Continuous Improvement Advocates

WORKBOOK

Contents

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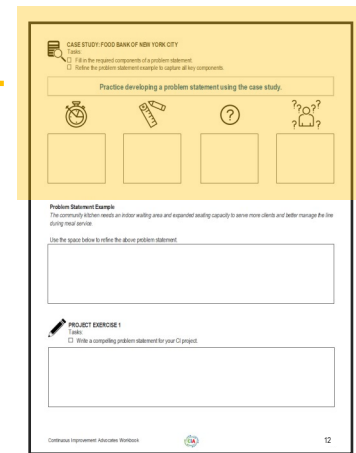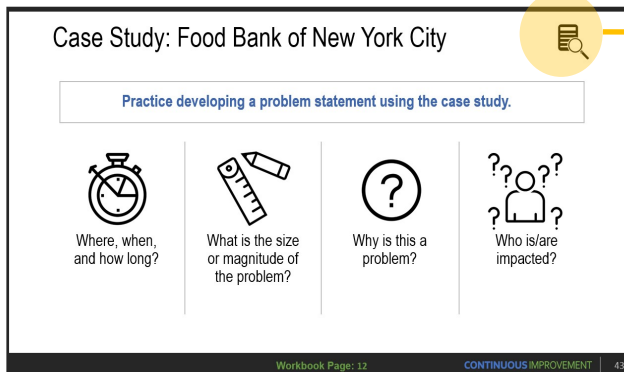Meisenheimer

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As you work your way through the CI Advocates course you will use this workbook to:

- **Take notes and follow along with classroom learning**
- **Practice using CI tools via Case Study examples**
- **Refer to the workbook exercises when compiling the toolkit for your own CI project**

Note on Icons:

The following icons appear in the upper right corner of slides with **corresponding workbook content**:

Case Study: Food Bank of New York City

Practice developing a problem statement using the case study.

| Where, when, and how long? | What is the size or magnitude of the problem? | Why is this a problem? | Who is/are impacted? |

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CASE STUDY: FOOD BANK OF NEW YORK CITY
Tasks
☐ Fill in the required components of a problem statement.
☐ Refine the problem statement example to capture all key components.

Practice developing a problem statement using the case study.

Problem Statement Example
The community kitchen needs an indoor waiting area and expanded seating capacity to serve more clients and better manage the line during meal service.

Use the space below to refine the above problem statement.

PROJECT EXERCISE 1
Tasks
☐ Write a compelling problem statement for your CI project.

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Ask Questions or Share Ideas

When you see a light bulb, you will be asked to record feedback from a group activity or answer one or more questions based on the learning material.

Review Case Study

When you see a magnifying glass, you will be prompted to answer questions or fill in a tool template based on information from a case study. You may refer to the case study examples for guidance as you complete tools related to your own CI project.

Practice Your Skills

The lightning bolt is a reminder for you to write down information as you follow along with the presentation. All needed information can be taken directly from the slides.

Dive Deep to Learn More

The diver icon indicates an opportunity to access additional resources (outside of the classroom) to deepen your knowledge of content or ideas that have been presented during the Advocates course.

We will refer to the case study below to guide your understanding and practice applying concepts as a group. Following each application of the case study you will be asked to apply the concept to your own project and record the results in your workbook.

*Adapted from: Meals per Hour (Video)*

▶ **VIDEO**
Watch: [Meals per Hour](#)

Situation

In October 2012, Superstorm Sandy devastated New York City. Store shelves were bare and disaster assistance groups struggled to meet the food needs of local communities. Six months later, people in the Rockaways were still hungry.

Challenges

Metro World Child, a partner agency of the Food Bank for New York City, operates a mobile food distribution unit that distributes emergency food boxes to communities in the Far Rockaways of New York City. Their ability to meet the increased demand brought on by Superstorm Sandy was constrained by an inefficient system for preparing and distributing food boxes.

George, warehouse manager for Metro's Food Distribution program, described the situation as, "When we get down to our last box and you have seven families standing on the line…that kills you."
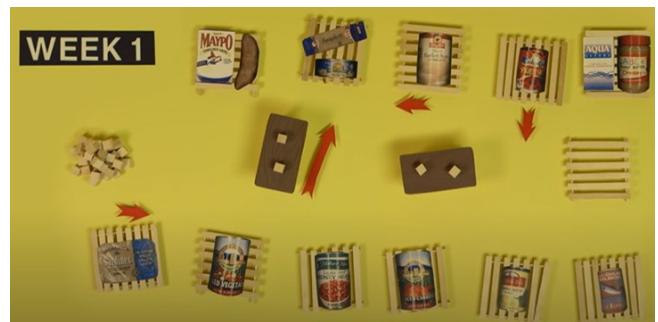
Assembly line for meal packaging at Metro World Child.

Each box contained 40 meals and could feed one family for three days. It took three minutes to pack each of the 864 boxes that fit on their truck, and the distribution of those boxes took three hours. Metro partnered with staff from the Toyota Production Support System Center (TSSC) for 8 weeks to develop solutions to their challenges.

Improvements

After TSSC completed a Gemba Walk (Gemba translates to "where the work is done"), they identified three major improvements for George's team:

- Reduced waste by limiting unused box space: 30% of the space in their existing boxes was unused. By switching to a smaller box, the team could pack boxes more efficiently and fit more boxes on their truck.

- Improved flow through an assembly line: As they packed their boxes, volunteers were walking long distances and carrying undue weight. By designing an assembly line with food stockers and box packers on opposite sides of the roller conveyor, they reduced motion and transportation.

- Improved efficiency of the distribution line: With their roller conveyor and a makeshift backstop, George's team created a continuous flow of boxes at their distribution site.

Results

Through their improvements, George's team achieved multiple efficiencies:
- Reduced waste by limiting unused box space: The number of boxes a truck could hold increased from 864 to 1,260 (i.e. 34,560 to 50,400 meals).
- Improved flow through an assembly line: Box packing time was reduced from three minutes to 11 seconds.
- Improved efficiency of the distribution line: The time it took to distribute their boxes was reduced from three to 1.2 hours.

1 Section 1
Introduction

Welcome! You're here because you want to learn how Continuous Improvement can enhance the way you work.

To start, what is Continuous Improvement?

Continuous Improvement (CI), also known as Kaizen, is an incremental improvement strategy. The goal of CI is to create small, measurable improvements in processes that reduce or eliminate waste in order to increase quality.

The following exercises will introduce you to the City of Tacoma's ci4i process improvement framework and help you flex your CI muscles by applying foundational concepts and tools to featured case studies as well as your own CI project.

Let's get to work:

BICYCLE EXERCISE
Tasks:

☐ List at least 3 things you would want to know.

> ## Practice solving a typical business problem.

QUESTIONS TO CONSIDER
Tasks:

☐ Answer each of the following questions:

> ## How are the issues that businesses deal with different from government?

1   Do you have similar information about processes or programs in your work group?

2 If so how do you use the information to manage your processes or programs?

3 Do you use similar data to judge the effectiveness of your processes or programs?

2 Section 2
Widgets and Factories

As you expand your thinking on the differences between continuous improvement in government compared to private industry, consider the following quote:

"Government is a group of hard-working people trapped in dysfunctional systems producing invisible things for people who do not want them, on behalf of others that do, for reasons we can rarely articulate and hardly measure."

-Ken Miller

Let's get to work:

3 MYTHS THAT KEEP GOVERNMENT FROM IMPROVING
[Book: We Don't Make Widgets: Overcoming the Myths That Keep Government From Radically Improving, Ken Miller](#)

1 **We don't make widgets**
What we do is hard to describe, squishy, and intangible.

2 **We don't have customers**
We have hostages– they didn't choose us, they don't want to come back, and it doesn't really matter if they are happy. Also, we have customers with competitive interests who can't agree on what they want vs. need.

3 **We're not here to make a profit**
Increased revenue or time savings are not reinvested in us as employees. There is no reward for making Improvements.

WHAT'S A WIDGET?
Tasks:
☐ Fill in the information below about characteristics of widgets.

Widgets have ____ specific characteristics.

WHY DO WIDGETS MATTER?
Tasks:
☐ Fill in the information below about why widgets matter.

We produce _____ and deliver them directly to _____.

If we can't identify widgets we can't identify the _____ that need to improve.

HOW TO IDENTIFY WIDGETS AND INTERNAL FACTORIES
Tasks:
☐ Complete the table below.

Share an example of a factory, a widget you produce and your customer.

