it's root cause!
  - Avoid making assumptions - "Do you ***think*** or do you ***know***?"
  - When multiple root causes exist, ***quantify*** and select the relevant few for countermeasure development.

Left Side Reminders (continued)

- Displaying information visually aids ***tremendously*** in the absorption rate of the information
  - Pie charts, trend charts, graphs, bar diagrams
  - Drawings
  - Photographs
  - Problem trees, fishbone diagrams, Pareto charts
  - Process maps
  - Representations of the people involved
  - Anything that communicates information more quickly and effectively than words

Common Components of the A3 Report

Plan → Do, Check, Act

Theme: _____ Owner: _____

Background

Current Condition

Target Condition / Measurable Objectives

Root Cause & Gap Analysis

Countermeasures / Implementation Plan

Effect Confirmation

Follow-up Actions

Common Components of the A3 Report

Plan → **Do, Check, Act**

Theme: "What is our area of focus?"

Owner: Person accountable for results.

Background

- Problem statement
- Context - why is this a problem?

Current Condition

- Diagram of current situation or process
- What about it is not ideal?
- Extent of the problem (metrics)

Target Condition / Measurable Objectives

- Diagram of desired state
- Measurable targets – how will we know that the improvement has been successful?

Root Cause & Gap Analysis

- Graphical depiction of the most likely direct (root) causes

Countermeasures / Implementation Plan

- What?
- Who?
- When?
- Where? (if relevant)

Effect Confirmation

- What measurable results did the solution achieve (or will be measured to verify effectiveness)?
- Who's responsible for ongoing measurement?

