5 FREE LEAN FLOW SIX SIGMA METHODS & TOOLS YOU CAN APPLY RIGHT NOW TO YOUR GROWING OPERATION!

- 5 Whys
- Fishbone Diagram
- Value Stream Mapping
- Process Map
- Spaghetti Diagram

BONUS: Value Add vs Non-Value Add

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Value Stream Mapping and Process Flow Tools

Tools document a process in a consistent manner

Provide observational and real information on current problems

Helps simulate and evaluate new options

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Basic Process Mapping

What's it for?

Process mapping is the way to create a flowchart of a process.

It is the framework and foundation for more detailed tools.

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Basic Process Mapping

Preparation:

- Detail - Not too much, not too little.
- Too much will overwhelm and too little will not give you the desired results.
- **Scope of the process** and **identify boundaries**
- Is the map **as-is** or **should-be**?

TIPS: Parking lot of ideas not directly related to the process mapping - improvement ideas, assumptions, questions, out of scope issues/ideas

Step back and talk about how to measure key information

Concentrate on the process, not the details, times or other non pertinent information

Helpful free software to create process mapping
https://www.draw.io/

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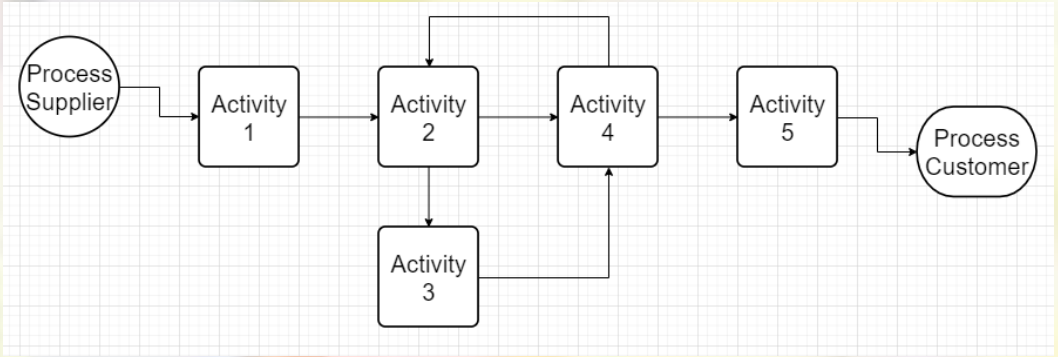
Basic Process Mapping



Steps

1. Get the team together
2. Team brainstorms steps. Organize sticky notes on a board
3. Use symbols that are relevant to your business
4. As a team, agree on and arrange steps in order.
5. Keep the process flow moving in chronological order. Only go in reverse if there is a repetition of a step
6. Walk the process forward to understand the flow. Then backward pretending to be the customer of the process
7. After reaching an agreement on all the steps, number and transfer to a spreadsheet.

Ideas for process mapping at nurseries:

Complete growing process

Potting

Customer Ordering

Propagation

Pruning

Chemical Spraying

Watering

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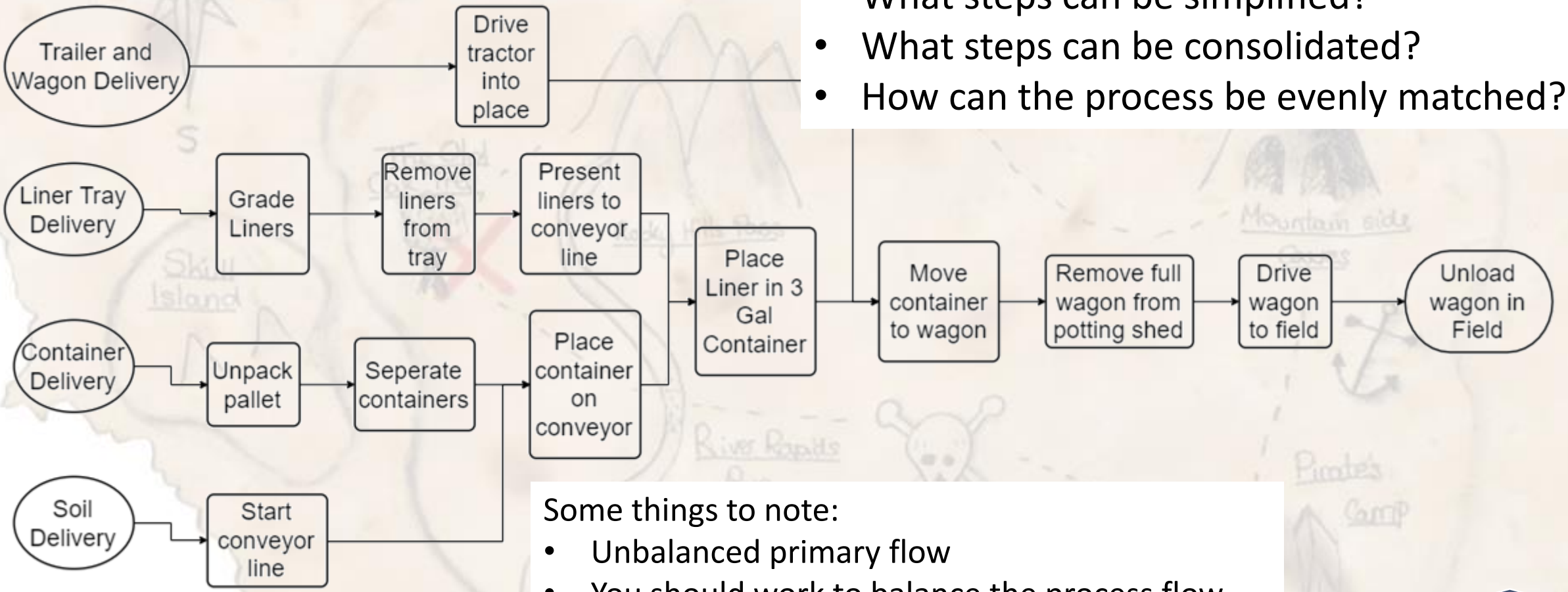
Example Process Map



- What steps can be simplified?
- What steps can be consolidated?
- How can the process be evenly matched?

Some things to note:

- Unbalanced primary flow
- You should work to balance the process flow
- Certain people have multiple jobs and may be missing when needed

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Transportation and Spaghetti (Workflow) diagrams

What's it for?

- Used to **visualize the physical movement** and **flow** of a desired task.
- Once visualized, you can better understand the **true cost of a process**.
- From this you can identify waste, evaluate improvements and improve productivity.
- Pick your approach
  - As-Is
  - Should-Be

Transportation and Spaghetti (Workflow) diagrams

Preparation:

- Create a diagram of your workspace showing all key components and areas
- Work from existing flowchart of the process, or brainstorm a list of steps
- Decide on creating an as-is chart or a should-be chart.

TIPS: Remember, you can depict more than just people movement, you can visualize material or even information.

Transportation and Spaghetti (Workflow) diagrams

Steps

1. Find or Create a workplace diagram
2. Start with existing flowchart or brainstorm steps
3. Mark where the first step of the process happens
4. Draw arrow to the next task location
5. Map all steps
6. Evaluate the diagram

   Look for crisscross lines, returning repeatedly to a common location, long travel distances
7. Extra Steps – add time and information to better understand the value add versus nonvalue add time

Ideas for process mapping at nurseries:

- Propagation
- Potting Line
- Order Pulling
- Spraying
- Applying granular material