Factory	Widget	Customer
What resources, partners, rules, and activities are involved?	How Many? At what cost?	What do they value? Timeliness? Ease of Use?

A core fundamental of Continuous Improvement is curiosity. We believe that solving a problems is all about learning to see and dive deeper. As a CI Advocate, you will have the opportunity to develop and, undoubtedly, will be called upon to exercise this critical skill. In nearly all CI projects you will find yourself in unfamiliar territory. Before getting started it is important to frame your thinking around key principles that will guide you on your journey. We refer to these principles as the CI Mindsets.

Let's get to work:

CI MINDSETS
Tasks:
☐ Fill in the blanks below.
☐ Fill in (or select from the drop down) the mindset that corresponds with each image.

We're _____ of making it better.
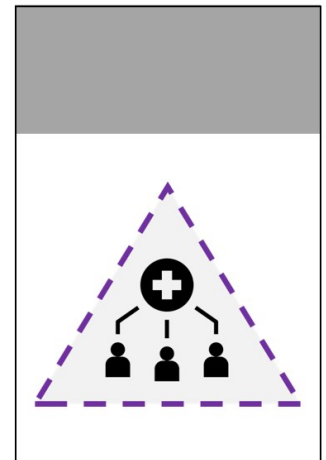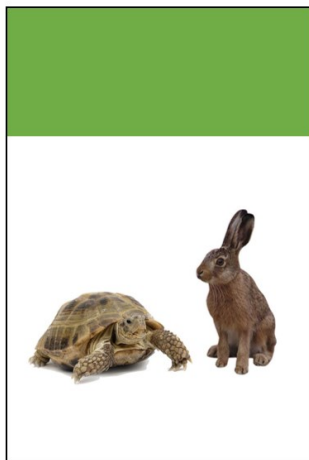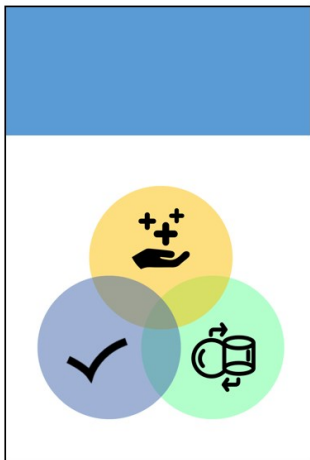
HOW DOES THE CUSTOMER DEFINE VALUE?
Tasks:
☐ Fill in the blanks below.

1. _____

2. _____

3. _____

NUMBERS AND SYMBOLS EXERCISE

Tasks:

☐ Use the space below to complete the exercise.

You will be given 45 seconds to memorize symbols for the numbers 1 to 10.

1. _____   6. _____   Solution:

2. _____   7. _____

3. _____   8. _____

4. _____   9. _____

5. _____   10. _____

Write down as many as you can!

"*Continuous improvement is about learning to see how things are connected within the entire system.*"

QUESTIONS TO CONSIDER

Tasks:

☐ Answer each of the following questions.

What efforts could you make to discourage silo building?

1 In your work with the city how have you made connections and worked with other functions to overcome silo thinking?

2   How could overcoming silo thinking lead to better outcomes in your work area?

[ ]

3   How might you avoid silo mentality throughout your improvement project?

[ ]

HOW CAN WE FORM NEW HABITS?

Tasks:

☐ Fill in the blanks below.

Remember: people respond to the _____ they work in.
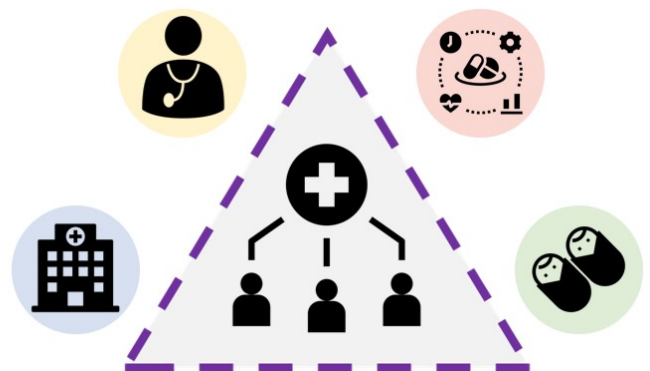
Don't respond to problems by blaming _____, let's improve the _____ first.

4 Section 4
Ci4i Framework

Continuous Improvement is a broad field with many different approaches. You may have heard about Lean, Six Sigma, Total Quality Management (TQM), User Experience (UX) and High Performance Organization (HPO). At the City of Tacoma, we have developed an approach called the Ci4i Framework which draws on project management concepts utilized by a variety methodologies. Ci4i includes 4 phases: initiate, investigate, improve and implement. The table below provides an overview of tasks and tools in each phase. Alternatively, the Ci4i Project Checklist and the Ci4i Framework Overview are more specific references listing detailed actions and milestones for project work.

Let's get to work:

Ci4i FRAMEWORK TOOLS
Ci4i Project Checklist   Ci4i Framework Overview

	GOAL	DELIVERABLES	ADDITIONAL TOOLS
initiate	1. Define the problem 2. Develop the charter 3. Get leadership support 4. Establish a project team	1. Project Charter - Front 2. Stakeholder Analysis 3. Environmental Scan & STEEPLE	1. Start with Why (Golden Circle) 2. SMART Goals/ HARD Goals (Targeted Outcomes)
investigate	1. Understand the current state 2. Understand the customer perspective 3. Verify the problem statement 4. Understand root causes of current state issues	1. Current State Map 2. Customer Perspective tool 3. Root Cause(s) Analysis tool	**Map Options:** 1. Process Map 2. The 8 Wastes 3. Value Analysis **Customer Perspective:** 1. Empathy Map 2. Customer Profile **Root Cause Analysis Options:** 1. Cause(s) Map 2. The 5 Whys 3. Fishbone
improve	1. Develop recommendations for improvement	1. Brainstorming Tools 2. PICK Chart 3. Business Case for Sponsor Approval	1. Affinity Diagram 2. 5S Analysis 3. Mistake Proofing (Poke Yoke) 4. Test Cards (Strategyzer)
implement	1. Fully implemented solution	1. Project Charter - Back (Documented Results) 2. Future State Map 3. 30-60-90 Day Plans	1. Standard Operating Procedures 2. Change Management (ADKAR) 3. Experiments/Prototyping 4. Data Indicators 5. Feedback Grid 6. Lead with a Story

During the initiate phase you will use several tools in order to complete a Project Charter. A Project Charter is the ultimate guiding document for your work. First and foremost, the Project Charter includes a compelling problem statement. Teams are kept on track by the scope and boundaries it contains. Similarly, progress is measured against targeted outcomes and the established project timeline. Completing a Project Charter ensures that the context for the project has been carefully considered and all details agreed upon by management and the project team before the work begins.

Specific tools are provided to help you complete most areas of the areas of the Project Charter. In class, we will work through several tools using a Case Study example. You may refer to the examples in your workbook to complete the required exercises for your own project. Your final task will be to fill in the Project Charter template.

Let's get to work:

THE GOLDEN CIRCLE
Book: Start With Why, Simon Sinek

In his book, Start with Why, Simon Sinek uses a model that he calls the Golden Circle to explain how legendary leaders such as Steve Jobs, Martin Luther King Jr. and the Wright brothers were able to achieve what others who were just as smart and hardworking, and sometimes better funded, were not.
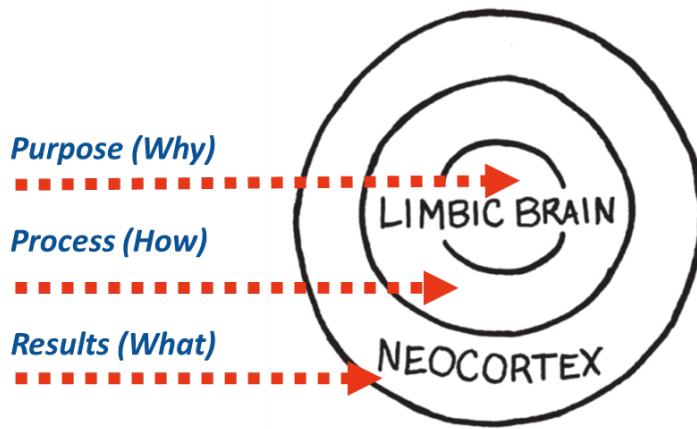
START WITH WHY
Tasks:
☐ Complete the prompt below.

> ## Tell us your single salient sentence of why your project is critical.