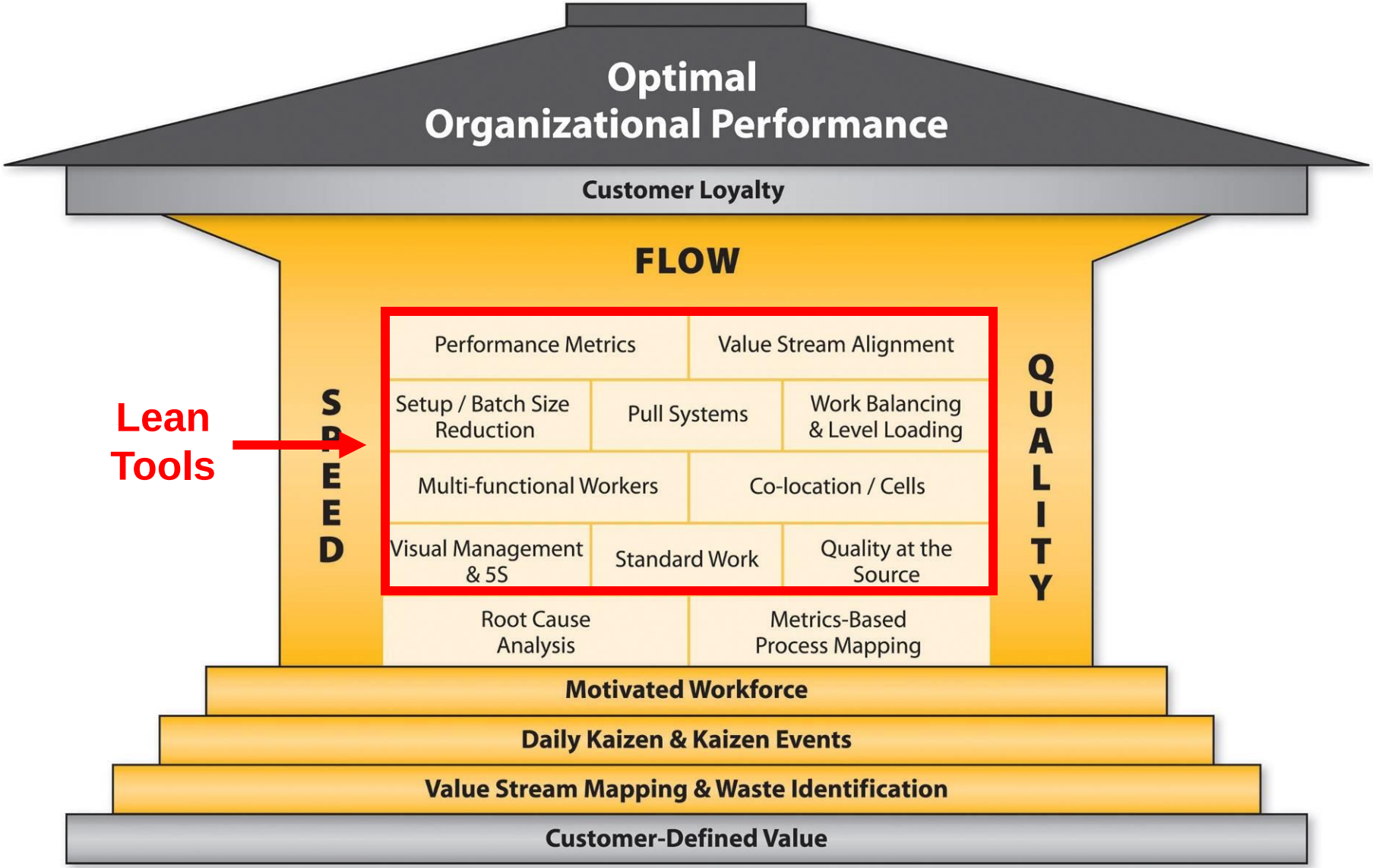
Follow-up Actions

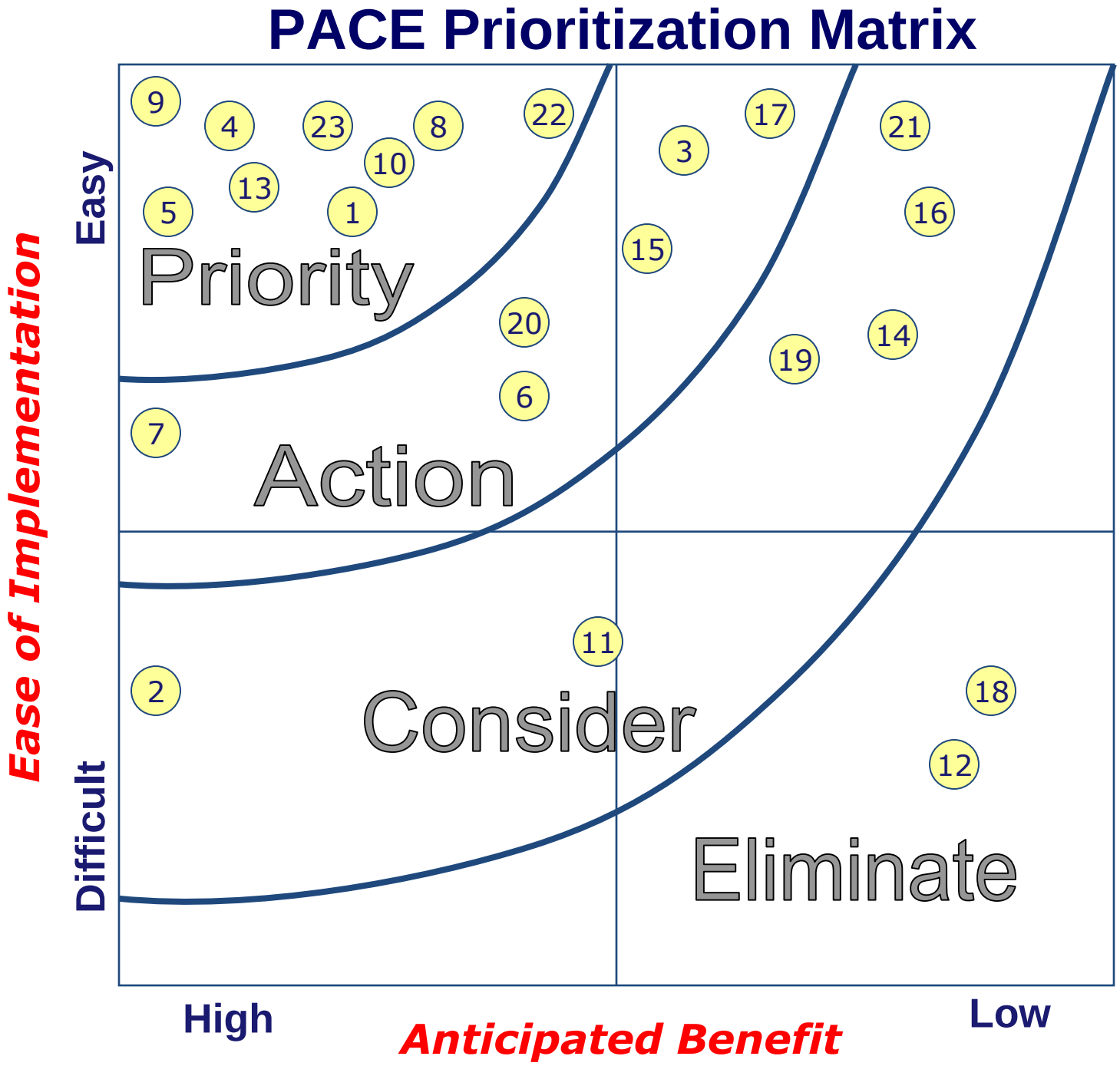
- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

