

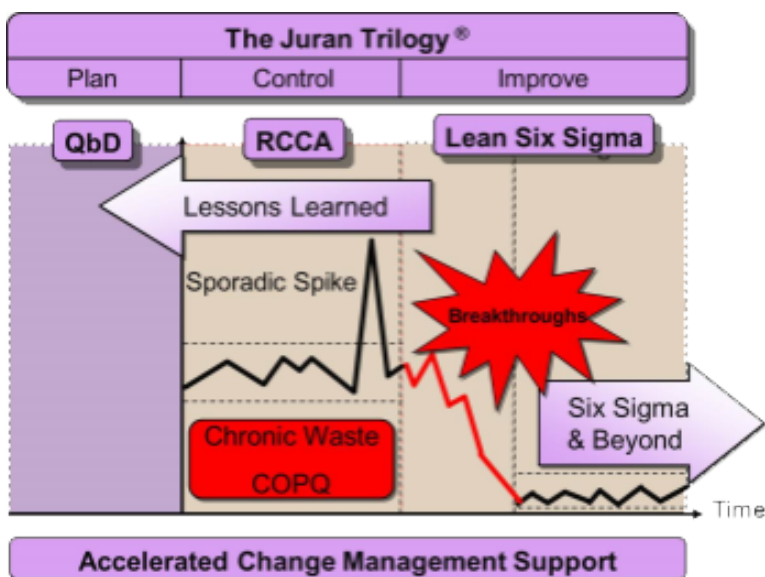
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Define

Key Learning Points

1. Define what the Y is in $Y=f(x)$.
2. Explain how to scope the problem for a project.
3. Describe the steps to discover stakeholders and CTQs.

What is DMAIC?



DMAIC is a five-step methodology that organizations use to achieve breakthrough improvement. The level of improvement is measured in business results. DMAIC

stands for:

- Define
- Measure
- Analyze
- Improve
- Control

Notes:

The DMAIC Methodology: Define

DMAIC Steps	Tools Used
Define Step: Define the project goals, deliverables, and project Y in words.	
Verify Problem Statement, Goals and Benefits	Project Charter
Meet With Resources: Champion and Team	Gantt Chart
Discover Stakeholder and Customers Requirements (CTQs)	SIPOC Diagram
Develop Project Plan and Milestones	CTQ Definitions
Develop High Level Process Map or SIPOC	For high risk and larger projects
	Stakeholder Analysis
	Voice of the Customer Gathering
Define Tollgate Review	

Purpose of the Define Step

Define is the first step of the DMAIC methodology. It is where a project team defines the project goals, deliverables, and project Y in words.

In effect, the team identifies the problem plaguing a process or product.

At this stage, the job of the improvement team is to validate what customer needs are not being met, and determine how to meet those needs

This problem is known as the project “Y,” or the measure of a failure to meet a customer need.

Verify the Project Charter

Notes:

Project Name:	Capital Expenditure Requests Reduction	Project #:	515
Revision Date:	7/5/2017	Business Unit and Process Focus:	Accounting
<input checked="" type="checkbox"/>	Six Sigma DMAIC Project	<input type="checkbox"/>	Lean Project

Project Charter Elements

1. Problem Statement:	On a monthly basis, accounting teams process 800-900 CERs. The defect rate of these requests is 77%. Defective CERs must be returned or followed up on in order to request additional information or corrections. This leads to delays in the capitalization of assets.
2. Goal Statement:	3. Reduce the defect rate of CERs to 35% by the end of Q3 FY 2017
4. Business Case & Expected Benefits:	Reducing the CER defect rate will accelerate the asset capitalization process, reduce re-work time, increase the capacity of an FTE on the accounting team, and allow the team to redeploy that time to be used in more productive ways. Additionally, reducing the defect rate will mitigate the risk associated with circumventing key controls and approval levels in the request submission process.
5. Project Scope:	<p>In Scope: All capital expenditures requests (CERs) received and reviewed by accounting within the request system.</p> <p>Out of Scope: Capital expenditure requests (CERs) not received by accounting for review within the request system.</p>

