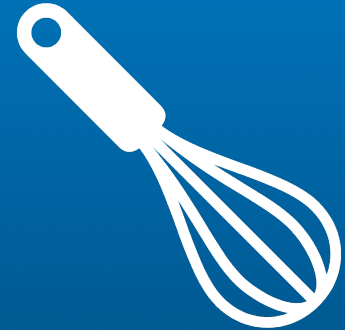
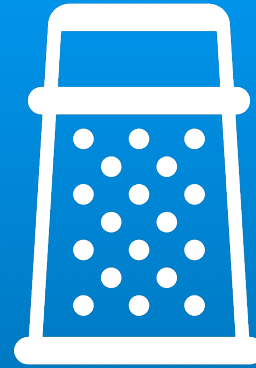


If I only had 1 quality tool...

An enabling continuous improvement tool

Keith Fong | American Society for Quality Section 1401 | August 19, 2020



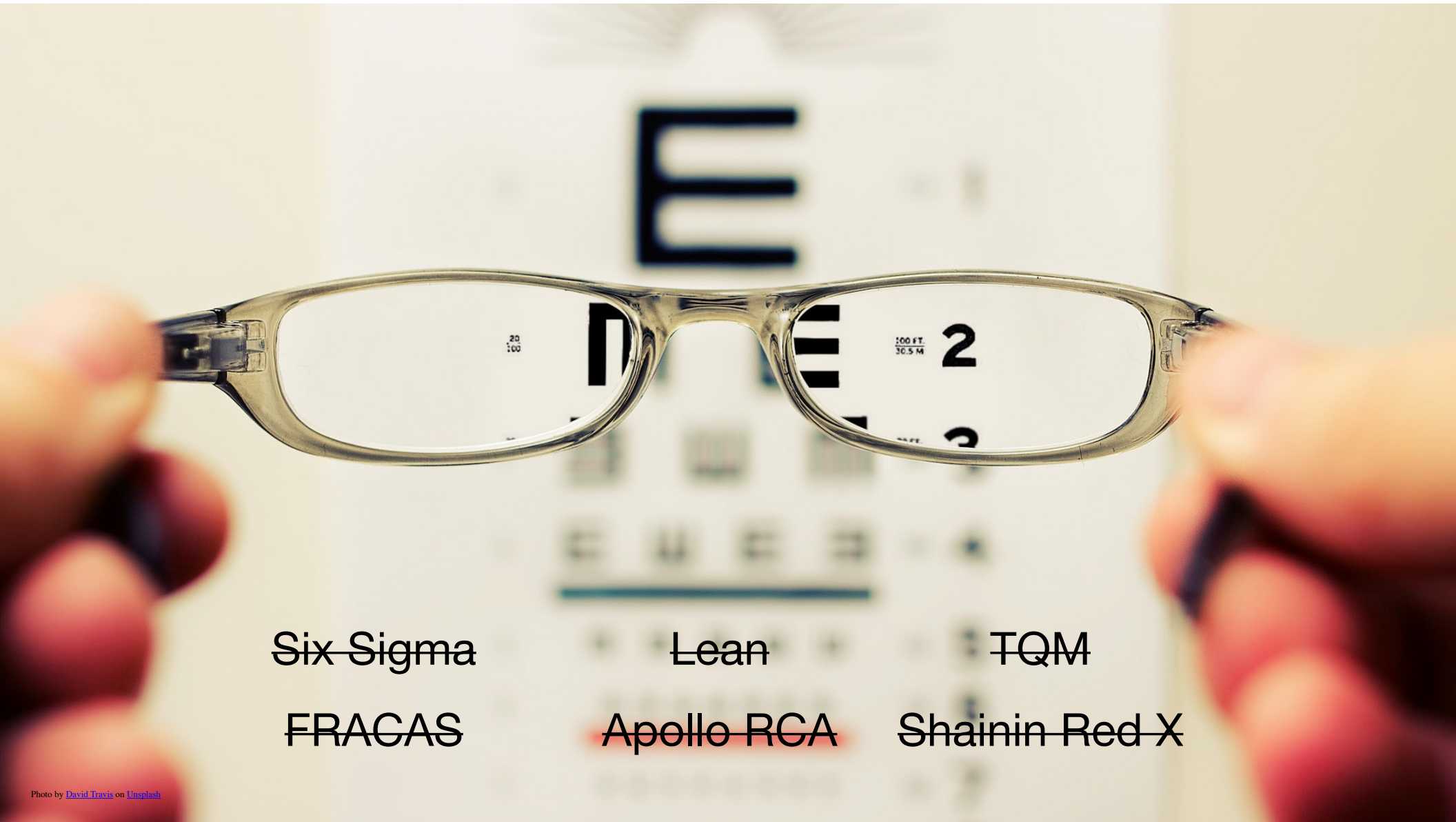


Which of our quality tools is as important to us as a knife is to a chef?

