26TH ANNUAL

26TH LCI CONGRESS
OCTOBER 22-25, 2024

What are the 8 wastes and how do I avoid and eliminate them?

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SURFING THE WAVE OF LEAN DESIGN AND CONSTRUCTION

OCTOBER 23, 2024

Introductions

Special Guests

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What are the 8 wastes?

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What is waste?

waste

- The activity does not physically change the process or product.
- It is not done right the first time.
- The customer does not care about it or is not willing to pay for it.

Make this a handout

What are the 8 wastes?

Defects

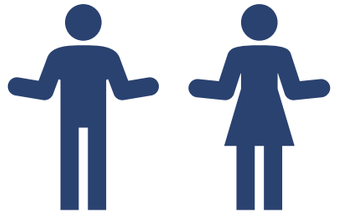
rework, scrap, incorrect documentation

Overproduction

making more than is immediately required

Waiting

for procedure, supplies, information, instructions, equipment



Non (Under)-Utilized Talent

under-utilizing capabilities, delegating tasks with inadequate training

Transportation

moving people, products and information

Inventory

storing pieces, products, or documentation ahead of requirements

Motion

walking, bending, turning, reaching, lifting

Extra (Over)processing

tighter tolerances or higher-grade materials than are necessary

TIME WASTE DIFFERS FROM MATERIAL WASTE IN THAT THERE CAN BE NO SALVAGE. THE EASIEST OF ALL WASTES AND THE HARDEST TO CORRECT IS THE WASTE OF TIME, BECAUSE WASTED TIME DOES NOT LITTER THE FLOOR LIKE WASTED MATERIAL.

- HENRY FORD -

LIBQUOTES.COM

The concept is evolving

- **Making-Do waste** (Koskela, 2004, IGLC)
    - Starting tasks with suboptimal or missing resources necessary to complete the tasks
- **Behavioral waste** (9 Types of waste in Lean with examples – TransformerO)
    - Politics, dismissal of ideas, and micro-management are examples of this waste
    - Listening and accepting different opinions and challenging past beliefs are ways overcome this waste

How do I identify waste?

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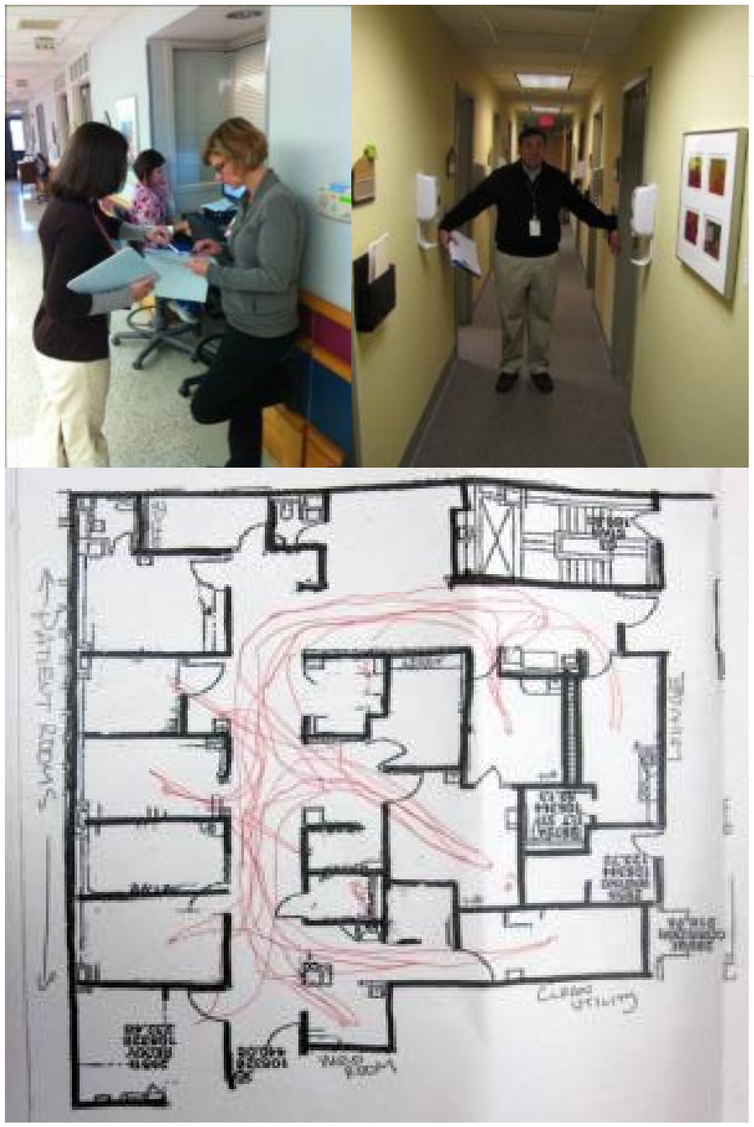
Go to the real place

- Problem solving is more effective with the people it involves at the place where the problem occurs.