![Project Charter Overview icon]

Project Charter Overview

Tasks:

☐ Fill in the blanks below.

Project Charter

The Project Charter is divided into two parts: front and back. The Project Charter Front is a mandatory deliverable for the initiate phase and must be completed and approved before any project can move forward. The Project Charter Back is completed near the end of the project in and is used to document feedback, progress and lessons learned that may be revisited or reviewed by others at a later date. We will go into more detail on the Project Charter Back during the implement phase. The tools and case study examples in the remainder of this section will assist you in completing all sections of the Project Charter Front including Problem Statement, Team, Stakeholders (and Customers), Scope, Boundaries, Targeted Outcomes and Timeline.

Project Charter Front

Problem Statement

A problem statement should clearly explain the issue you are trying to address. The problem is NOT "the form needs to be automated" nor is it "we need to fill out the form faster"…

Ask why you have a form in the first place – the answer to that question is your real problem statement! If your problem statement has a question mark or a solution in it – it isn't done. Refine it into a statement that describes an opportunity for improvement!

Craft a clear concise statement that briefly states:

- Where and when (and how long) the problem is occurring

- The size or magnitude of the problem

- Why it's a problem/the impact

- Who the customers are (who is impacted)

CASE STUDY: MEALS PER HOUR

Tasks:

- ☐ Fill in the required components of a problem statement.
- ☐ Note all key components of the problem statement using the chart.
- ☐ Draft a problem statement using your notes from the chart.

Practice developing a problem statement using the case study.

	Detail	Description	Input/Data
	What?	Name the Problem(s)	
	When?	During what process, time of year, task, does the problem occur?	
	How long?	Describe frequency/How often?	
	Size/Magnitude?	Unit, area, equipment affected	
		Process/tasks being performed	
	Why is it a problem?	Impact to Safety	
		Impact to Environment	
		Impact to Cost/Resources	
		Impact to Equipment	
		Impact to Policy/Code	
		Other impact(s)	
	Who is impacted?	Number of customers impacted?	

Problem Statement

Use the space below to draft a problem statement using your notes from the chart.

Team

Teams should be limited to 5-10 people. More individuals than that make success less likely and consumes undue levels of resources. Try to create a representative team, but not all stakeholder groups must have a representative from their group on the team. For example, in teams that touch the entire City, it is unreasonable to have a team member from every department/division within the City. Select representatives who bring the perspective of multiple groups. Other individuals can be included as resources.

Project Team

SPONSOR

The sponsor is the individual with decision-level authority for the process area. This may be an executive or for a specific program, it would be the program manager. They provide direction on goals and boundaries via charter. The ultimate responsibility of the sponsor is to remove barriers to implementation. Rather than hand-holding, the sponsor should check in periodically with the team to ensure that they are still working toward the agreed upon goals and that their process and solutions are basically on track.

TEAM LEAD

The team lead is staff level support who does much of the project management and logistical support for the improvement effort. They proactively keep the team in alignment with the charter, goals, and boundaries. They are also primarily responsible for driving implementation after recommendations have been accepted by the sponsor.

TEAM MEMBERS

The team is made up of subject matter experts (SMEs) tasked with understanding the current process and designing an improved process. They are active in all improvement activities. They will also assist with implementation of recommendations and follow-up assignments or any future adjustments to the process. Their primary responsibility is to generate solutions and recommendations on behalf of all stakeholders. The team may include customers of the process being improved.

RESOURCES

Resources are SMEs, process co-owners, and others who help answer questions and provide information, but do not participate full-time in all improvement meetings and events. It may include outside vendors, internal service departments, interdepartmental management, or key customers.

CI ANALYST

The Continuous Improvement analyst is an unbiased third party facilitator. They are not just working for management; rather, they work to make sure all voices are heard as part of an improvement process. They are not SMEs and do not have "the answers" – so they depend on the team to generate solutions. Their goal is to guide the team through an honest improvement process and act as a neutral facilitator. They should push back hard against assumptions and ask for a lot of proof, but they should not be the architect of solutions. CI Advocates serve as both facilitator and team lead for their independent improvement projects.

Stakeholders

Identify stakeholders as soon as possible in order to determine their role in your project as well as when and how to engage with them. Communicating with stakeholders at the outset of a project is critical to make sure everyone knows what to expect and plan for as the project moves forward. Some stakeholders won't come into play until later in the project but it is helpful to anticipate who they are so you can get their buy-in and help them feel involved from the beginning. Once your list of stakeholders is completed, start prioritizing it to ensure you are talking to the right people at the right time.

Customers & Stakeholders

Customer

- The direct recipient of the output from a process or the individual(s) whom we will design the process for

Stakeholders

- Any group or individual who can affect or who is affected by the project's outcomes

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Practice developing a Stakeholder Analysis.

Stakeholder Analysis

Use the space below to record your notes from the exercise.

Who? (Stakeholder: Customers, Team)	Issues & Concerns (What do they care about/role?)	Strategy (How can you help them?)

Scope

Defining your scope helps you maintain focus on your specific process and sets you up for success by avoiding the ad hoc addition of additional problems or processes to your project. This is called "scope creep." Once your charter is set and approved by your sponsors, you as the facilitator need to be firm from that point on about not adding to your scope. Be careful about processes with multiple variations or "flavors." Consider if the variations have the same process or separate distinct processes. If the processes and widgets are very similar, consider including them in your analysis.

Scope = Start/End +/- "Flavors"

Scope defines the distinct business process in which you will target your improvement efforts:

- Define the scope by identifying the start and end of the business process you are focused on

- Consider any "flavors" or variations of your business process that you may choose to include or exclude

Boundaries

Boundaries such as budget or regulatory needs should be identified and documented at the beginning of a project to ensure that expectations are aligned regarding potential solutions. They may also be used to help identify areas of the project that are outside out of your defined scope. Once a boundary is established it is unlikely for it to change as the project progresses. Examples of boundary statements include:

- Project cost will not exceed $25,000
- Implementation of any proposed changes will require Council Approval
- The project will not include modifications to SAP interface

Boundaries

Boundaries include any options or factors that limit the project team or the potential solutions produced by the project:

- Boundaries are considered completely "off limits"

- Examples of boundaries could be resource constraints, legal limitations or areas of the process that your team does not want to address

CASE STUDY: MEALS PER HOUR

Tasks:

☐ Refer to the diagram from the case study to define the process start and process end

☐ Write down 2 possible variations or "flavors" of the process and answer the follow up question.

☐ Write down one or more suggested boundaries for the case study

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Practice developing a project Scope and Boundaries using the case study.

If we were leading this project how would we identify the scope and boundaries?

✓ What is the Process Start?

✓ What is the process end?

✓ What are possible flavors?

✓ Suggested boundaries?
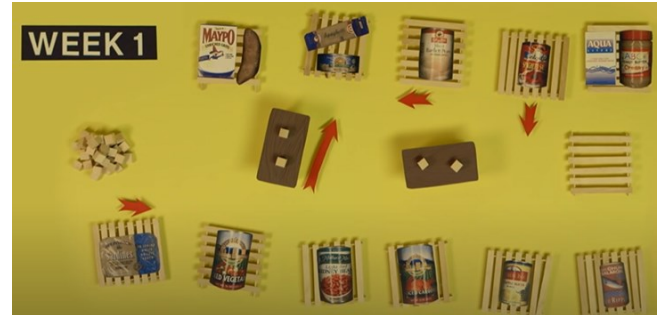
Scope

Use the space below to identify the process start and process end.

Process Start:

Process End:

Use the space below to identify 2 possible variations or "flavors."

Flavor A:

Flavor B:

Are the processes and outputs similar enough to narrow to one project scope? Or would you choose to consider them independently?

Boundaries

Use the space below to identify project boundaries.

Note on Progress:

Congratulations! At this point you should be well on your way to completing your project charter. You Started with Why to help you craft a compelling **Problem Statement.** You learned about balancing a **Team** and compiled a list of **Stakeholders** you will engage with during your project. You defined your project **Scope** by carefully considering the start and end of the process your project will focus on improving and choosing to include or exclude any possible variations. And, you have documented **Boundaries** for the project to align expectations. Before we move on to the final component of the charter, **Targeted Outcomes & Timeline** we will discuss the importance of performing an environmental scan in order to identify external factors that could potentially impact the project.

Environmental Scan

Performing an environmental scan is necessary in order to document changes taking place that are happening outside the factory where your widget is produced. Think about your factory. What is the weather like outside? What people, policies, and external factors are in place that may influence the production of your widget?