The One Tool

Selection Criteria

- Ease of Use
- Versatility
- Leverage Existing Knowledge
- Generate Useful Insights
- Facilitate Common Understanding
- Guide Meaningful Action
- Propel Continued Expertise Growth/Development



~~Six Sigma~~

~~Lean~~

~~TQM~~

~~FRACAS~~

~~Apollo RCA~~

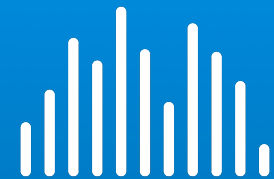
~~Shainin Red X~~

Obvious Candidates

Ishikawa's Seven Basic Tools of Quality

Telephone Interruptions						
Reason	Day					Total
	Mon	Tues	Wed	Thurs	Fri	
Wrong number						20
Info request						10
Bots						19
Total	12	6	10	8	13	49

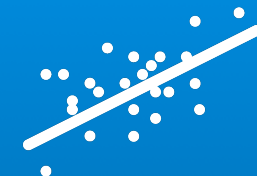
Check Sheet



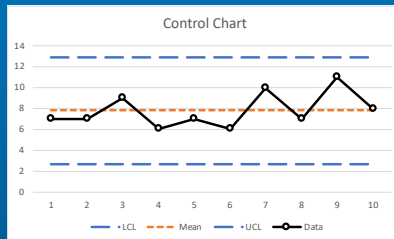
Histogram



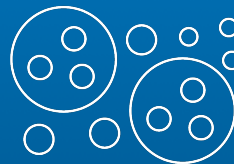
Pareto Chart



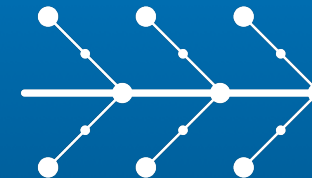
Scatter Plot



Control Chart



Stratification



Fishbone Diagram

Obvious Candidates

5 Whys

Does 5 Why work for anyone outside of Toyota?

