Process Mapping

PARTNERS IN PUBLIC INNOVATION TOOLBOX

What is a process map?

A process map is a visual representation of the steps in a business process. In lean process improvement, having a team collaboratively build a process map is an excellent way to build the group's understanding about how a process works, identify common areas of errors or frustration, expose where steps of a process are not standardized, find the steps that do and do not provide value to the customer, and get an estimate for the length of your process. In most lean process improvement projects, the process map is the foundational tool the group uses to get started on improving the process.

Figure 1. Sample map of a new hire on-boarding process

When should I use it?

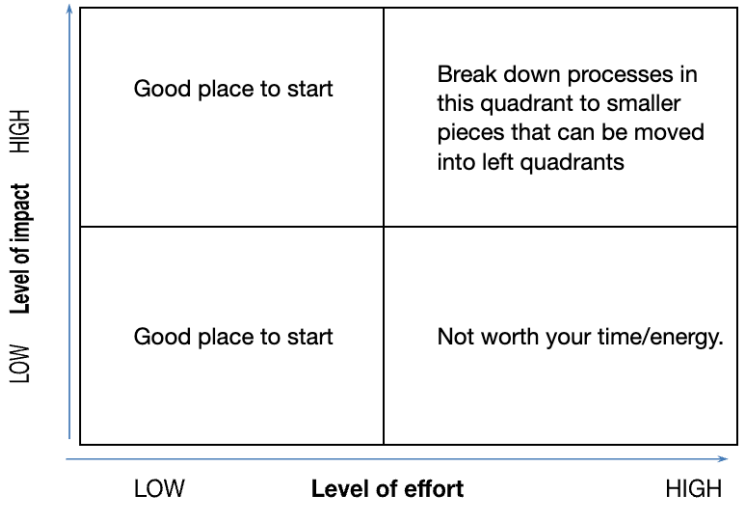
- After you have identified the scope (the start and end points) of the process you want to improve
- When you want to identify key problem areas in the process to improve upon
- When the process is shared between many different units or roles, and no one person has a view into the entire process
- When you need to estimate the hands-on time for each step of the process
- Process mapping can be used as a standalone activity or as an early tool during a Rapid Improvement Event, Value Stream Mapping session, or other lean facilitation.

How do I facilitate or create it?

1.Pick a process

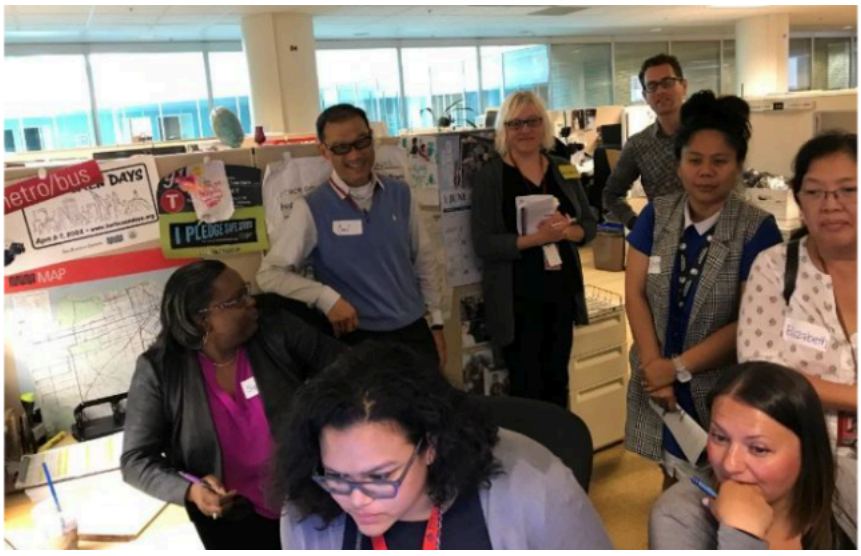
- Guidelines for choosing a process to work on:
  - Staff have control over the process or a part of the process; staff shouldn't spend time improving a process they don't have control over because they won't be able to implement changes
  - The Executive Sponsor is willing to make the necessary resources available
  - The scope is reasonable (also see #7 in this list)
  - Use the Impact/Effort Matrix (Figure 2) to help decide which process to work on

Figure 2. Impact/Effort Matrix



2. Go to the Gemba ("The Real Place") first!

- There are different ways to Gemba. Watching a process isn't always straightforward. Administrative or electronic-based processes that occur across multiple departments and months make it harder but not impossible to go to "the Real Place:" Some ideas for how to Gemba:
  - Observe one part of the process that seems to have many pain points – even if that means standing behind someone's desk and watching them work for a couple hours
  - Sit or stand in one place in an office where work is being done and observe what goes on for a couple of hours
  - Ask one or more customers to participate in a focus group to share their experiences of the process
  - If you're building a new process rather than improving an existing one, Go and See how a similar process is being implemented in another division, department
- Executive sponsor(s), process owner, key process workers should go on the Gemba
- Executive sponsor(s) and managers should DEFINITELY go on the Gemba