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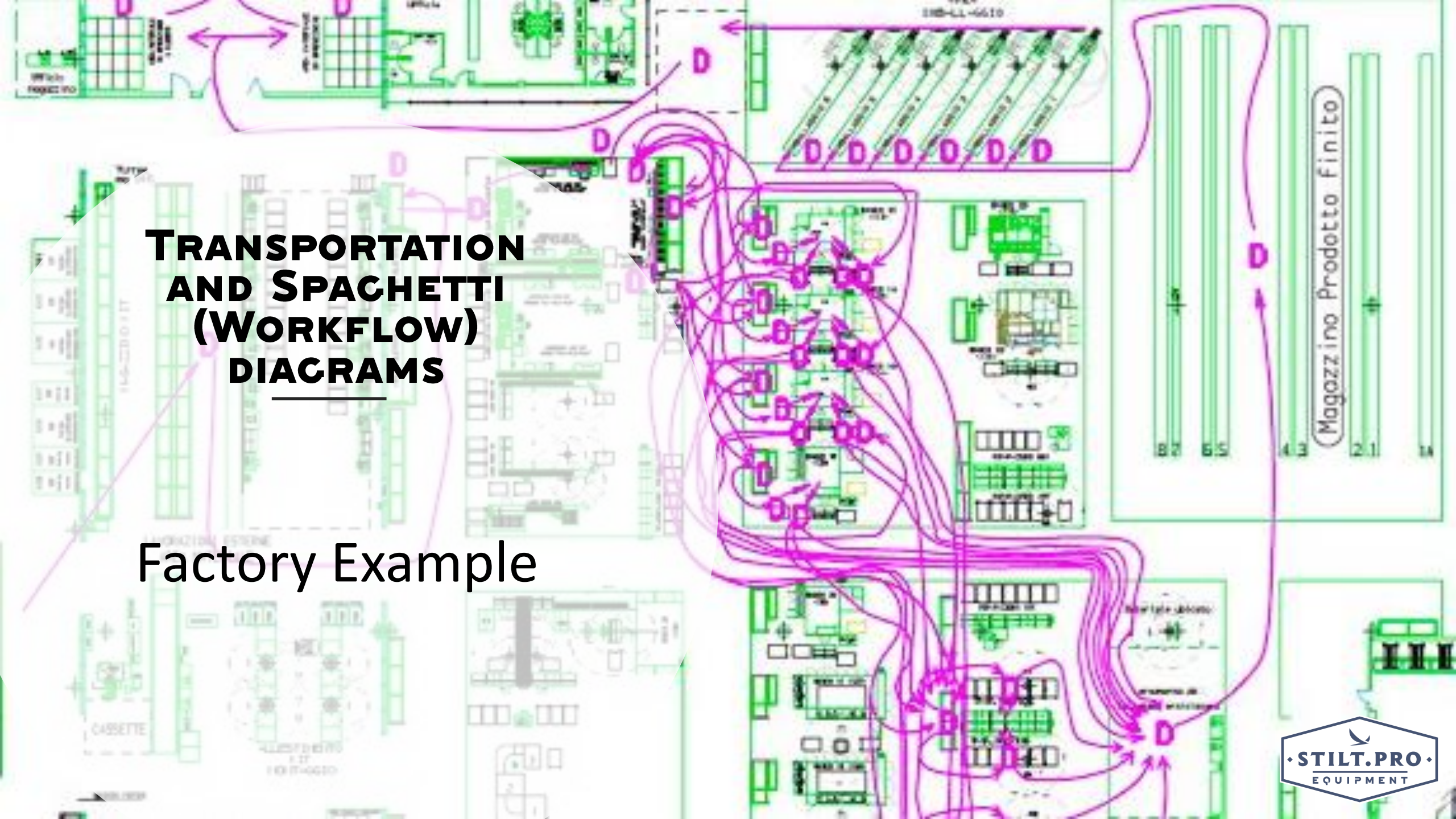
Transportation and Spachetti (Workflow) diagrams