- In the traditional lean manufacturing world, most of the problems were visible on the shop floor, and opportunities for continuous improvement (*kaizen*) could be generated by going to the place *(gemba).*

- The goal is to **Identify and Eliminate Waste.**



Do a waste walk

- Observe
- Document
- Question what you see
- Assign homework to capture the people and processes you can’t observe

HKS

Date: Department:

Notes/Observations:

D	Defects: Rework, Scrap, Incorrect Documentation, Returned by the Customer	
O	Overproduction: Making more than immediately required, delivering sooner than required	
W	Waiting: For supplies, information, instructions, equipment	
N	Non (Under)-Utilized Talent: Under-utilizing capabilities, using their hands and feet, but not their minds	
T	Transportation: Moving people, products and/or information without adding value.	
I	Inventory: Storing pieces, products, documentation ahead of need.	
M	Motion: Walking, bending, turning, reaching, lifting	
E	Extra (Over)processing: Tighter tolerances or higher grade materials/work than are necessary	

Additional Comments:

Simulation

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Simulation Rules of Engagement

- Simulation inspired by The House of Cards (Pollesch et al., 2017, IGLC)
- **Goal: Build a high rise building where the work developed on each floor is represented by cards from Ace (ground floor) to King (top floor).**
- There are three different trades represented by the following suits:
  - **Structural** ♠
  - **Mechanical** ♦
  - **Finishings** ♥

Rules of Engagement

- Define within your team who will be the leader to represent each of the three trades:
  - **Structural** ♠
  - **Mechanical** ♦
  - **Finishings** ♥
- Each trade leader is responsible for obtaining the materials from the laydown area that is necessary to build and placing the card in the right location **– one card at a time.**
- Identify the laydown and instruct team to look for the pile with their group number.

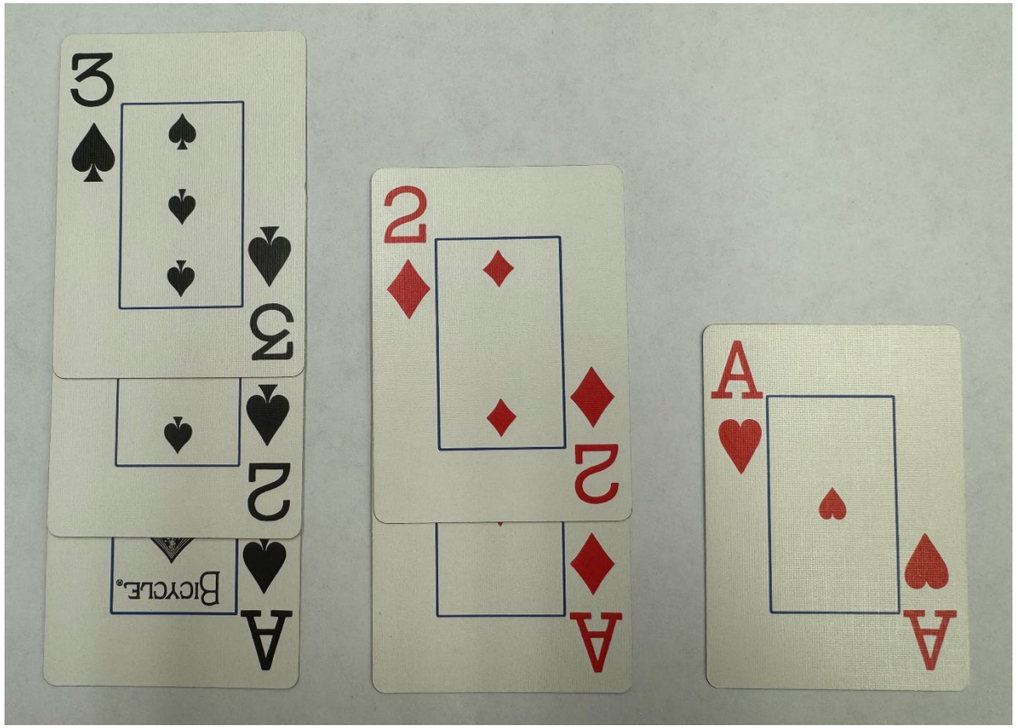
Let’s build! - Round 1

- When the simulation starts, the leader of each trade walks to the laydown area designated for their group and searches for cards related to their trade.
- Leaders can only pick up one card at a time when visiting the laydown area.
- Cards for each suit must be put in place in sequence from Ace to King.
  - **Sequence of trades: Structural ♠ → Mechanical ♦ → Finishings ♥**

