

Lean Six Sigma Green Belt Certification Course

DIGITAL
OPERATIONS



Project: Define Phase



Case Study: Introduction

This case study is a project simulation. As we complete each Phase of the DMAIC (Define, Measure, Analyze, Improve, and Control) process, different aspects of the case study will be presented to you. You will be given background information, instructions, data sets, project updates, and all necessary information to work through each step of the project and answer questions.

Note:

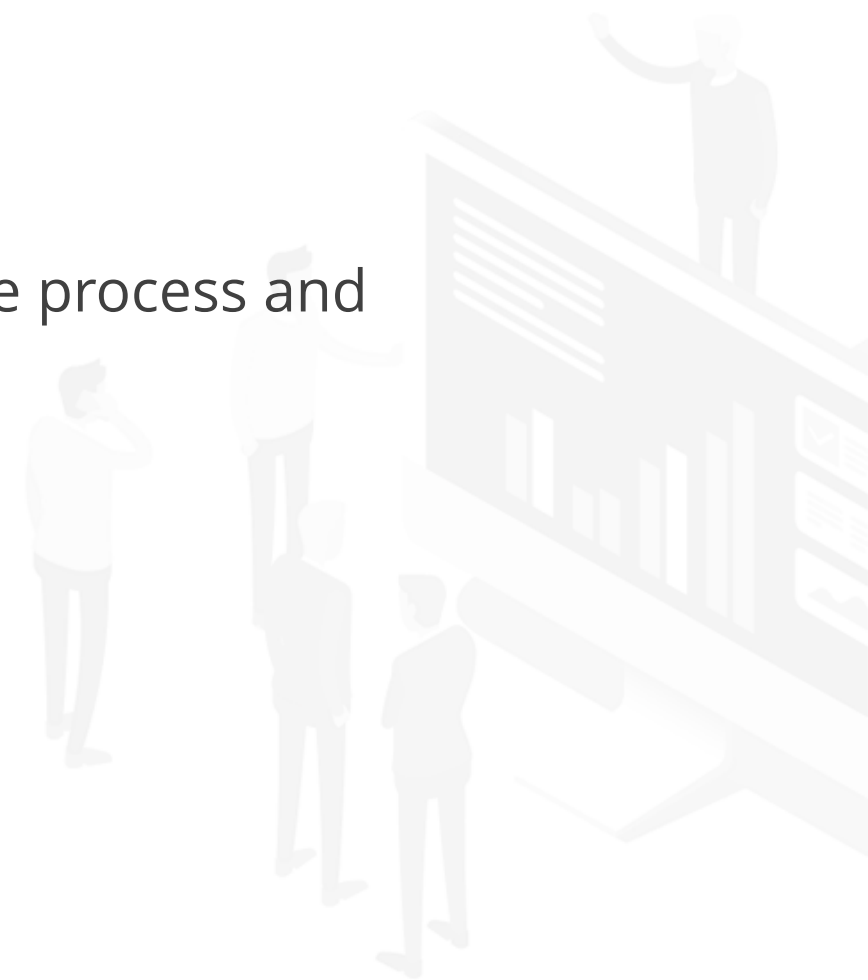
You will be using only some of the DMAIC tools and techniques in the case study to practice solving a single problem.

The provided solutions are not the “perfect” answers; they are only one of many potential solutions.

Problem Statement

Super Warehouse uses multiple vendors to supply and maintain its 5,000+ forklifts at all of its locations across the globe. Over the last 6 months, forklift expense for the company was \$16.5M. An audit performed on the billing revealed a very high percentage of errors which has resulted in significantly large overpayments to vendors.

Your team has been assigned the task to identify the cause of the errors in the process and find a solution.



Background Information: Fulfilment Process

Any time a location needs a forklift, a purchase order is placed with the vendor. The vendor prepares the lease paperwork for the forklift and returns the paperwork for approval to the location that made the request. After the approval, the forklift is built to the specifications of the location and delivered. If the delivered forklift is a replacement for a broken forklift, the broken one is returned to the vendor.