Conceptually sound, in practice results are inconsistent and poor

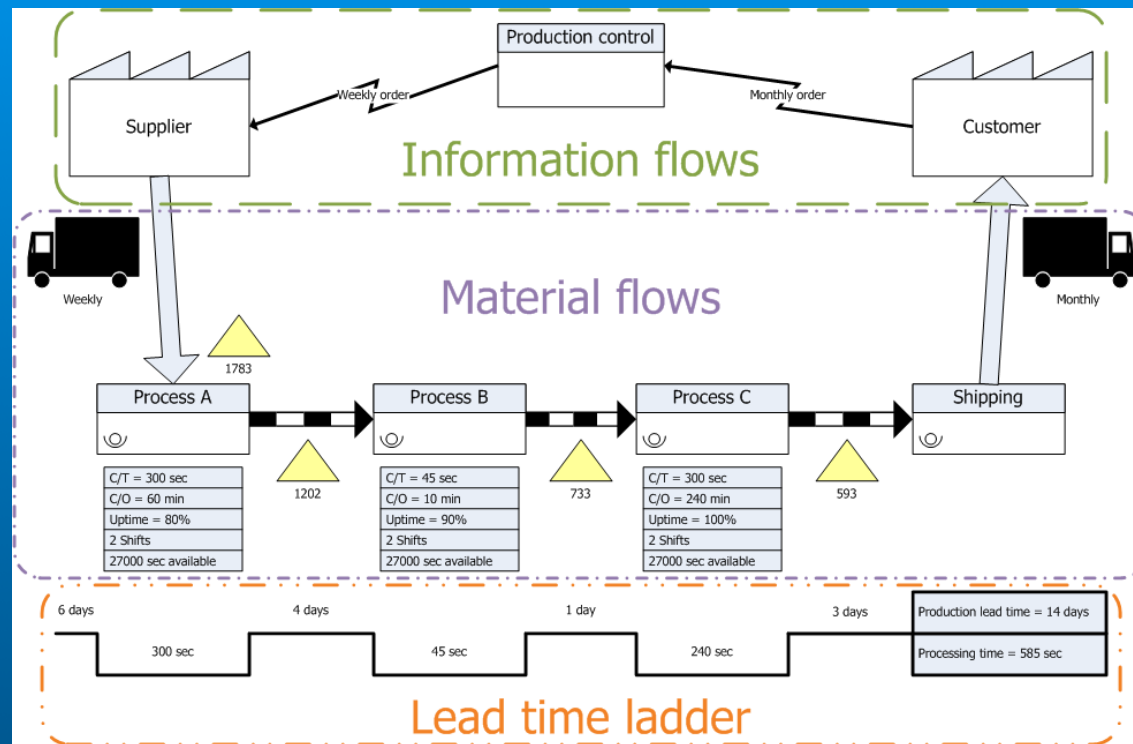
5 Random Whys the bad thing happened

*5 Whys it's *really* not my fault*

5 Who should be blamed—definitely not me!

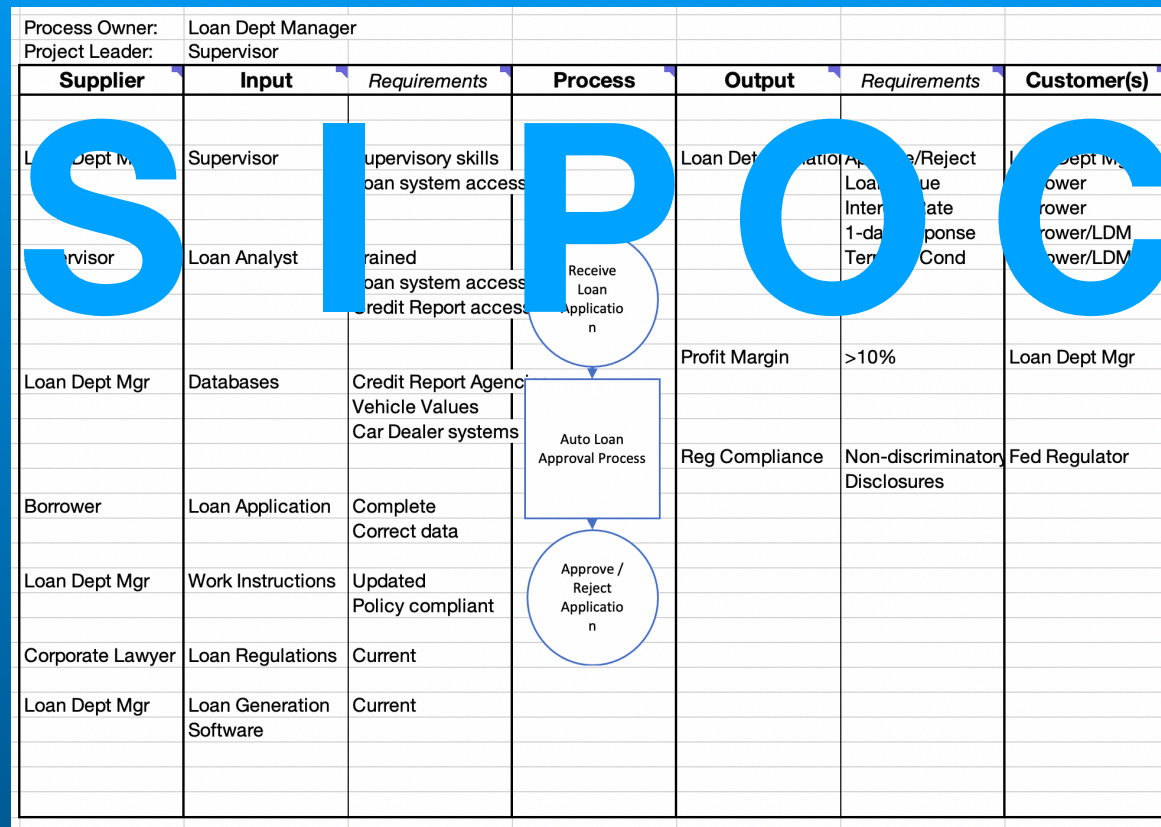
Obvious Candidates

Value Stream Map

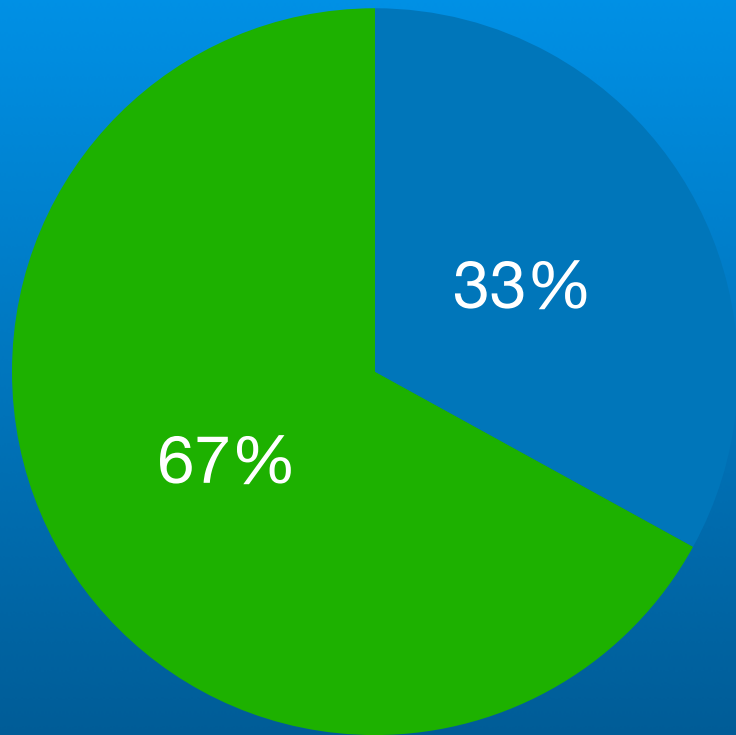


By Daniel Penfield - Own work
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<https://commons.wikimedia.org/w/index.php?curid=28553995>

SIPOC







At least 2/3 of my Six Sigma projects could have been resolved using SIPOC alone.

You can't be certified using just 1 tool.

Six Sigma Framework