Let's build! - Round 1

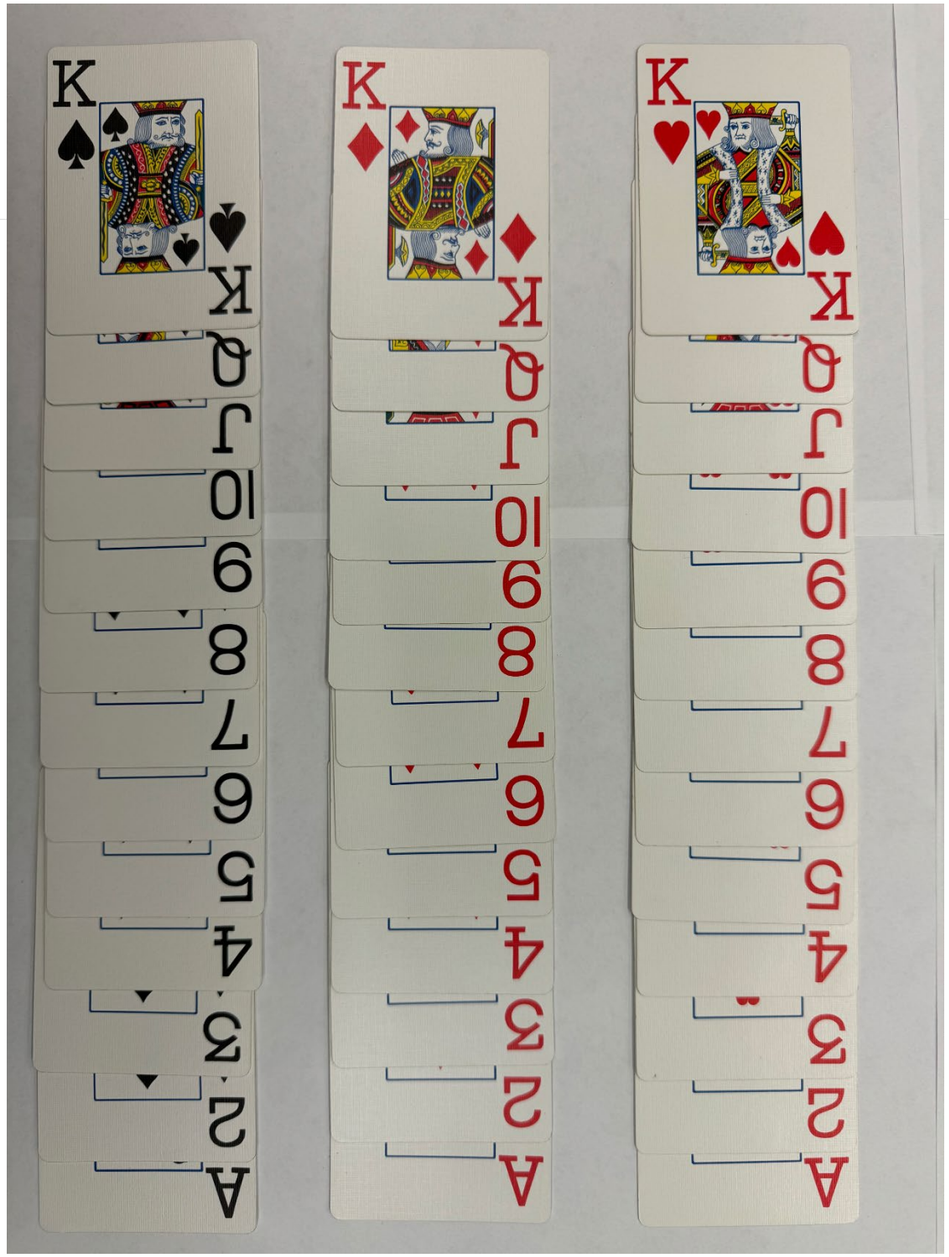
- Start with the **Ace of Spades Structural** ♠, followed by the
- **Ace of Diamonds Mechanical** ♦ and the
- **Ace of Hearts Finishings** ♥
- Repeat the process using this sequence until the end to place the **King of Hearts** ♥

- Once you've placed your card you can return to the laydown area to pick another card – but you cannot place a card out of sequence (♥ can't build faster than ♠)



Let’s build! - Round 1

- Each team will have up to 5 minutes to complete the project.
- When the project is done, a team member should announce it to one of the facilitators who will inform the time and record it on behalf of the team.
- Any questions before we start?
- **A successful project looks like this →**



Round 1 - Debriefing

- How long did each team take to complete the task?
- Did you identify any of the wastes we discussed earlier in the presentation?
- Which of the wastes identified had the most impact on the performance of the team?
- What changes would you make to improve this process?