STEEPLE Analysis

A STEEPLE analysis is one tool that may be used for your environmental scan. Each letter in STEEPLE stands for 1 of 7 categories you will use to complete your analysis: Social, Technological, Economic, Environmental, Political, Legal, Equity. When completing your analysis, use your best judgement to determine which category to utilize. There are no right or wrong answers.
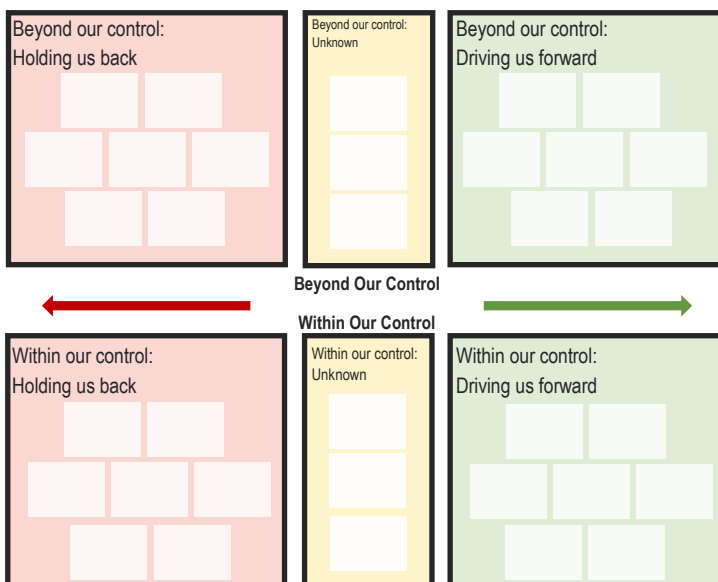
SOCIAL	TECHNOLOGICAL	ECONOMIC	ENVIRONMENTAL	POLITICAL	LEGAL	EQUITY
• Health conscious-ness • Population growth rate • Age distribution • Career attitudes • Emphasis on safety	• R&D activity • Automation • Technology incentives • Rate of technological change	• Economic growth • Interest rates • Exchange rates • Inflation rates	• Water, wind, soil • Food • Soil energy • Pollution • Environmental regulations.	• Tax policy • Employment laws • Environmental regulations • Trade restrictions and tariffs • Political stability	• Legal restraints and regulations • Health and safety of employees	• Racial and Ethnic communities • Historically under repre-sented communities input • The compounding impact of decisions over time

Environmental Scan

Beyond our control: Holding us back

Beyond our control: Unknown

Beyond our control: Driving us forward

Beyond Our Control

Within Our Control

Within our control: Holding us back

Within our control: Unknown

Within our control: Driving us forward

An Environmental Scan is a technique for assessing the environment of your operations by focusing on internal and external factors:

- Consider things our staff can and can't control

- What is holding us back and what is driving us forward?

- What is within our control and beyond our control that has an unknown impact?

CASE STUDY: MEALS PER HOUR

Tasks:

☐ Complete the Environmental Scan below using the case study.

Practice scanning the environment with an Environmental Scan using the case study.

Beyond our control: Holding us back	Beyond our control: Unknown	Beyond our control: Driving us forward

Beyond Our Control

Within Our Control

Within our control: Holding us back	Within our control: Unknown	Within our control: Driving us forward

Targeted Outcomes & Timeline

Use targeted outcomes to set a direction for your project that the sponsor, team members and customers can agree upon and understand. **Tasks and deliverables are not targeted outcomes!** Targeted Outcomes must be measurable as they will be your standard for determining whether or not improvements made as part of the project were successful. You must be able to use the outcomes in order to compare the current state to the improved state in order to measure progress.

Using **SMART or HARD goals** as a guide is helpful to generate targeted outcomes that are appropriate and meaningful. Your timeline should clearly lay out the start and end of the project and any relevant actions or tasks that you expect to accomplish within in each phase.

Targeted Outcomes & Timeline

Targeted outcomes help us answer the question: How will we know we are successful?

- A few of the goals can be more qualitative/long term/strategic.

The project timeline should set dates to reach milestones for each phase in the ci4i framework

- You may include additional milestones as needed

SMART Goals and HARD Goals

Tasks:

☐ Fill in the blanks below.

CASE STUDY: MEALS PER HOUR

Tasks:

☐ Respond to the question below and refine the Targeted Outcome example from the case study.

Practice developing Targeted Outcomes using the case study.

Targeted Outcomes Example

Develop a survey to collect feedback from clients while they are in line.

Describe how the statement above either meets or does not meet the criteria for a successful Targeted Outcome.

Use the space below to refine the Targeted Outcomes example above.

Note on Progress:

We've now covered all components of the Project Charter Front! Your final task is to compile information for your independent CI project onto the Project Charter Front template within your Excel toolkit. Make sure to have your Project Charter Front ready to go before the Day 2 class session.

Case Study
Boeing: Then and Now

We will refer to the case study below to guide your understanding and practice applying concepts as a group. Following each application of the case study you will be asked to apply the concept to your own project and record the results in your workbook.

Sources: Wikipedia: Boeing 377 Stratocruiser, Wikipedia: Boeing 707

▶ **VIDEO**
How Boeing Builds a 737 in 9 Days

How did Boeing pivot from war planes to making one of the most successful passenger airplanes in history?

Situation

In 1947, Boeing introduced its first post-war commercial aircraft the Stratocruiser (377). Based on the US military's Boeing C-97 Stratofreighter, it featured a luxurious pressurized cabin, air conditioning, two passenger decks, and a lower level lounge. It was among the most advanced passenger aircraft for its day. With a speed of 350 mph, the 377 could fly from San Francisco to Honolulu in just under 9 hours. All these amenities came with a price however, with one way international fares ranging from $290-400 in 1955 dollars ($2,800-$3,800 today).

Despite its technological innovations and focus on passenger comfort, only 55 were produced. The 377 proved to have low reliability and high maintenance costs. Additionally, it could only carry a maximum of 84 passengers and tickets were not affordable for the average traveler.

Boeing's "double decker" Stratocruiser 377.

Challenges

The end of wartime travel restrictions led to the emergence of new carriers. Increased competition resulted in lower fares and caused a surge in short-range domestic air travel. To keep pace with growing passenger volume, airlines rapidly found themselves needing additional capacity.

High maintenance costs, limited passenger capacity, and expensive fares, made the 377 unsuitable for frequent shorter flights. The changing needs of their customers required Boeing to rethink their strategy.

The Boeing 707 is credited with beginning the jet age.

Improvements

The result was the Boeing 707. A completely new design, it was Boeings first passenger jet aircraft. Emphasizing speed and passenger capacity, the 707 allowed airlines to offer customers more routes, shorter trips, and lower fares. The 707 could accommodate 174 passengers, and had a maximum speed of over 600 mph. A trip from San Francisco to Honolulu via 707 could now be accomplished in less than 5 hours. At the time production ended, over 856 had been built.

Results

The commercial success of the 707 established Boeing as a leader in aircraft manufacturing. Boeing has since iterated on the 707's original design to produce a variety of successful jet engine aircraft. Perhaps the most notable, is the Boeing 737, one of the most manufactured passenger aircraft in the world.

During the investigate phase you will understand what is. You will use tools to capture customer perspective. You will create a process map to visualize the current state of your process. On your process map you will record data to establish baseline measurements and add details such as people involved or time required for each step. Finally, you will identify areas of waste, analyze the value of each step in the process and pinpoint the root causes of your most high impact challenges.

Before you transition to the investigate phase, review your charter one last time. Have you clearly identified your problem and balanced your project team and stakeholders? Are your targeted outcomes both meaningful and measurable? Will they enable you to determine whether or not your potential improvements are successful? Has your charter been reviewed and approved by your Sponsor? If you answered 'no' to any of those questions, go back and complete the missing steps.

Let's get to work:

CHARTER CHECK
Tasks:

☐ Use the space below to reflect on your charter and document feedback from your group.

Gather feedback on your charter.

CUSTOMER PERSPECTIVE
Tasks:

☐ Fill in the information below about customer perspective.