Factory Example



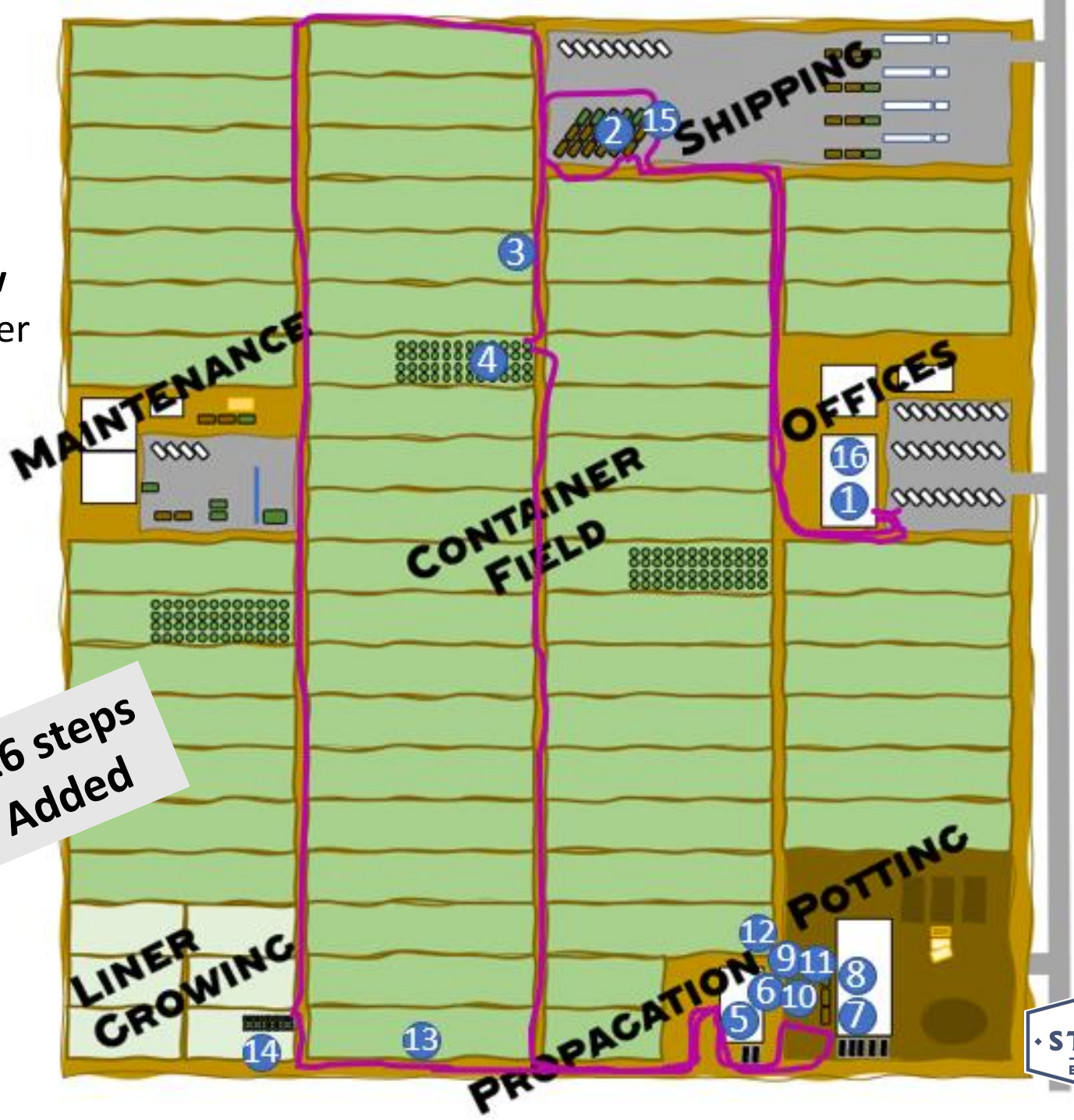
Spaghetti (Workflow) diagrams

Example of propagation workflow

1. Receive work task from manager
2. Get vehicle
3. Go to field
4. **Take Cuttings**
5. Go to propagation building
6. Store cuttings
7. **Fill liner trays with media**
8. **Water Trays**
9. **Apply Rooting Hormone**
10. **Sticking**
11. **Watering Trays**
12. Transfer to carts
13. Moving to field
14. Place in liner growing area
15. Return vehicle
16. Return to break area

BLUE are Value Added Tasks

Only 6 of 16 steps are Value Added



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Value Add vs Nonvalue Add

Identify waste areas. Steps and tasks should be evaluated based on function.

Evaluate with respect to customer.

Categories:

Value Added – Essential to deliver plant to customer
Pruning, fertilizing, spacing, upsizing containers, weeding, watering

Business Nonvalue Added – Required for business operation
OHSA/EPA reporting, frost protection, equipment maintenance

Non-Value Added – No value from customers perspective.
Transportation of product, movement around nursery, overproduction, excess pruning, waiting