6. Project Milestones:	7. Team Members:	Title:
Start: July	CFO	Team Leader
Define: August	Accountant 1	Team Member
Measure: September	Accountant 2	Team Member
Analyze: October	Accountant 3	Team Member
Improve: November	IT Manager	Team Member
Control: December	Request Supervisor	Resource
Complete: January	Intern	Resource

Approvals—Sign and Date

Champion	Date	Project Team Leader	Date
Bob Ross, CPO	7/4/2017	Linda Martin Davis	7/4/2017

Gantt Chart

A Gantt chart is used to create a timeline. It is a visual representation of milestones and timing for a project.

Phase	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
Define								
Measure								
Analyze								
Improve								
Control								

Notes:

Understanding the Problem: $Y = f(x)$

This simple equation is the means to understand solving a problem. The Y (the defect) is a function of x (unknown causes) to be discovered by the improvement team.

Verify Problem and Goal Statements from the Voices of the Stakeholders

Ask stakeholders (internal and external customers) what is important to them in regards to the problem.

The answers you receive are translated into “Critical to Quality Requirements” or CTQs.

Stakeholders

Stakeholders are entities with an interest in, or receive an output of a process. They can affect or be affected by an organization or processes actions, objectives, or policies. Some examples of stakeholders are:

- Internal Customers
- External Customers
- Creditors
- Directors
- Employees

- Government (and agencies)
- Owners (shareholders)
- Suppliers
- Unions
- The Community

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External Customers

External customers are not a part of the organization providing a particular product or service. While the obvious external customers of any service organization are the paying customers, there are other customers as well.

The table below shows some external customers for a service organization, such as vendors and suppliers of a product and the community. Various regulators and governmental agencies are also customers.

Company Type	Retail Store	Online Retailer	Call Center	Insurance	Cable TV
Primary Customer	Consumer	Consumer	Caller	Insured Person	Subscriber
Other External	Product Suppliers Resellers Fed Trade Commission Community	Product Suppliers Shipping Companies Internet Providers	Product/Service Provider Telephone Companies Equipment Suppliers	Employers Agents Healthcare Providers Insurance Commissions	Equipment Suppliers TV Stations Federal Communication Commission Community

Internal Customers

Internal customers are those within your organization who are affected in some way by your work. Satisfying external customers requires that you also satisfy the needs of internal customers.

The table below shows some of the many internal customer relationships for a service organization. For example, when a sales associate on the floor requests an item from the warehouse, but the item is nowhere to be found although the inventory shows that it is in stock, an additional request may be placed through purchasing to replenish the item. The store customer's needs cannot be met if the needs of the sales associates are also not satisfied.

Customer: Sales Associate

Internal customer needs to be met: Accurate Inventory Information

Supplier: Warehouse

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Company Type	Retail Store	Online Retailer	Call Center	Insurance	Cable TV
Internal	Warehouse Sales Associates Other Employees Management	Warehouse Customer Support Marketing IT Management	Phone Reps IT Support Problem Investigators Claims Processing Management	Underwriting Marketing Claims Processing Management	Billing Department Installers Customer Support Management

Quality and Competitive Advantage

Identify the Customers

Customer Behavior

Operational Definitions

An operational definition, when applied to DMAIC projects, is a clear, concise, detailed definition of a term used by our stakeholders (internal or external customers) that enables our team to understand it.

Examples

Key Terms	Operational Definitions
Asset	OCS equipment placed at customers
Opportunity	Record in Salesforce used to manage sales team activity with a future customer
Time to Install	Time it takes to install a new piece equipment at a customer
OCS	Office Coffee Services
Market Center (MC)	Group of geographically close locations managed by a single District Manager with a single P&L
SFDC	Salesforce CRM Application used to manage customers and equipment
Case	Record captured in SFDC of an interaction with a customer or customer request
Work Order	Assignment of Technician in SFDC to perform work at a customer
CER	Capital Equipment Request
CRM	Customer Relationship Management System utilizing SFDC

Identify the Stakeholders

External Customers:

- The Purchaser—buys the product/service for self or someone else
- Suppliers—provide input the process
- Potential Customers—those capable of becoming customers
- Hidden Customers—includes regulators, policy makers, the public at large

Internal Customers:

- Utilize the output of your process or other internal processes (the service or product) to complete their own process
- Business leaders

Document Voice of the Customer

Stakeholders commonly state their needs as seen from their viewpoint and in their language. They may state their needs in terms of specific product features or solutions to problems. This is known as "Voice of the Customer", or VOC. Be sure to capture this verbatim.