Once you know the root cause, brainstorm and prioritize solutions

1. List relevant countermeasures.
2. Eliminate those that aren't possible.
   - Regulatory, budgetary, resource availability, system capability, etc.
3. Combine those that are similar.
4. Number the countermeasures sequentially.
5. Place countermeasures accordingly on the PACE Prioritization Grid.

Building a Lean Enterprise




PACE Prioritization Matrix
Ease of Implementation
Easy
Difficult
Priority
Action
Consider
Eliminate
9
4
23
8
22
10
13
5
1
3
17
21
16
15
20
14
19
6
7
11
2
18
12
High
Low
Anticipated Benefit

The A3 Report: Countermeasures / Implementation Plan

- Consider all options
  - Be innovative – be willing to challenge your paradigms and help others challenge their own
- Make sure the countermeasure is directed very specifically to the key root causes
- Make is clear exactly what will be done, ***by whom***, when, where, how, in what order
  - Gantt charts can be helpful
  - How often will the implementation plan be reviewed?
- Aim for full implementation by a specific date
- At this point, the problem owner's key roles shifts to advocate and project manager
- Cross-functional involvement and consensus is a vital success factor

Sample A3
Countermeasures / Implementation Plan

Task	Accountable	Due Date	% Cmplte		Complete Date
Improved Technician's Refrigerant Tracking form that includes directions	Hugh		100 75	25 50	04/17/09
Surveys done with Service Managers: cycle counting/auditing	Ramona/Shawn/ Bryan		100 75	25 50	04/20/09
Cycle count of refrigerant on 3 vans: using old and new form	Landon/Ramona		100 75	25 50	04/21/09
Surveys done with Service Admins/Dispatch on current auditing process & forms	Ramona		100 75	25 50	04/24/09
Technician Visual Aide on Refrigerant: types; cylinder wt gross/empty; charge orientation; Refrigerant Safety; Disposal /Weighing Procedures	Bryan / Hugh /Shawn		100 75	25 50	05/07/09
Refrigerant Control and Tracking section in the Tech Guide	Bryan		100 75	25 50	05/07/09
Selected Branch in each Region for Pilot Tracking Program -approved by Regional Director - 5 Site ID's for each Region	A-Team		100 75	25 50	05/01/09
Revised Current Existing Source Pallet Refrigerant Report for Auditing Purpose	IT - Ramona	05/08/09	100 75	25 50	
Created Refrigerant Audit Form per Region	Ramona / Hugh	05/15/09	100 75	25 50	
Select Admins for each Region for tracking and auditing function	Regional Director /	05/20/09	100 75	25 50	
Created Detailed Refrigerant Control Procedures	Ramona	05/21/09	100 75	25 50	
Determine Owner of Refrigerant Tracking Process	TBD / owner	05/21/09	100 75	25 50	
Training Program for Service Managers and Techs for cycle count - 'Go-To-Meeting' : 1st Phase: managers in Pilot Program 2nd Phase: all remaining mngrs.	A-Team	05/27/09	100 75	25 50	
Training Program for Admins for Auditing Process - 'Go-To-Meeting' : 1st Phase: admins in Pilot Program 2nd Phase: all remaining admins	A-Team	05/27/09	100 75	25 50	
Individual Branch Performance Score Card for Refrigerant of Write-Offs	Shawn	06/01/09	100 75	25 50	
Run Pilot Program for 3 months; track progress; reports to Regions/Branches> start 6-1-09	1-A-Team member per region	09/01/09	100 75	25 50	
Company Wide Implementation	TBD / owner	09/28/09	100 75	25 50	
Exception Reports for Managers/Admin: 1) >150# on trucks and Negative Balances 2) $ per Lb. discrepency on PO's per	IT / Shawn/Ramona	07/01/09	100 75	25 50	
Hand Held 2.0v - Purchases of Refrigerant thru Hand Held to eliminate 80% PO/Vendor/Admin error >> cycle count;	IT / A-Team	TBD	100 75	25 50	