Consider ___ specific ways to gain insights from your customer.
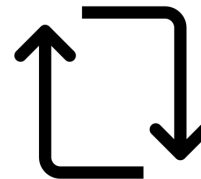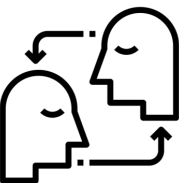
Customer Perspective Tools
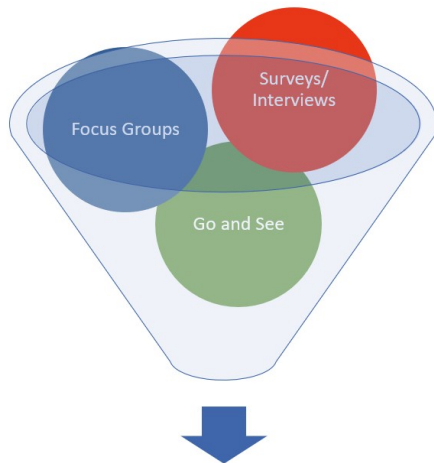
Direct Feedback
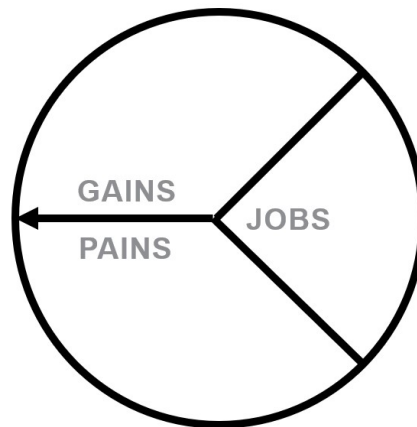
Customer Profile
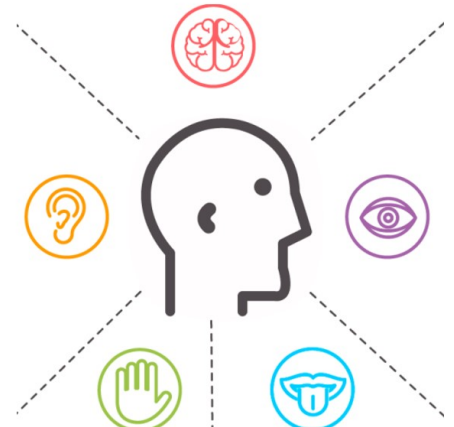
Empathy Map

EMPATHY MAP EXERCISE

Tasks:

☐ Put yourself in the shoes of a young child experiencing an MRI for the first time.

☐ Use the space below to practice creating an empathy map.

Practice creating an empathy map.
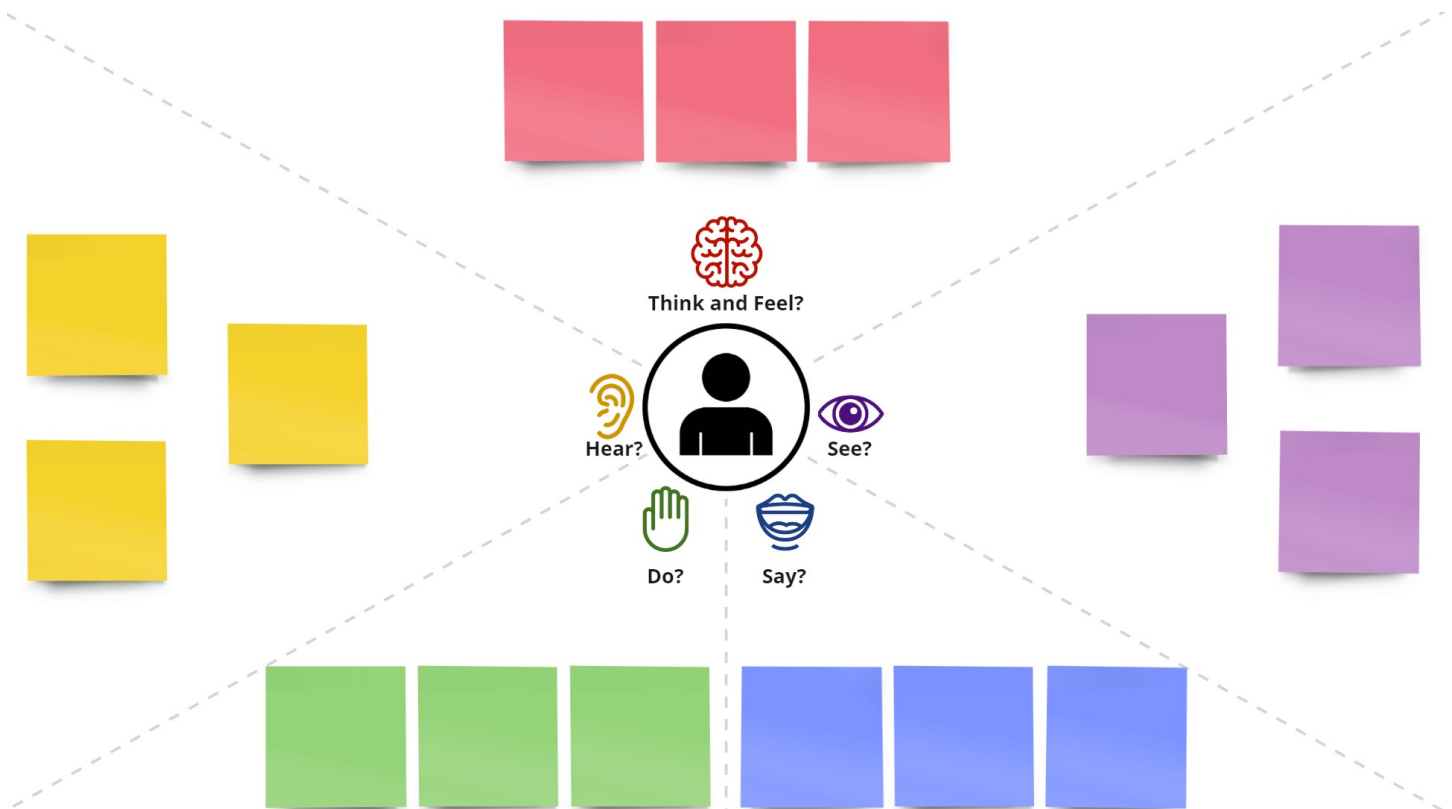
DIRECT FEEDBACK - GO AND SEE (AKA GEMBA WALK)
Tasks:
- ☐ Watch the video: IDEO: MRI at Children's Hospital of Pittsburgh
- ☐ Answer each of the following questions.

What did you observe?

1 What tools and systems were used?

2 What wasn't working?

3 What ended up working?

CASE STUDY: Boeing Then and Now

Tasks:

☐ Watch the video: Clay Christensen: Jobs to be Done

☐ With your breakout group, document jobs pains and gains for Boeing's commercial airline customers

---

Practice the customer profile using the case study example.

BOEING   **CUSTOMER:** Commercial airlines

GAINS

PAINS

JOBS

JOBS: Tasks the customer is trying to perform, problems they are trying to solve or needs they aim to satisfy

PAINS: Anything that annoys or challenges the customer before, during or after trying to complete a job

