

DO IT² PROBLEM SOLVING WORKSHEET

1. Define the Problem		
<i>What</i>		
<i>Where</i>		
<i>When</i>		
<i>How much</i>		
Problem Statement		
2. Understand the Process		
<i>Boundaries</i>	Starts:	Ends:
Major Steps		
3. Identify Possible Causes	It Could Be	It Couldn't Be
4. Data Collected		
5. Actual Causes	Physical	System
<i>Evidence to Support Causes</i>		
6. Possible Solutions		
7. Selected Solutions		
<i>Reason for Selected Solutions</i>		
8. Implementation Plan		
<i>What</i>		
<i>Who</i>		
<i>When</i>		
9. Results of Follow-Up		
<i>Actions Required</i>		
10. Institutionalize		

DO-IT² Root Cause Analysis Guide

Step	Questions	Outputs
1. Define the Problem	<ul style="list-style-type: none"> • What is the right problem to work on (frequency, cost, risk)? • Is it scoped to a reasonable size? • What is it, where and how much does it occur? • How does it perform over time? 	<ul style="list-style-type: none"> • Pareto for selecting right problem • Pareto for scoping problem • Run chart showing how it performs over time • Problem statement
2. Understand the Process	<ul style="list-style-type: none"> • What are the boundaries? • What are the major steps between the boundaries? 	<ul style="list-style-type: none"> • Process flowchart
3. Identify Possible Causes	<ul style="list-style-type: none"> • Which is the best way to identifying causes? • What changes may have been made and/or occurred in the process? • What barriers might have failed? 	<ul style="list-style-type: none"> • List of most likely causes (flowchart, logic tree, or brainstorming)
4. Collect Data	<ul style="list-style-type: none"> • What data to collect (e.g., which Y data, X data)? • What sample size and method, over what time frame? • What level of accuracy and precision (e.g., # of decimal points)? • How will the data be analyzed (e.g., which tools)? 	<ul style="list-style-type: none"> • Data collection and analysis plan • Forms and training for data collection • Data collected
5. Analyze Data	<ul style="list-style-type: none"> • How to slice/dice the Y data by X variables? • Have we gone deep enough in the 5-whys? • If the problem found is the physical cause, should the process root cause also be pursued? 	<ul style="list-style-type: none"> • Charts/graphs used to analyze the data • Conclusions regarding which X variables are and/or are not creating the problem • (Revised problem statement and return to step 1 if needed)
6. Identify Possible Solutions	<ul style="list-style-type: none"> • What could prevent the problem? 	<ul style="list-style-type: none"> • List of possible solutions
7. Select Solution(s)	<ul style="list-style-type: none"> • Which solution is best, based on economics, technical impact, time/effort required to implement, impact on other variables, capability to sustain? 	<ul style="list-style-type: none"> • Solutions to implement, and rationale to support (e.g., decision table, benefit/cost analysis)
8. Implement the Solution(s)	<ul style="list-style-type: none"> • What needs to be acquired? • What training and communications need to be done? • Where will resistance occur and how to offset it? • Who should do each item, and when? 	<ul style="list-style-type: none"> • Implementation plan (e.g., action item list with actions, responsibilities, timing), including both technical and organizational change actions
9. Evaluate the Results	<ul style="list-style-type: none"> • Did the problem go away or is it less? • If it is better, is it because of the action taken? • Did the change cause any adverse effects? • If it isn't better, where in the 10-steps did things go wrong? 	<ul style="list-style-type: none"> • Chart/graph/data showing how process performance is now different than what it was before project was initiated
10. Institutionalize the Process	<ul style="list-style-type: none"> • What actions need to be taken in order to make the change permanent (e.g. revise what procedures, job descriptions, training materials, ...)? • What will be done to monitor the process, and for how long, to ensure it is sustained (e.g., tracking outcomes, auditing process)? • Where else in the facility/company might this solution be useful? • What was learned during this project that could help us be more effective at future projects? 	<ul style="list-style-type: none"> • Revised drawings, specs, procedures, etc. • Communication to other process owners, managers, facilities where the gained knowledge might be useful.