Define

Voice of Customer
Critical to X
Pareto Chart
Balanced Scorecard
Kano Model
SIPOC

Measure

Key Performance Indicators
Measurement System Analysis
Process Map
Control Chart
Histogram
Check Sheet
Process Capability
Value Stream Map

Analyze

Scatter Plot
Histogram
5 Why
Stratification
Fishbone Diagram
Pareto Chart
Is-Is Not

Improve

Brainstorming
Benchmarking
Pugh Concept Selection
Failure Modes & Effects Analysis
Design of Experiments
Hypothesis Tests

Control

Check Lists
Poke Yoke
Control Charts
Poke Yoke
Control Plans
Training
Documentation

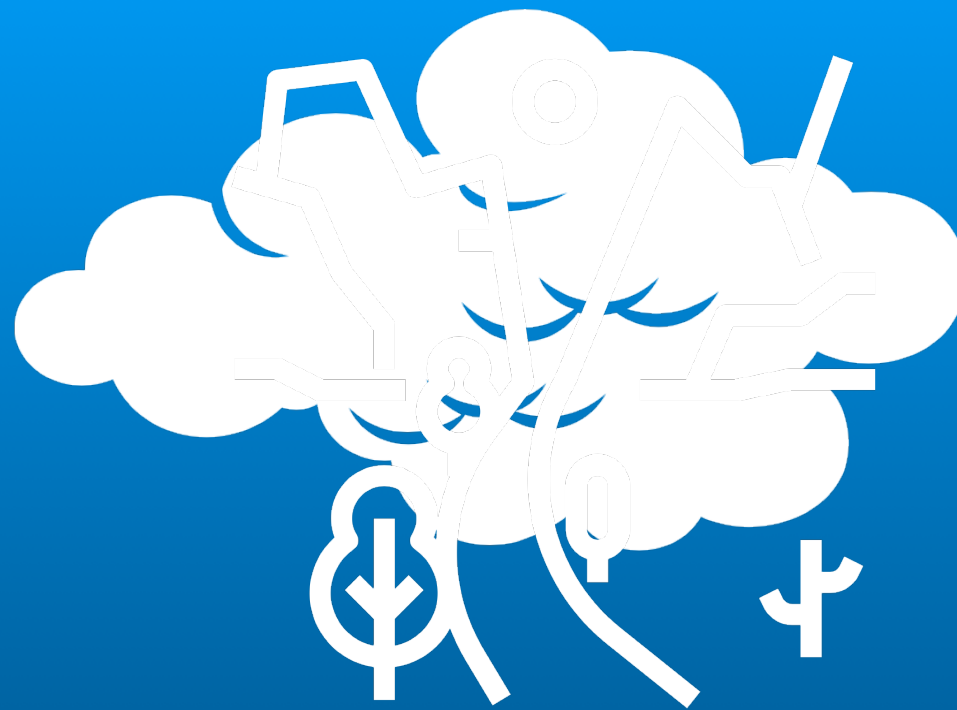
**A problem well stated is a
problem half solved.**