GAINS: Things that the customer may want, expect or desire that make them excited to use a product or service
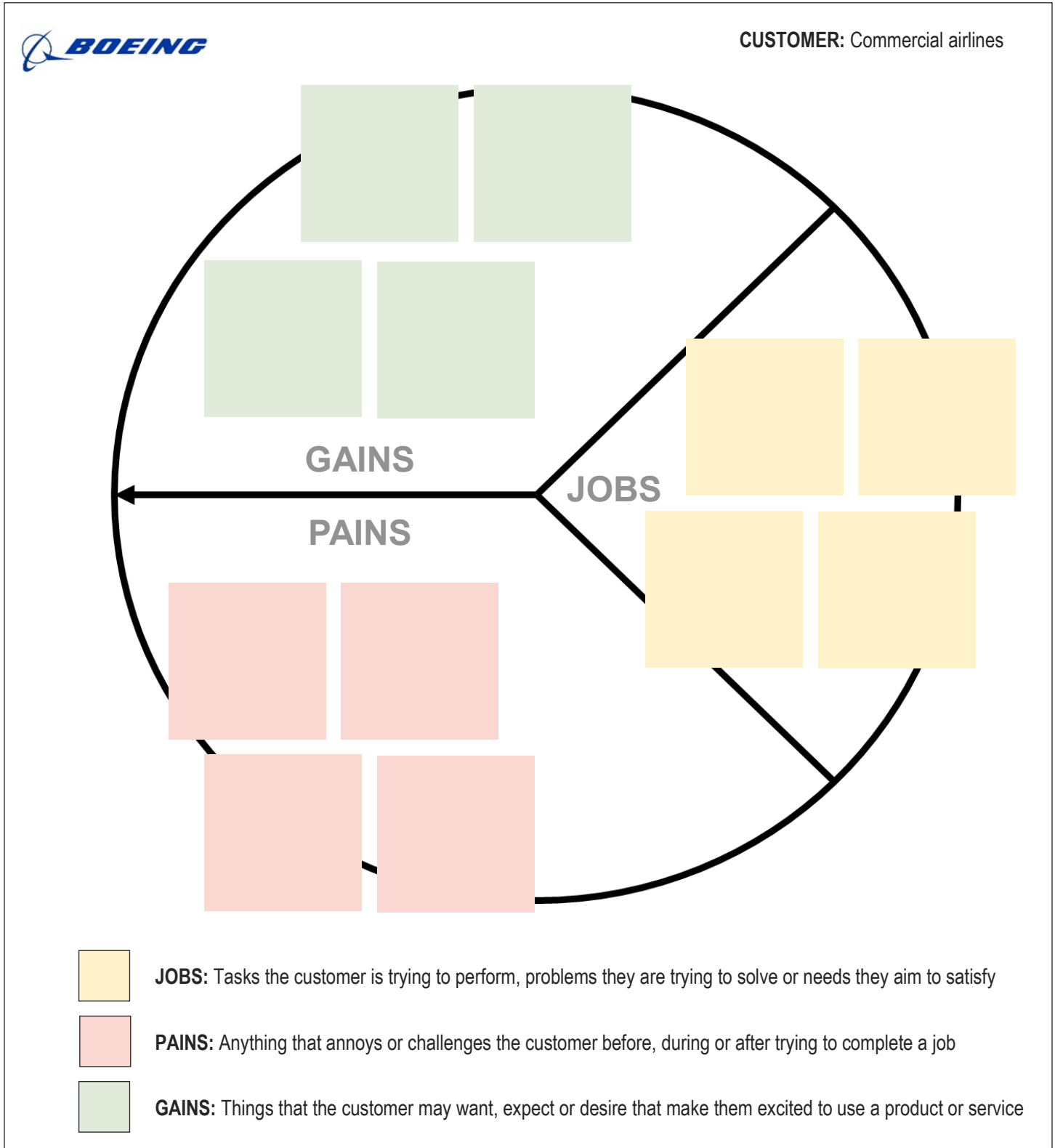
CASE STUDY: Boeing Then and Now

Tasks:
- ☐ Watch the video: How Boeing Builds a 737 in 9 Days
- ☐ List out the process steps for each day and complete the process map.

Practice creating a 9 step process map using the case study video.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
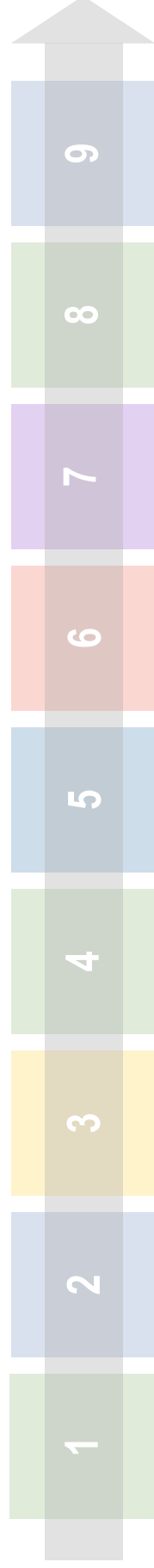
Day 1: _____

Day 2: _____

Day 3: _____

Day 4: _____

Day 5: _____

Day 6: _____

Day 7: _____

Day 8: _____

Day 9: _____

STEP 1

STEP 2 → STEP 5

STEP 3

STEP 4

STEP 6

STEP 7

Pass?

YES → Store in yard for delivery

NO → Make adjustments

8 Wastes

The 8 wastes can be identified by the acronym WOODMITE, which stands for Waiting, Overproduction, Overprocessing, Defects, Motion, Inventory, Transportation, and Unused Employee Creativity. Generally speaking, waste can be identified as any part of your process that does not add value for the customer.

Goal: Reduce or eliminate non-value added steps.

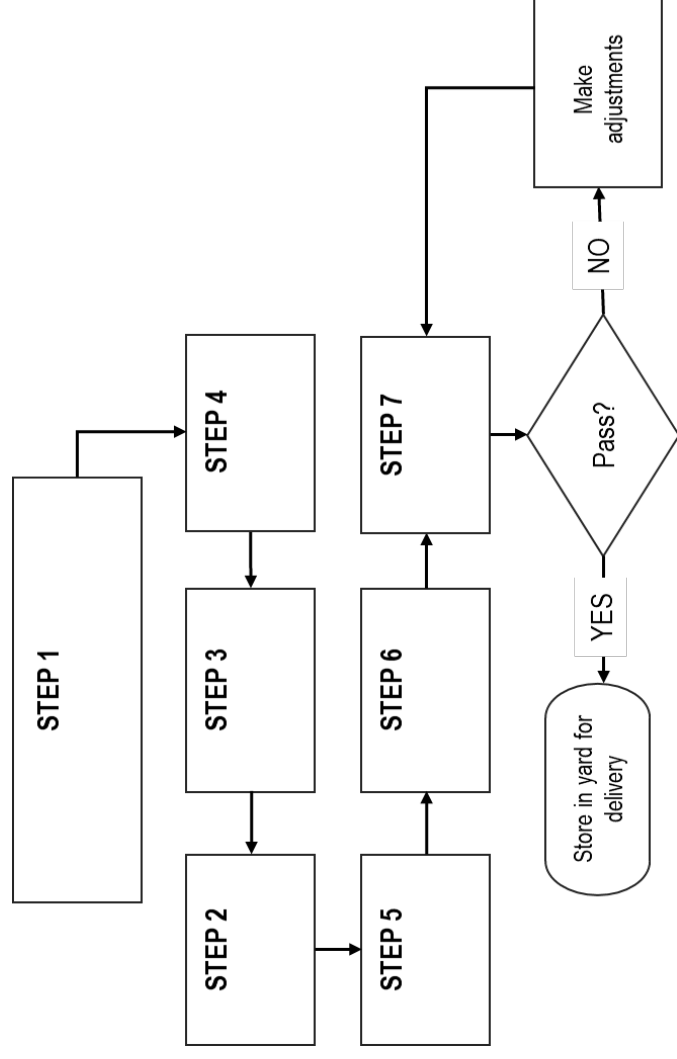| 8 Wastes			
(icon)	Waiting	(icon)	Motion
(icon)	Overproduction	(icon)	Inventory
(icon)	Overprocessing	(icon)	Transportation
(icon)	Defects	(icon)	Employee Skills (Unused)

The 8 wastes are:

Waiting: People waiting on material or equipment.
Ex: Waiting for inbox to fill up before processing paperwork.

Overprocessing: Doing more work, adding components or steps. Ex: Using higher precision than necessary.

Overproduction: Creating something before it is asked for or required. Ex: Too many copies, reports that no one reads.

Defects: Errors that make product or service unusable or result in rework. Ex: Forms with missing information.

Motion: Unnecessary, repetitive movement of people equipment or machinery. Ex: Walking, lifting, reaching.

Inventory: Producing more than the customer needs. Ex: Purchasing too many supplies, unused files in a database.

Transportation: Movement of people, inventory, equipment. Ex: Sitting far away from those you interact with frequently.

Employee Skills (Unused): Waste of human talent or ingenuity. Ex: Not asking for employee feedback.

CASE STUDY: Boeing Then and Now
Tasks:
☐ Record examples of waste you observed in Boeing's 737 assembly process.

Practice documenting waste using the case study example.

8 Wastes			
(icon)	**Waiting:**	(icon)	**Motion:**
(icon)	**Overproduction:**	(icon)	**Inventory:**
(icon)	**Overprocessing:**	(icon)	**Transportation:**
(icon)	**Defects:**	(icon)	**Employee Skills (Unused):**

Value Added Analysis

Value Added
- The customer must recognize the task as important.
- The product or service must physically change or transform.
- The task is done right the first time.

Non-Value Added
- Waste. A process step that adds no value to the product or service.
- Does the customer want to pay for this?

Non-Value Added, but Required
- A process step that adds no value to the product but is currently required to produce the product or service. A required law, regulation, rule etc. Internal or external.

Root Cause Analysis

Though the generally accepted view of cause and effect is that for every effect there is a cause, a more accurate approach is "for every effect there are causes."