Vendors update their forklift records, then bill the company's Expense/Payables (E/P) for the forklifts. The invoice is then paid by E/P.

Maintenance Operations (MO) manually keys the updated vendor fleet report into the Fleet Management System (FMS).

Accounting at company headquarters matches the vendor invoice to the fleet report and books accruals so that the expense is billed to the correct location which placed the order. MO is notified of any billing, order, or order discrepancies, and contacts the vendor and location to resolve them.

Project Update: The Voice of the Customer

Your project team wants to gather information from the locations and departments that support the forklift procurement process. To accomplish this task, your team decides to create and present a survey about the current situation.

The team brainstorms to create a list of questions for the survey and starts gathering information to identify reasons for billing inaccuracies.

You will find the responses to the survey in the next slide.



Project Update: The Voice of the Customer

The quotes in the following table represents the responses from the survey.

VOC Responses

We were billed for a forklift that was returned three months ago	We don't have that lift at our location even though it is listed in the fleet report
I never received that forklift	I submitted the changes to update the fleet report but still cannot find the lift in the report
The charges are right but the lease amount is wrong	I need the serial number instead of the model number to track lifts
I don't have anything by that serial number here	I am doubled billed for the same piece of equipment
We are getting billed for items like fuel with no explanation	The vendor tracking numbers and serial numbers don't match
Vendor statements seem to be off every month	I have a credit on my P&L but no explanation as to why
We were billed for charges from third party delivery agents	I have charges on my P&L and not sure what they are for
The vendor is overcharging for this forklift	I wish we could automate the system since everything is manual



Define Phase Questions

1. What should be the outcome(s) of the Define Phase?
2. Using the given information, create a SIPOC for the forklift fulfillment process. You can use the SIPOC template available in the toolkit.
3. Create an Affinity Diagram from the VOC responses. Using the results, what do you think are the common complaints and the desired state for the customer?
4. Use the VOC information to complete a CTQ tree for accurate billing. You can use the CTQ tree template available in the toolkit.
5. Formulate the operational definitions of the identified billing defect(s).

This information, along with the creation of the team charter, will help you prepare for the Define Tollgate.

Define Phase Answers

1. The outcome of the Define Phase should be:
 - Team charter with a clearly documented problem,
 - Defined project objectives,
 - Listed team members, and
 - Highlighted project milestones.



Define Phase Answers

2. SIPOC for the forklift fulfillment process

Suppliers	Inputs	Process	Outputs	Customers
Location	PO	Forklift ordered	Received PO	Vendor
Vendor	PO	Lease Prepared	Lease Paperwork	Location
Location	Lease Contract	Lease Approved	Approval	Vendor
Vendor	Forklift	Forklift Delivery	Forklift delivered	Location
E/P	Money	Bill Pay	Bill Paid	Vendor
MO	Vendor Fleet Report	FMS Updated	Updated FMS	Accounting
Vendor	Vendor Invoice Company Fleet Report	Accruals Booked	Accruals	Location
MO	Discrepancies Contact info	Discrepancies Addressed	Resolutions	Location/Vendor