Charles F. Kettering

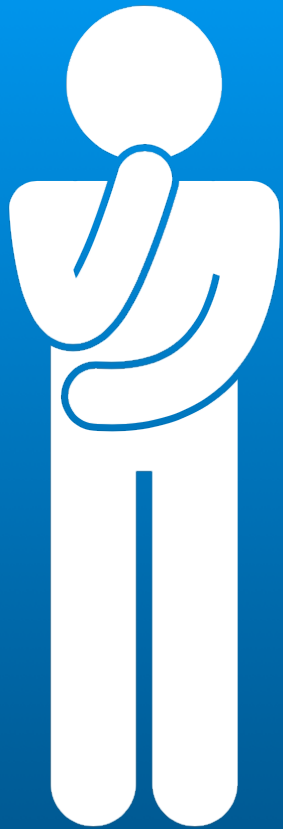
Electric car starter, colored auto paint, etc.

*Corollary: A problem poorly
stated may never be solved.*





The SIPOC's power is to reveal the important factors that have been obscured



What is a problem?



A problem is the difference between what you have and what you want.

Problems come in 2 basic types

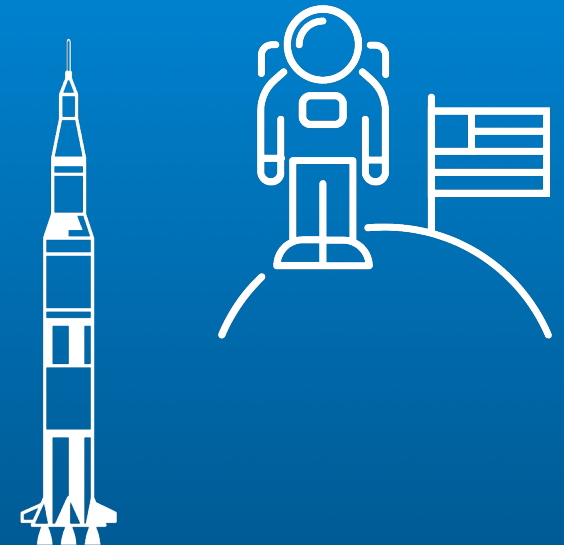
Found Problems

Failures



Created Problems

Aspirations

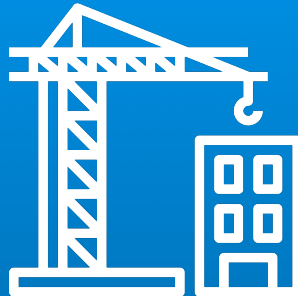


SIPOC works for both types of problems

SIPOC works with any type of process



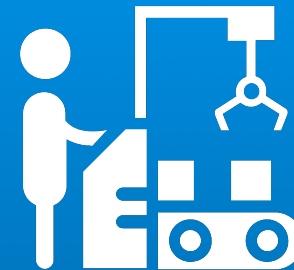
Retail



Construction



Financial



Manufacturing



Service



Healthcare



Legal



Agriculture/food



Logistics

SIPOC is so powerful because
most processes are ad-hoc.

The processes were not designed, they “just happened”
Training is “follow someone around”
Finger crossing is part of the delivery

Quick Summary

SIPOC

Project Definition & Scoping Tool

Focus Efforts

Clarity about key factors

Applicable to problems of failure and aspiration

Applicable to any type of process



Variation in Techniques

Using a tool is better than not

I will show what I consider best practices

Others may do things differently

Use what works best for you—iterate

The tool's structure will help you, regardless of technique

Perfect is the enemy of done

Process

SIPOC Step 1

Definitions

Process is a series of activities to transform inputs into outputs

An activity is described by “Active verb + noun”



Photo by [Adam Lindgren](#) on [Unsplash](#)

What is the process to sell a car?