The root is a system of causes. A system is a combination of parts that interact and function as a whole. Since every effect has causes (plural), there isn't a cause (one cause) to any issue or event. Looking for one cause is an example of the natural bias to the singular, right-answer thinking. Getting to the root of an issue is the process of identifying all the causes by digging into the details. Instead of attempting to differentiate causes, an investigation should identify all of the causes then differentiate the solutions.

Concept
- Since every effect has causes (plural), there isn't a cause (one cause) to any issue or event
- Getting to the root of an issue is the process of identifying **_all the causes_** by digging into the details

"The Weed"
- above the surface
- obvious, easy to see
- the symptom

"The Root"
(root system)
- underlying causes
- below the surface
- not obvious
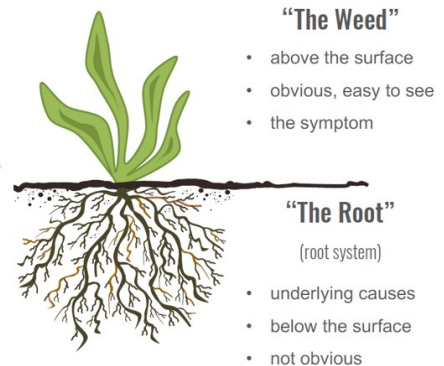
Execution
- Focus on impacted goals
- Rely on evidence and facts (what, when, where)
- Start with what you know—using 5 Whys
- Facilitate a group with those closest to the work
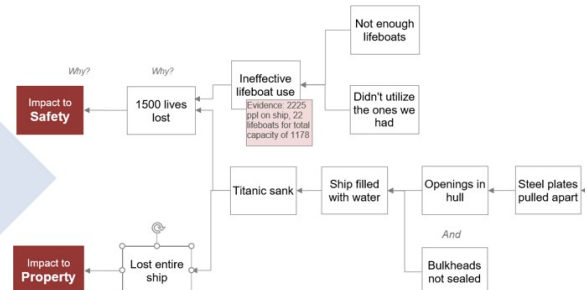
Root Cause Analysis

Root cause analysis (RCA) is a general methodology for problem solving that focuses on investigating and understanding the root causes of a problem or issue. The purpose of Root Cause Analysis (RCA) is to explore the major contributing factors to a specific breakdown or failure in your process. Tools including the 5 Whys and Fishbone diagram allow you to document your root causes in order to develop solutions to your most pressing challenges.

CASE STUDY: Boeing Then and Now (5 Whys)
Tasks:

☐ Review the 5 Whys example below based on the case study.

Why did Boeing encounter barriers entering the civil aviation market?
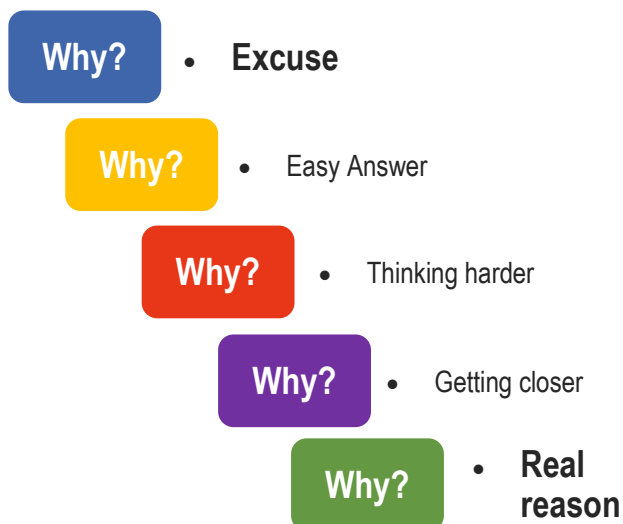
Why? • **Excuse**	**Why 1:** Customers could not afford the price of airfare - 2,800-3,800 today's $
Why? • Easy Answer	**Why 2:** Cost per flight were very high
Why? • Thinking harder	**Why 3:** Carry less than 100 passengers
Why? • Getting closer	**Why 4:** Plane lacks space for more seats
Why? • **Real reason**	**Why 5:** Double decker design based on wartime Stratofreighter

---

CASE STUDY: Boeing Then and Now
Tasks:

☐ List 3 or more baseline data points to measure the impact of proposed improvements.

Brainstorm baseline data points using the case study.

Note on Progress:

Great job! You are almost through with the investigate phase. By now you should have drafted your **Process Map** and performed a **Root Cause Analysis** for your project. Before moving on to the improve phase you will tackle one last task: collecting baseline data .

During the improve phase you will explore what could be. You will brainstorm and prioritize potential solutions as you work towards developing a business case for sponsor approval.

Before you transition to the improve phase, review your current state map, root cause analysis and baseline data. Did your process map help you identify bottlenecks, repetition and waste? Did your stakeholders agree on the end result? Which factors or inputs did you identify in your root cause analysis? What did you learn? What data points did you select to capture your baseline? Do you need help measuring or retrieving data from specific sources? If your analysis is incomplete, go back and complete the missing steps.

Let's get to work:

INVESTIGATE CHECK
Tasks:

☐   Use the space below to reflect on your investigate phase resources and document feedback from your group.

> **Gather feedback on your investigate phase resources.**

"Progress cannot be generated when we are satisfied with existing situations."
-Taiichi Ohno

QUESTIONS TO CONSIDER
Tasks:

☐   Answer each of the following questions.

> **How will you improve?**

1   What is the one thing you can focus your energy on to make the biggest impact?

2   What practices or processes will you start stop or change?

START	STOP	CHANGE

3   Which non-value added steps will guide your improvement efforts?

LEAN SIX SIGMA: 5s
Tasks:
☐ Fill in the information below about Lean 6 Sigma 5s.

5s is a workplace organization technique composed of ___ phases.

SORT	SET IN ORDER	SHINE	STANDARDIZE	SYSTEMIZE
Keep only necessary items in the workplace.	Arrange items to promote efficient workflow.	Clean the work area so it is neat and tidy.	Set standards for a consistently organized workplace.	Maintain and review standards.
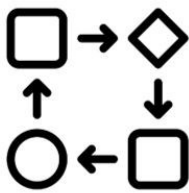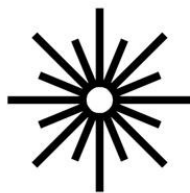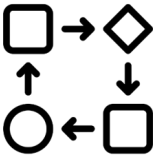
LEAN SIX SIGMA: 5s
Tasks:

☐ Use the table below to document how you might apply 5s to a CI project.

SORT	SET IN ORDER	SHINE	STANDARDIZE	SYSTEMIZE

CASE STUDY: Meals Per Hour
Tasks:

☐ Use the space below to record ideas for improving the food packing and distribution workflow.

Practice brainstorming using the case study example.

CASE STUDY: Meals Per Hour

Tasks:

☐ Use the space below to write down the groups of ideas you identified.

Use affinity analysis to organize the ideas into themes.

CASE STUDY: Meals Per Hour

Tasks:

☐ Identify 3 potential solutions. Gauge impact then effort for each one.

☐ Fill in the box on the pick chart that corresponds with your assessment.

☐ Fill in the names of the PICK categories on the chart.

Use an Impact vs. Effort Matrix (PICK) chart to prioritize solutions.

High Impact   **Low Impact**

Easier / **Harder**

(High Impact/Easy)

(Low Impact/Easy)

(High Impact/Hard)