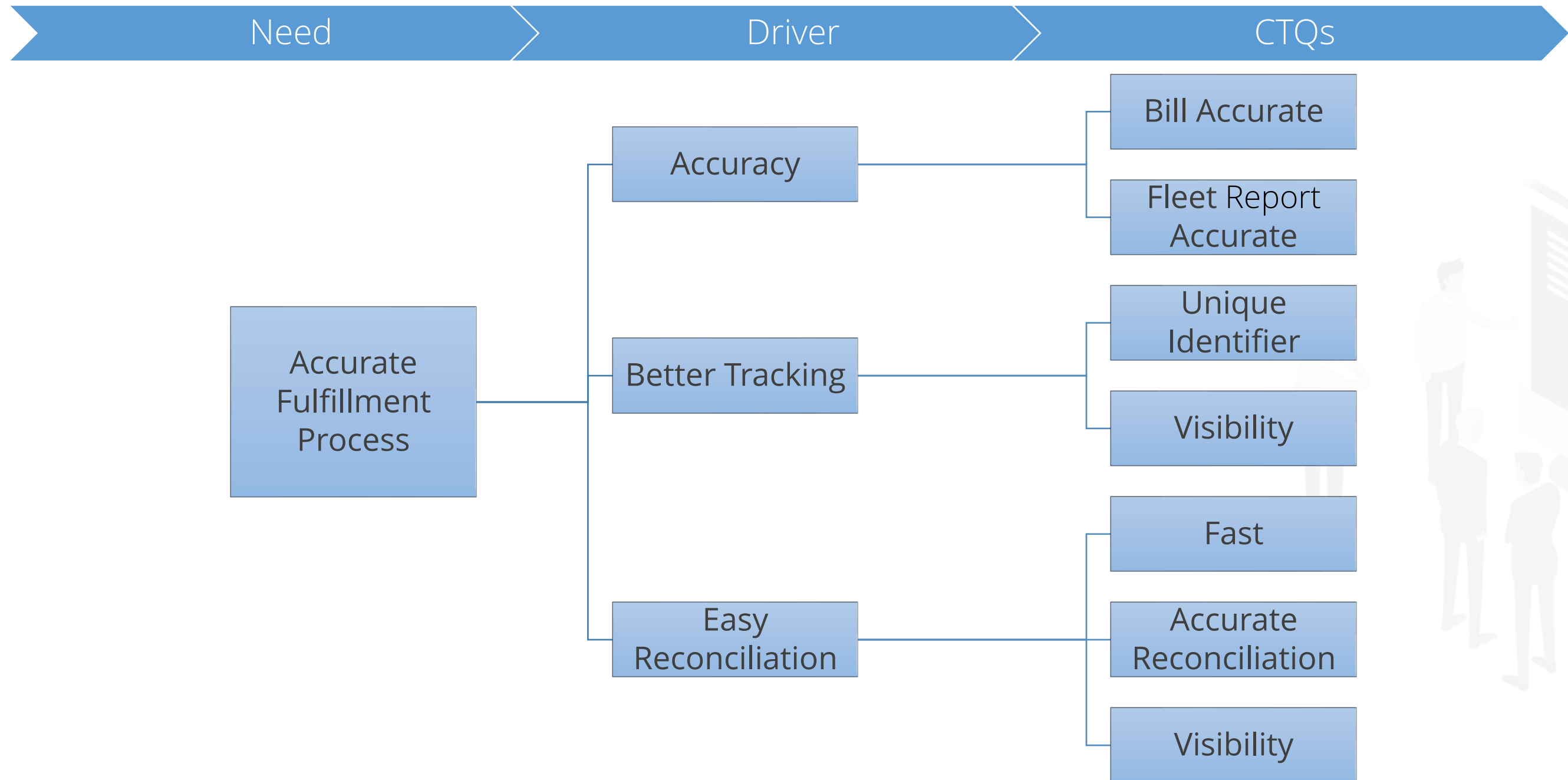
Define Phase Answers

3. Affinity Diagram shows the need to improve charges, billing, forklift tracking, accounting, and processes.

Charges	Billing	Tracking	Accounting	Process
The charges are right but the lease amount is wrong	We were billed for a forklift that was returned three months ago	I never received that forklift	I have a credit on my P&L but no explanation as to why	I wish we could automate the system since everything is manual
Vendor statements seem to be off every month	We are getting billed for items like fuel with no explanation	I don't have anything by that serial number here	I have charges on my P&L and not sure what they are for	I submitted the changes to update the fleet report but still cannot find the lift in the report
We were billed for charges from third party delivery agents	I am doubled billed for the same piece of equipment	We don't have that lift at our location even though it is listed in the fleet report		
The vendor is overcharging for this forklift		I need the serial number instead of model number to track lifts		
		The vendor tracking numbers and serial numbers don't match		

Define Phase Answers

4. CTQ tree for accurate billing



Define Phase Answers

5. A developed operational definition for defect in billing could be :
- Billing should accurately specify the actual costs of the forklifts, match the on-hand inventory, and attribute the expenses to the correct locations within 30 days.