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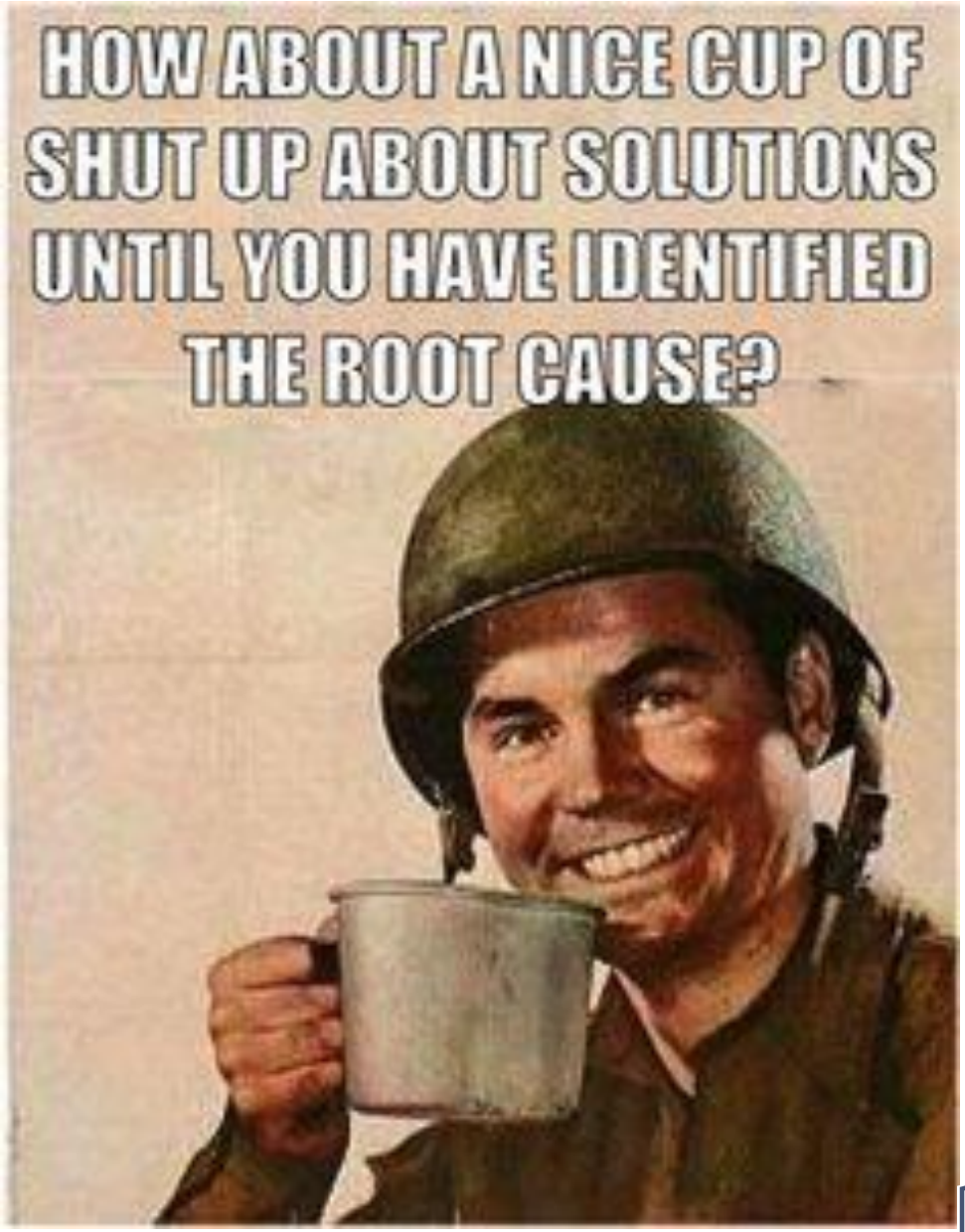
Cause-Focused Brainstorming Tools

Tools to help you identify the root cause of a problem



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Five Whys

What's it for?

- Basic technique to work down to root cause of a problem

TIPS:

- Don’t send baggage through the Five Whys. Discourage team and not likely to be successful.
- Many times, the underlying issues on old problems have been around a long time and may be very difficult to fix.
- Use on new problems. Often when a new problem is evaluated with 5 whys, old issues will surface organically.
- Be tolerance of all mistakes the first time.
- Never allow the same mistake to be made twice.

5 Whys

Getting Started:

Ask “Why” five times in a row to get to the root of the problem

Good uses:

- Inventory issues
- Missing inputs
- Miscommunication
- Differing or missed expectations (sales and production)
- Equipment / Machine Failures

“We have a very sophisticated technique for developing new products. It is called five-why. We ask why five times.” – Yuichi Okamoto (former Toyota Technical Center VP)

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Five Why's Example

Worn Belt on Conveyor

WHY?