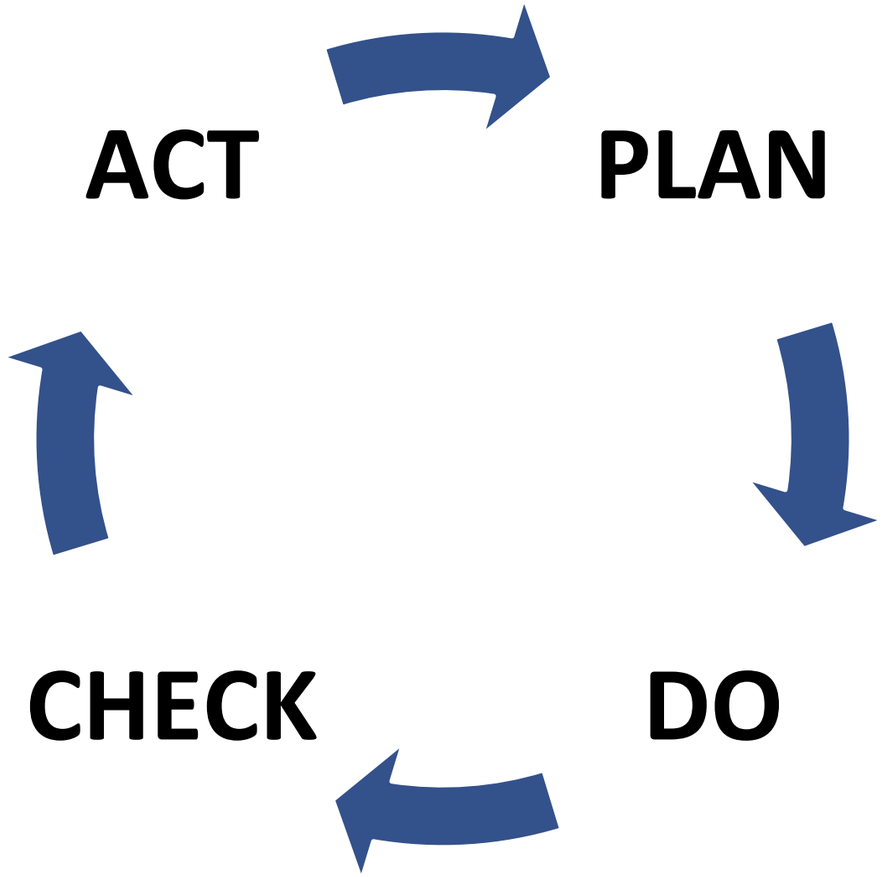
Let’s build! – Round 2

- Quickly review the improvements recommended by your team – Which changes can be implemented to improve the process?

- Work with your team and the facilitators to implement changes that:
  - Can be made considering the environment of this room
  - Falls within the limitations of the resources we currently have

Round 2 - Debriefing

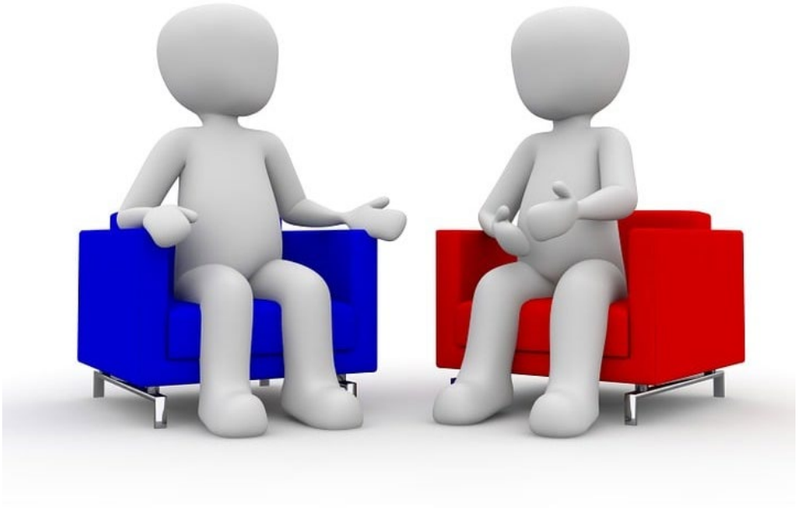
- How long did each team take to complete the task?
- Was it better, the same, or worse than before? Why?
- Are there additional changes you would make to improve this process the next time?



How can you apply this tomorrow?

Teach to see Waste

Knowledge is Power



Debrief

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In the spirit of continuous improvement, we would like to remind you to complete this session's survey! We look forward to receiving your feedback.

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Thank you for attending this presentation. Enjoy the rest of the 26th Annual LCI Congress!