Keep in mind that stakeholders real needs are the benefits they believe they will receive. It is rare that they outright state what these needs or key issues are.

It is the improvement teams job to reword the key issues so they reflect the true needs of the stakeholder.

Typical needs often fall into categories or key issues related to defect prevention, timeliness of delivery, cost, and customer service (e.g. responsiveness).

Translate VOC into CTQs

From the stakeholder's point of view, CTQs are the vital few key measurable requirements of a product or process whose performance standards must be met in order to satisfy the stakeholder.

Translating the Voice of the Customer into CTQs is the process of transforming different types of feedback into specific, measurable requirements for a process or product. By converting stakeholder feedback into specific needs, you create clear, concise directives for improvement.

Guidelines

- Write the need, not the solution.
- Use measurable terms and/or metrics.
- Be clear and concise.
- Write from a positive perspective.

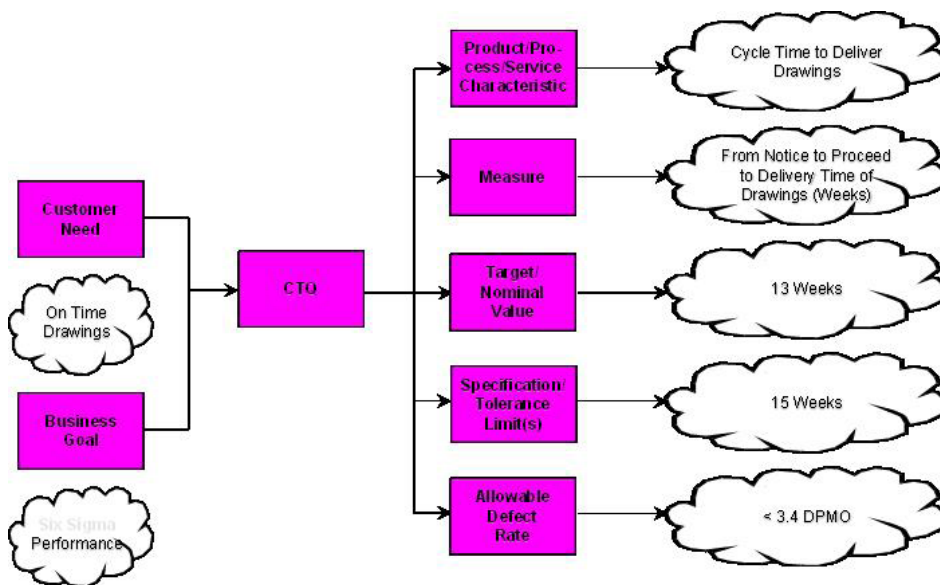
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- Validate with the stakeholder.
- Include the desired level of performance when possible (e.g. within 10 minutes).

When designing new services there may be many stakeholders with similar needs but with different “voices.” The affinity process is used to group like needs and CTQs to focus the design of features.

CTQ Definition

CTQs are the translation of stakeholder needs into quantified requirements for a product, process, or service. They are critical requirements placed on the product, process, or service.



The Affinity Process

The Affinity Process is an activity that organizes large amounts of verbal information into like categories. When asking stakeholders what their needs are, each may respond differently. It is up to the team to group similar needs into vital few categories.

Agent Accessibility

- “No one answered the phone when I called.”
- “I called and got voicemail.”
- “The attendant couldn’t find my agent.”

Agent Knowledge

- “The agent didn’t have an answer to my question.”
- “The agent gave me an incorrect answer.”
- “I had to call three times before someone knew the answer to my

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question.”