(Low Impact/Hard)
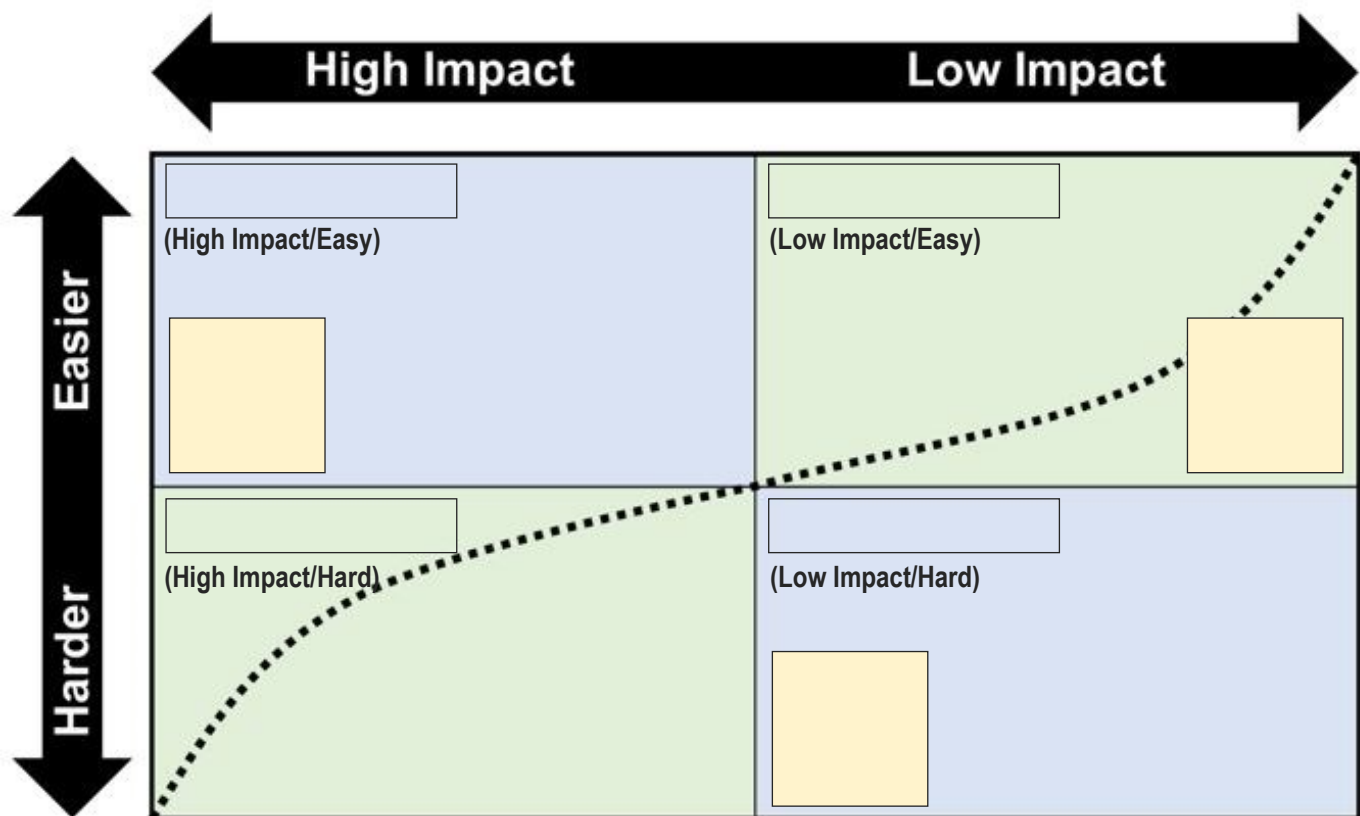
QUESTIONS TO CONSIDER
Tasks:
- ☐ Watch the video: Home: Reply All
- ☐ Answer each of the following questions.

How would you solve the problem?

1   What made the error easy to make?

---

2   What could have been done to prevent it?

---

3   How would the customer respond if the error had not occurred?

OPPORTUNITIES FOR MISTAKE PROOFING
Tasks:
- ☐ Fill in the blanks below.

Mistake proofing a process makes it _____ for an error to occur or makes an error immediately _____ once it does occur.

MISTAKE PROOFING STRATEGIES
Tasks:
- ☐ Fill in the blanks below.

There are _____ strategies for mistake proofing your process.

PROTOYPING

Tasks:

☐ Fill in the blanks below.

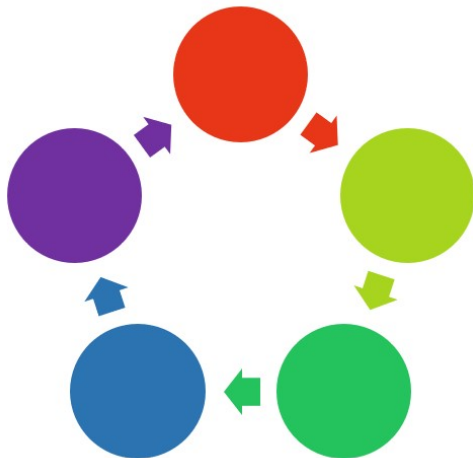### How can prototyping help you think about your improvements?

Prototyping Cycle

Questions to ask

CASE STUDY: City of Louisville Fleet Maintenance

Tasks:

☐ Choose a solution to test. Refer to the example on the left to complete a test card for that solution.

Test Card by Strategyzer
Test Name: Mechanic Workstation Layout
Assigned to: Matt
Step 1: Hypothesis **We believe that…** Standardizing mechanic workstation layout will enable repairs to be completed 30% faster.
Step 2: Test **To verify that we will…** Observe how long it takes for vehicle repairs to be completed.
Step 3: Metric **We will measure…** The number of minutes each repair takes.
Step 4: Criteria **We are right if…** Repair time decreases by at least 30% compared to the same repair type made prior to the test.

Test Card by Strategyzer
Test Name:
Assigned to:
Step 1: Hypothesis **We believe that…**
Step 2: Test **To verify that we will…**
Step 3: Metric **We will measure…**
Step 4: Criteria **We are right if…**

Developing A Business Case

After your project team has selected and prioritized recommendations the next step is to formalize them into a business case and present it to your sponsor for approval. Your business case should capture the critical elements listed below. Additionally, CI Advocates are encouraged to frame the impact of proposed improvements using the 4Es:

Effectiveness- getting better results regardless of cost (measured in percentage changes in targeted outcomes; increased throughput or counts of widgets)

Efficiency- less time or less money for the same results (measured in dollars, time, resources saved)

Empowerment- ability to solve problems/feel delegated to, employee safety, good sponsorship (measured in customer satisfaction, feedback from after-action survey with participants/sponsors)

Equity- change that results in improved outcomes for historically underrepresented or disadvantaged groups (can be measured using Equity Index criteria for community facing projects or impact on strategic equity related goals)

Critical Elements

Your business case should:
- Describe the strategy (Tacoma 2025, Department Strategic Plan, etc.)
- Include recommendations and alternative options
- Explain expected benefits
- Provide a list of estimated costs
- Include risks that could impact success (if there are any)

The 4Es

From a CI lens also consider:

- Effectiveness
- Efficiency
- Empowerment
- Equity

DEVELOPING A BUSINESS CASE
Tasks:

☐ Use the space below to include recommendations or notes you plan to include in your business case.

Note on Progress:
By now you should have developed recommendations for improvement and prioritized them using an **Impact vs. Effort Matrix**. Additionally, you may have used **Test Cards** to design experiments and measure results based on your assumptions. The final task in the improve phase is to draft a **Business Case** and present it to your sponsor for approval.

8 Section 8
implement

During the implement phase you will create what will be. You will roll out your chosen solutions, communicate what has changed about your process and reinforce the change with standard operating procedures to encourage adoption and avoid backsliding.

Before you transition to the implement phase, review your current state map, root cause analysis and baseline data. What did your process map help you learn about your problem? What insights did you pursue solutions for? Which factors in your root cause analysis had the largest impact? Where did the analysis lead you to focus your improvement efforts? How did your improvements affect your baseline data? Were you able to achieve your targeted outcomes?

Let's get to work:

Project Charter - Back
Completing the Project Charter - Back allows you to document and reflect on your CI project journey. It is a resource for you and your team to capture results as well as barriers and lessons learned. It is a critical part of implementation that documents the impact of your improvements and marks the formal closing out of the project.

Project Charter Back

To complete the back of the charter reflect on the following:

- What was the problem?
- What was the impact?
- What were the recommendations?
- What were the barriers and lessons learned?

PROJECT CHARTER - BACK
Tasks:

☐ Use the space below to reflect on the Ci4i tools you used in order to complete the Project Charter - Back.

Revisit Ci4i tools to complete the back of your charter.

☐ Here is another tool for brainstorming. Consider how to influence the rider, elephant, & path.

What behavioral insights did you observe?

1 **The Rider**
In their solutions, what is one thing that might cause the customer to get frustrated or easily exhausted?

[ ]

---

2 **The Elephant**
What is one thing the customer might need to feel reassured?

[ ]

---

3 **The Path**
What is a clear vision for the customer to follow?

[ ]

Note on Progress:
Congratulations! You have completed your CI Advocates training! You are now equipped with the tools and information you need to successfully complete your first CI Project. As you implement your improvements and close out your project, don't forget to document your results on the **Project Charter - Back**.

Remember: Continuous Improvement is a journey – there is always more work to do and the CI team is here to help. You can reach CI staff via e-mail at improve@cityoftacoma.org to discuss project challenges or CI related questions. We look forward to hearing from you!