WHY?

WHY?

WHY?

WHY?

Level of Problem	Corresponding Level of Countermeasure
The belt is broken	Replace belt
There was a tear in belt	Monitor belt Integrity
The belt was misaligned	Adjust belt tracking
The belt was not properly adjusted	Create a belt adjustment procedure and acceptable range
No one noticed or spoke up that the belt wasn't aligned	Educate on proper operation
The crew did not receive proper training on what to look for	Setup training program for new hires

"Observe the production floor without preconceptions and with a blank mind. Repeat "why" five times to every matter" – Taiichi Ohno

Page 230 – Lean Startup, Page 252 – The Toyota Way, Page 145 – Lean Six Sigma

Fishbone Diagram – Cause and Effect

What's it for?

Tool to arrange and organize many potential causes of a problem.

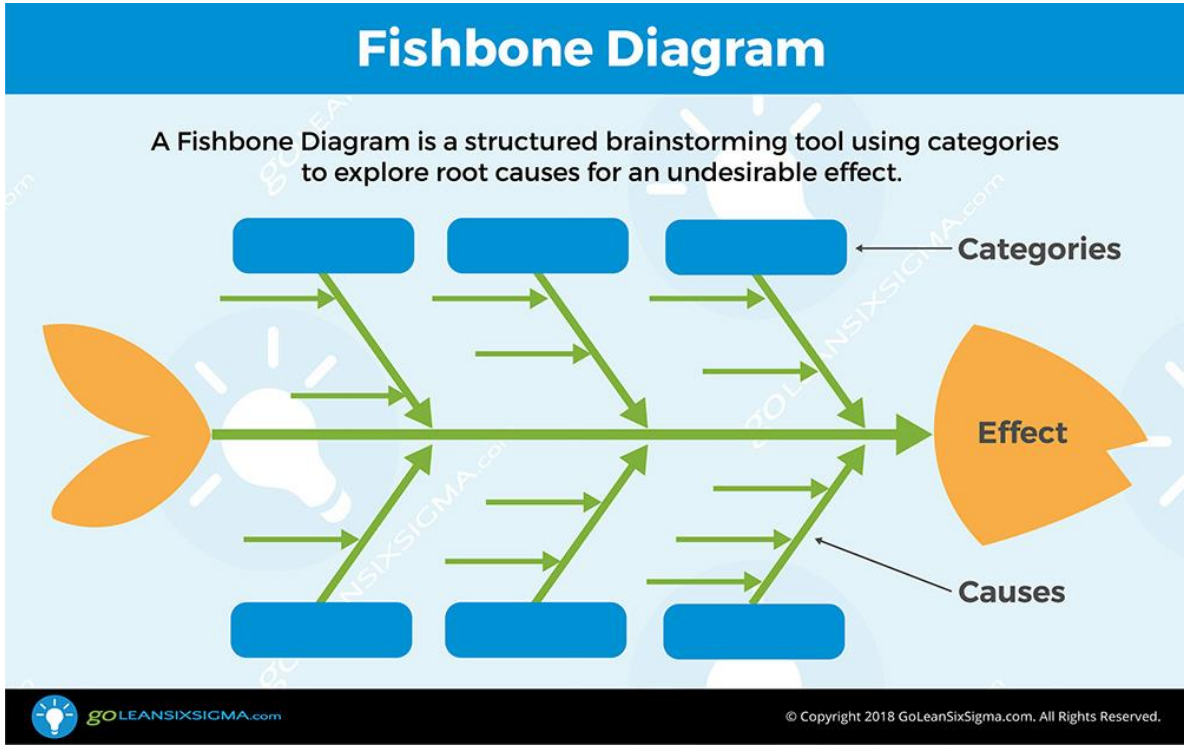
Used to identify critical areas to investigate and not miss other areas that may be root cause

Good tool for persistent and reoccurring issues

TIPS:

Use this tool to organize different causes of a problem and determine which areas you should test to find root cause.

There may be more than one root cause. Fishbone diagrams provides structure to your evaluation.