Agent Professionalism

- “I want the agent to be professional.”
- “Some of the agents are not very friendly.”
- “The agent should really make you feel comfortable.”
- “Agents need to be patient during the process.”

Determine Vital Few CTQs

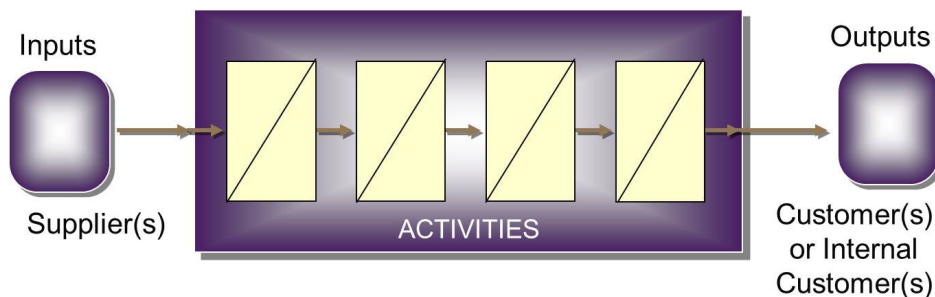
To ensure that your improvement team focuses on the few, most important CTQs rank the most critical related to the project Y in question.

Scoping the Problem

The purpose of scoping the problem using a SIPOC or high-level process map. Scoping provides the team a common understanding of the process that they will need to improve to achieve their project goals.

Understanding the scope of a problem requires understanding, at a high-level, the process that is creating the deficient Y.

A process is a series of steps or activities that uses one or more kinds of INPUT and transforms them into an OUTPUT for the CUSTOMER.



Input Value: \$

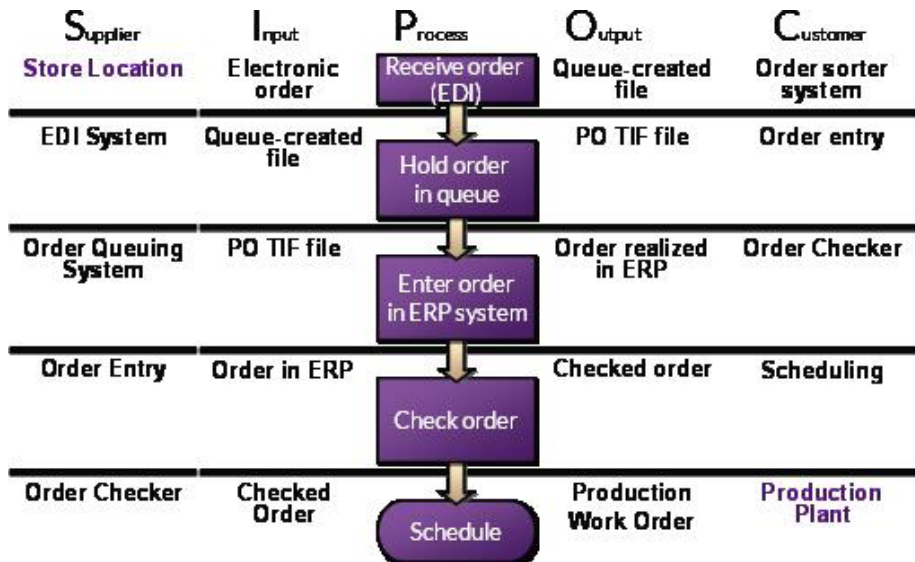
Output Value: \$ + ▲

SIPOC Diagram

SIPOC stands for Supplier, Input, Process, Output, Customer. It is a high-level map showing a process’s supplier, the inputs received from them, and the process that adds value to those inputs. That process produces an output that meets or exceeds customer requirements.

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Documenting the Process

1. Name the process
2. Define start and stop points
3. Identify major process activities in the process, in order
4. Identify the final customers from the last activity
5. Specify the outputs to those customers
6. Identify supplier and inputs to first activity
7. Complete intermediate suppliers, inputs, outputs, customers
8. Validate