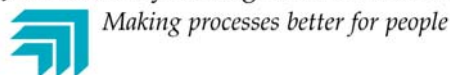


Problem Solving Tasks and Tools with Six Sigma DMAIC

Step	Tasks	Tools
Define	<ol style="list-style-type: none"> 1. Determine goals, benefits, project charter. 2. Obtain Voice of Customer 3. Create project plan and communication plan 	<ol style="list-style-type: none"> 1. High-level process map [SIPOC] [Supplier, Input, Process, Output, Customer] 2. Process flowcharts. 3. Customer surveys, interviews, focus groups 4. Project management tools
Measure	<ol style="list-style-type: none"> 1. Define and measure process inputs and process outputs. 2. Collect data on process performance 3. Define process capability. 	<ol style="list-style-type: none"> 1. Pareto charts 2. Statistical methods and sampling 3. Value stream mapping 4. Capability analysis 5. Total lead time analysis 6. Process efficiency cycle
Analyze	<ol style="list-style-type: none"> 1. Analyze sources of variation. 2. Analyze data and processes. 3. Determine root causes to improve processes. 	<ol style="list-style-type: none"> 1. Statistical tools 2. Cause-Effect diagrams 3. Pareto charts 4. Simulation models 5. Root-cause analysis 6. Failure Mode Effects Analysis [FMEA]
Improve	<ol style="list-style-type: none"> 1. Identify changes to improve processes and reduce waste. 2. Reduce cycle times. 3. Improve quality and speed. 4. Focus on customer expectations. 	<ol style="list-style-type: none"> 1. Brainstorm solutions 2. Simulation models 3. The 5S method of Lean 4. Error proofing 5. Failure Mode Effects Analysis [FMEA] 6. Verify new process meets project goals and voice of customer.
Control	<ol style="list-style-type: none"> 1. Prepare control plan to ensure improvements hold. 2. Implement monitoring of key variables. 3. Identify measures, targets, and control limits for key variables. 4. Estimate financial benefits from improved processes. 	<ol style="list-style-type: none"> 1. Control charts 2. Training requirements 3. Documented new processes 4. Scorecard to track targets and control limits 5. Pareto charts for key variables 6. Calculate return on investment [ROI]

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