Fishbone Diagram – Cause and Effect

Steps

- Name the problem – Be Specific
- Decide major categories
- Brainstorm detailed causes and add “fishbones”
- Identify most likely causes
- Determine ways to quickly test causes and verify if they are true root cause

Example Uses

- Weed control issues
- Identifying cause of shrink
- Finding the root cause of a complicated issue or something that has many sources causing a problem.

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To Summarize

Value Stream Mapping and Process Flow Tools

- Process Flow Map
- Transportation Diagram
- Value Add vs Non Value Add

Cause – Focused Brainstorming Tools

- Five Whys
- Fishbone Diagram

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If you want to learn more or have any questions, reach out to us!

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Thanks!

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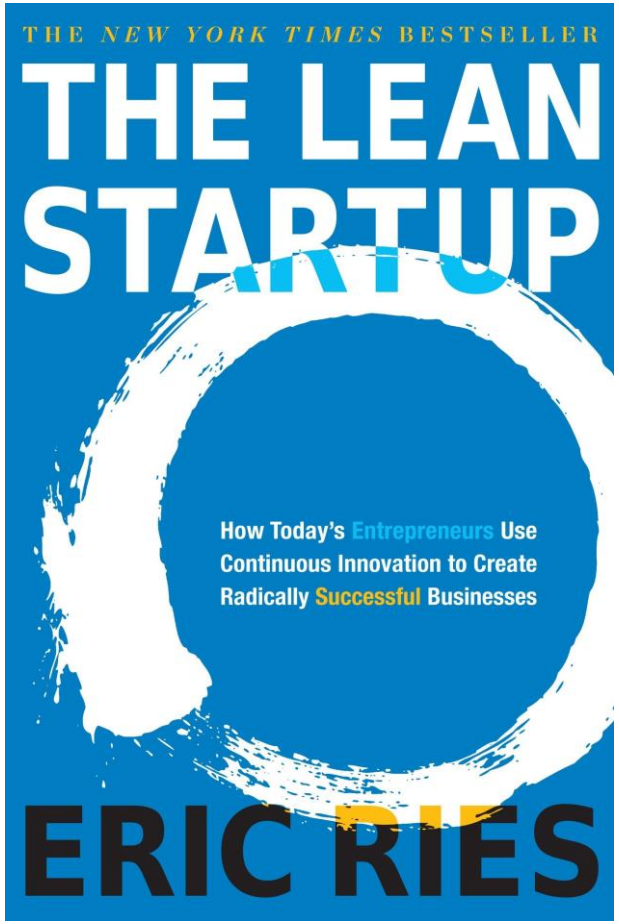
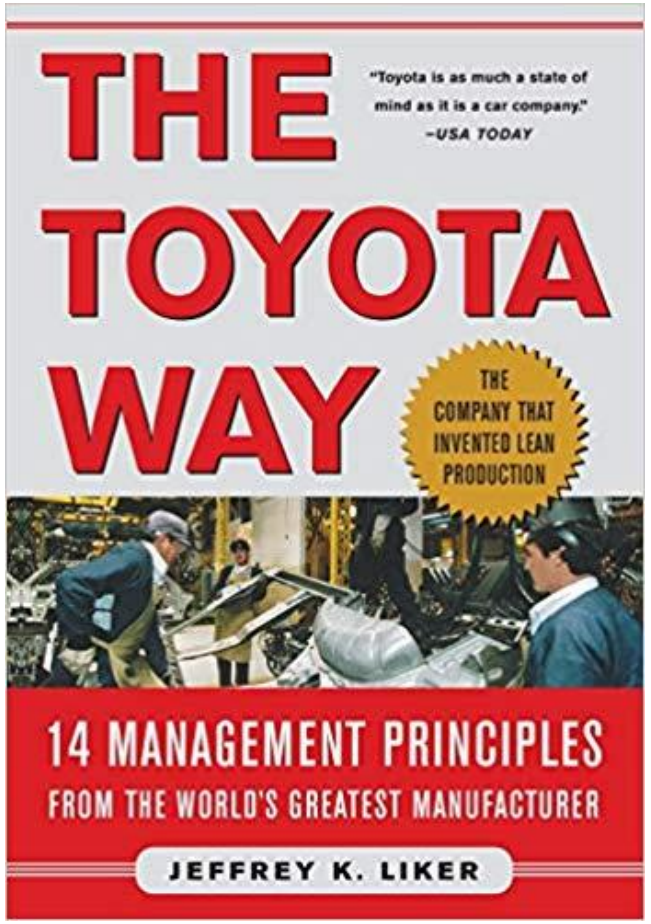
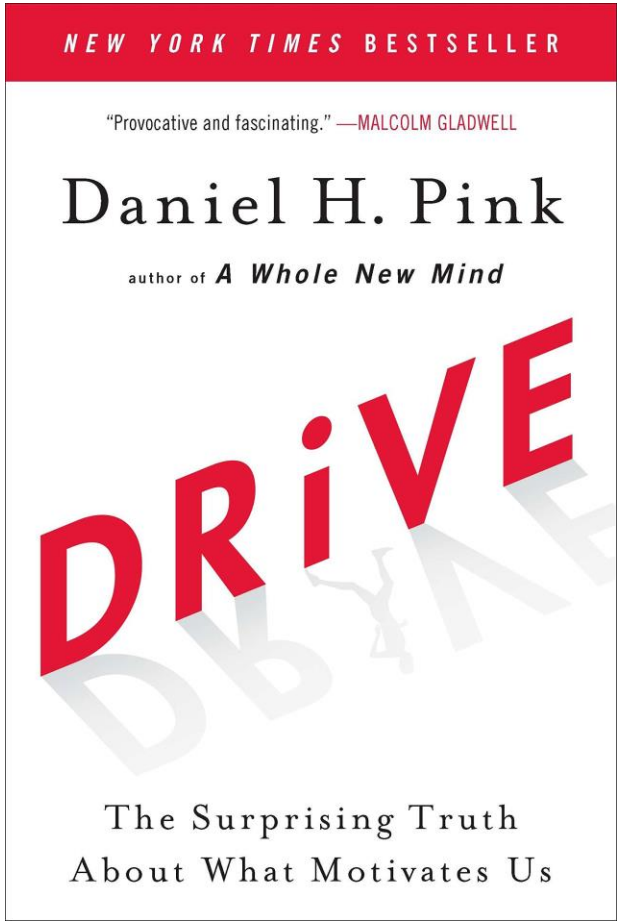
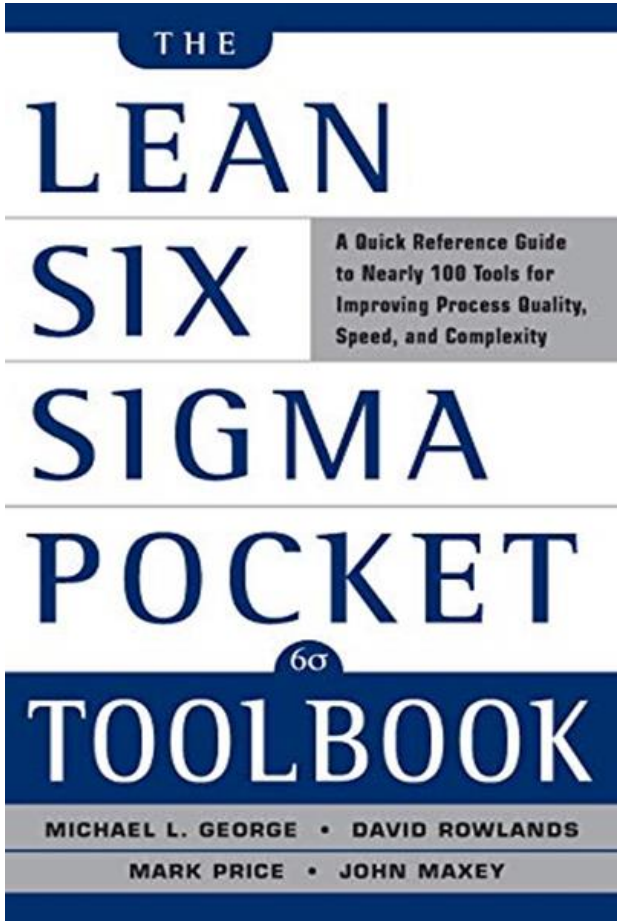
Some reading recommendations









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