

# Six Sigma DMAIC Process

$$Y = f(x)$$

Y Output      f Function      (x) Processes

## DMAIC Project Overview

- What is the importance/priority of the project
- Who is the customer?
- Who is the sponsor of the project?
- Who is the process owner?
- What is the scope of the opportunity?

## DEFINE

### Identify Problem and What's Important to the Customer

#### Discovery:

- What is the problem/opportunity
- Who is the customer of this process?
- (Internal and/or External)
- How is the process not meeting the customer's needs? (Critical to Quality) (CTQ)

#### Possible Tools & Techniques:

- Charter
- Process Maps (high level)
- Process Performance Metrics
- SIPOC
- Stakeholder Analysis
- Voice of the Customer (VOC)/SWOT
- Cost of Poor Quality (COPQ)

## MEASURE

### Quantify Current Performance and Estimate Improvement Target

#### Discovery:

- Do we have reliable data on process performance? (measurement systems analysis)
- How is the process performing (VOP) and what is the customer's desired performance? (VOC)

#### Possible Tools & Techniques:

- Control Charts
- Data Collection Plan
- Pareto Charts
- Process Capability
- Process Mapping
- Run Charts/Control Charts
- Sampling
- Voice of the Process (VOP)

## ANALYZE

### Statistically Validate Critical X's (Causes) & Commit to Improvement Target for Y

#### Discovery:

- What are the possible reasons for poor performance? (Various X's)
- What are the root causes of poor performance? (Critical X's)

#### Possible Tools & Techniques:

- Root Cause Analysis
- Cause & Effect Diagram
- Correlation & Regression
- Data Collection Plan
- FMEA
- Hypothesis Testing
- Pareto Charts

## IMPROVE

### Identify and Implement Process Improvements

#### Discovery:

- What solution(s) will control the causes?
- What solution(s) have been implemented?

#### Possible Tools & Techniques:

- Brainstorming
- Control Charts
- Data Collection Plan
- Design of Experiments
- Pareto Charts
- Process Capability
- Sampling
- Implementation Plan
- Change Management Plan

## CONTROL

### Maintain Improvements Over Time

#### Discovery:

- Did our solution(s) improve the process? By how much?
- How will we sustain the improvements over time? (Control Plan)

#### Possible Tools & Techniques:

- Control Charts
- Control Plan
- Data Collection Plan
- Procedures/Work (Standard Work)
- Instructions (Procedures)
- Process Maps
- Sampling
- Standardization