What action triggers the process to start?

Customer enters website?

Customer enters store?

Manager sets monthly sales goal?

New inventory arrives?



What action signals the process ends?

Sales contract signed?

Customer receives financing?

Customer receives car?

Complete free return period?

Process

SIPOC Step 1

Establishing clearly the beginning and end of the process is the key to the SIPOC “Process” element.

Process Owner: Loan Dept Manager						
Project Leader: Supervisor						
Supplier	Input	Requirements	Process	Output	Requirements	Customer(s)
Loan Dept Mgr	Supervisor	Supervisory skills Loan system access		Loan Determination	Approve/Reject Loan Value Interest Rate 1-day response Terms & Cond	Loan Dept Mgr Borrower Borrower Borrower/LDM Borrower/LDM
Supervisor	Loan Analyst	Ttrained	<pre> graph TD Start(()) --> Receive((Receive Loan Application)) Receive --> Approval[Auto Loan Approval Process] Approval --> End((Approve / Reject Application)) </pre>	Profit Margin	>10%	Loan Dept Mgr
Loan Dept Mgr	Databases	Credit Report / Agency Vehicle Values Car Dealer systems		Reg Compliance	Non-discriminatory Disclosures	Fed Regulator
Borrower	Loan Application	Complete Correct data				
Loan Dept Mgr	Work Instructions					
Corporate Lawyer	Loan Regulations	Current				
Loan Dept Mgr	Loan Generation Software	Current				

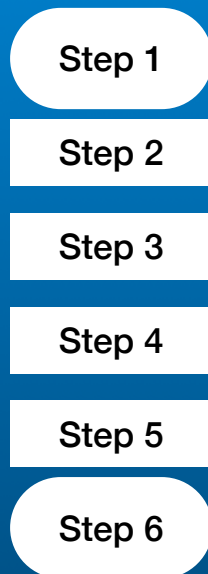
Auto Loan Application Process

Process

SIPOC Step 1

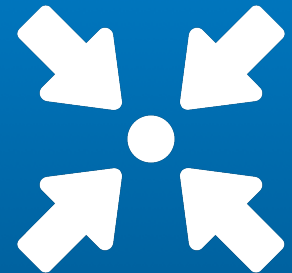
Common Practice

“Show 4-6 Process Steps”



Best Practice

“Show Start & End Steps”



Outputs

SIPOC Step 2

What do you deliver at the end step?

Principal function(s)

Financial deliverables

Legal deliverables

Information/Data

Process Performance

Other outputs, as appropriate

Process Owner:	Loan Dept Manager					
Project Leader:	Supervisor					
Supplier	Input	Requirements	Process	Output	Requirements	Customer(s)
Loan Dept Mgr	Supervisor	Supervisory skills Loan system access		Loan Determination	Assessment Loan value Interest Rate 1-day response Terms & Cond	Loan Dept Mgr Borrower Borrower Borrower/LDM Borrower/LDM
Supervisor	Loan Analyst	Trained Loan system access Credit Report access	Receive Loan Application			
Loan Dept Mgr	Databases	Credit Report Agency Vehicle Values Car Dealer systems	Auto Loan Approval Process	Profit Margin		Loan Dept Mgr
Borrower	Loan Application	Complete Correct data		Reg Compliance	Non-Statutory Disclosures	Fed Regulator
Loan Dept Mgr	Work Instructions	Updated Policy compliant	Approve / Reject Application			
Corporate Lawyer	Loan Regulations	Current				
Loan Dept Mgr	Loan Generation Software	Current				

Auto Loan Application Process

Outputs

SIPOC Step 2

How do you know if you missed an output?



The person affected will let you know.

It may be later than you'd like if they're not on the team

Outputs

SIPOC Step 2

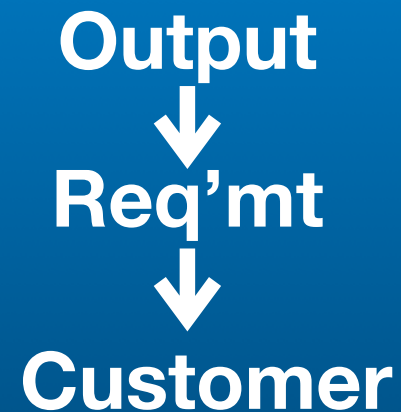
Common Practice

Output is a bin, just throw stuff in



Best Practice

Output is linked to requirements which are linked to customer



Output Requirements

SIPOC Step 2

What are the key requirements for your output to be good?