Common Components of the A3 Report

Plan

Theme: "What is our area of focus?"

Background

- Problem statement
- Context - why is this a problem?

Current Condition

- Diagram of current situation or process
- What about it is not ideal?
- Extent of the problem (metrics)

Target Condition / Measurable Objectives

- Diagram of desired state
- Measurable targets – how will we know that the improvement has been successful?

Root Cause & Gap Analysis

- Graphical depiction of the most likely direct (root) causes

Do, Check, Act

Owner: Person accountable for results.

Countermeasures / Implementation Plan

- What?
- Who?
- When?
- Where? (if relevant)

Effect Confirmation

- What measurable results did the solution achieve (or will be measured to verify effectiveness)?
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Follow-up Actions

- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

The A3 Report: Effect Confirmation

- Tie confirmation directly to the target condition.
- Define 2-5 key performance indicators (KPIs).
- Determine ways to verify the effectiveness of the countermeasures, one by one if possible.
- Plan in advance for the data that will need to be collected.
- Identify who will help collect the data and how frequently.

Common Components of the A3 Report

Plan → **Do, Check, Act**

Theme: "What is our area of focus?"

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Follow-up Actions

- Where else in the organization can this solution be applied?
- How will the improved state be standardized and communicated?

The A3 Report: Follow-up Actions

- How will you communicate the new process?
- Who will monitor the process?
- Which metrics will be used to measure ongoing performance?
- Look for similar processes within the department and across the organization that can benefit from these countermeasures
- Ensure ongoing improvement – who will do this?
- Share the wealth!
  - Communicate results across the organization and teach others to problem-solve via the A3 process

Sample A3
Effect Confirmation & Follow-up Actions

Effect Confirmation

Task	Accountability	Frequency/Due Date
• Quarterly monitoring and adjustment	TBD - Owner	Through 10-15-2010
• Annual write off at end of fiscal year, > 3%	Regional Director	10-15-2010
• Branch audit compliance from 10% to 100%	Regional Director	End Q1-2010
• Technician compliance from 19% to 100%	Service Manager	End Q1-2010
• Audit accuracy from 0% to 98%	TBD - Owner	End Q1-2010
• Process monitoring	TBD - Owner	10-1-2010

Follow-up Actions

Task	Accountability	Frequency
• Monitoring all processes and inventory variances	TBD- Owner	Quarterly
• Update Metrics for Branch Score Card	TBD- Owner	Quarterly

The *process* is as important as the results.

Additional A3 Considerations

- A3 Roles & Responsibilities
  - Problem Owner – Person(s) accountable for results; authorized to engage any and all parties needed
  - Problem Coach – Person(s) "developing" the process owner into a skilled problem-solver; typically leadership.
- A3 vs. Value Stream Mapping – how they work together (or separately)

PDCA: Plan Stage

Primary problem-solving role:
Investigator

"Do you think or do you know?"

PDCA: Do-Check-Act Stages

Primary problem-solving role:
Director

"Action!"

Other A3 Applications and Common A3 Components

- Proposal
  - Theme
  - Background
  - Current Condition
  - Analysis and Proposal
  - Plan Details
  - Unresolved Issues (if relevant)
  - Implementation Schedule
  - Total Effect
- Status Report
  - Theme
  - Background
  - Current Condition
  - Results
  - Unresolved Issues / Follow-up Actions
  - Total Effect

In Summary

A3 reports should become a standardized form of currency for problem-solving, dialogue, and decision-making in your organization– creating an organization of "scientists" who continually improve operations and achieve results through constant learning from the work at hand.