These requirements often clarify the problem
Specific and measurable requirements are best

Output Requirements

SIPOC Step 2

Common Practice

There is no column for output requirements so requirements are not assessed.

Best Practice

Incorporate the output requirements so that customer expectations are **explicitly** established.

Customer

SIPOC Step 3

Who is the customer?

Mis-identifying the customer is very common

Ideally, you can identify a specific person

Each output has a customer—maybe more than 1

Customer

SIPOC Step 3

Common Practice

Customer listed is a multinational corporation or government entity several steps removed from the process, e.g. Ford, Boeing, US Department of Health & Human Services, etc.

Best Practice

Customer is a **specific person or department** that you can contact to negotiate requirements, if necessary. That customer may be inside of your company.

Inputs

SIPOC Step 4

What do you need to create the outputs?

People—every process has them

Materials and Data

Machines, Equipment, or Programs

Measurement System

Methods, Procedures, Policies, Instructions

Ambient conditions

Process Owner:	Loan Dept Manager					
Project Leader:	Supervisor					
Supplier	Input	Requirements	Process	Output	Requirements	Customer(s)
Loan Dept Mgr	Supervisor	Supervisory skills Loan system access		Loan Determination	Approve/Reject Loan Value Interest Rate 1-day response Terms & Cond	Loan Dept Mgr Borrower Borrower Borrower/LDM Borrower/LDM
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Borrower	Loan Application	Complete Correct data		Reg Compliance	Non-discriminatory Disclosures	Fed Regulator
Loan Dept Mgr	Work Instructions	Updated Policy compliant	Approve / Reject Application			
Corporate Lawyer	Loan Regulations	Current				
Loan Dept Mgr	Loan Generation Software	Current				

Auto Loan Application Process

Inputs

SIPOC Step 4

Common Practice

Brainstorm the possible inputs

Best Practice

Use the list of input categories to rigorously assess what inputs are required (People, Materials, Machines, Methods, Measurement Systems, and Ambient Environment).

Input Requirements

SIPOC Step 4

What are the key requirements for your input to create good outputs?

Identifying these requirements drives the resolution
Specific and measurable requirements are best

Process Owner:	Loan Dept Manager					
Project Leader:	Supervisor					
Supplier	Input	Requirements	Process	Output	Requirements	Customer(s)
Loan Dept Mgr	Supervisor	Supervisory skills Loan system access		Loan Determination	Approve/Reject Loan Value Interest Rate 1-day response Terms & Cond	Loan Dept Mgr Borrower Borrower Borrower/LDM Borrower/LDM
Supervisor	Loan Analyst	Ttrained Loan system access Credit Report access	<div>Receive Loan applicatio n</div>			
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Loan Dept Mgr	Work Instructions	Updated Policy compliant	<div>Approve / Reject Applicatio n</div>			
Corporate Lawyer	Loan Regulations	Current				
Loan Dept Mgr	Loan Generation Software	Current				

Auto Loan Application Process

Input Requirements

SIPOC Step 4

Common Practice

Input requirements are not assessed.

Best Practice

Incorporate the input requirements to ensure that the process needs are explicitly established.

This ensures that gaps will be eliminated so customer expectations can be satisfied.

Supplier

SIPOC Step 5

Who is the supplier?

Mis-identifying the supplier is very common

Ideally, you can identify a specific person

Each input has a supplier—the person responsible to ensure the input satisfies all of the requirements.

Make the SIPOC Work

Success factors

Use only a single page

Describe what is **ideal** for each element of the SIPOC

Only indicate start and stop activities for the process

Inputs and Outputs are nouns

Requirements listed should be critical, specific, and measurable.

Customers and Suppliers should be specific people or departments

SIPOC

Why it works

Most processes are ad-hoc

SIPOC drives focus on a specific process

SIPOC ensures outputs and their requirements are explicit

SIPOC links customers to the outputs and requirements

SIPOC identifies the inputs required to produce good outputs

SIPOC links the supplier to the inputs and requirements

SIPOC encourages cause-and-effect thinking

The One Tool

Selection Criteria

- Ease of Use
- Versatility
- Leverage Existing Knowledge
- Generate Useful Insights
- Facilitate Common Understanding
- Guide Meaningful Action
- Propel Continued Expertise Growth/Development