Process Mapping session in progress

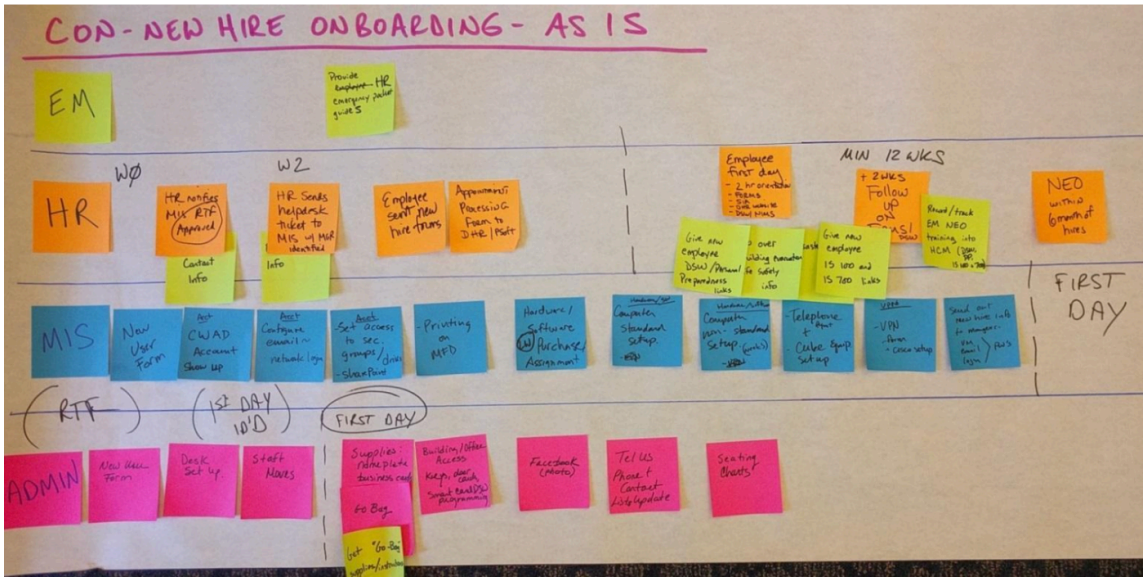
3. Who participates in process mapping?

- All members of the process improvement project team should participate in process mapping EXCEPT the executive sponsor(s) and manager(s) because their presence could hinder the participation of the most important people: the process workers.
- There needs to be someone who can speak to each main step in the process. Not everyone who touches the process has to be there, but the whole process needs to be represented.
- If there are disagreements about what happens, the people with the disagreements should be present to ensure the differing opinions are presented/included. This means that a supervisor or manager might need to be present if they are in disagreement with a staff person.

4. Use butcher paper or sticky notes

- Write the name of the process, current state (or "As Is") and date of creation at top of map
- Use pink or red sticky notes for obstacles (wastes)
- Use different colors for process steps (squares) and decision points (diamonds – flip the sticky note 90 degrees)
- Can also use different colors for sub-processes or to show steps that happen simultaneously or to show steps completed by different people or teams/units. See Figure 3 for sample process map.
- Mapping simultaneous steps done by different roles or teams involved in the process is called swimlane mapping, as shown below.

Figure 3. Example of a swimlane process map



5. Map one instance of the process that is most frequent

- If there are 3 variations of the process that occur equally as frequently then you'll need to map all three variations. Within those variations, map the instance that occurs most frequently.
  - For example, there are two ways someone arrives at the Emergency Dept: (1) walk-in or (2) ambulance drop off. If both processes occur with similar frequency, map both processes. When you map the walk-in process, map what the typical walk-in process looks like. Same with the ambulance process.
- If there is a ton of variation in the process, then map the instances that represent the majority. For example, with the ambulance drop-off process you might have:
  - Arrives conscious (40%)
  - Arrives unconscious (30%)
  - Arrives semi-conscious (30%)
- You would map all three because they occur with similar frequency. Then you can build a consolidated map. At some point the processes will most likely converge.

6. Map from the customer's perspective

- Important to get clear from the get-go about who the customer is. The customer is the end user of the service, process or product.
  - For example: staff travel reimbursement process – the customer is the staff person who needs to get reimbursed.
- Mapping from the staff perspective won't get you all the pain points that the customer experiences and vice versa. This is where swimlane mapping can be helpful. You can build a simple two-lane map: one lane for customers and one for staff. Then you can see both experiences simultaneously.
- Another tool that can be used is called the Customer Journey Map – this is used in service design. See here and here for more info on building customer journey maps.*

7. Identify the start and end points

- If it's a long, complex process, shrink it down. People can get easily overwhelmed by thinking about processes in their entirety. Focus on one part of the process. For example, hiring processes can be long, complex, and contain many subprocesses. Start with one subprocess such as the application process or exam review process.
- You can always map other parts of the process later.

8. Order steps from left to right

- If you are swimlane mapping or have extensive routing (Yes/No trees) be sure to indicate which step occurs first by positioning the sticky note that happens first slightly left of the proceeding steps, unless they are actually happening simultaneously in which case the sticky notes would be placed above/below each other.

---

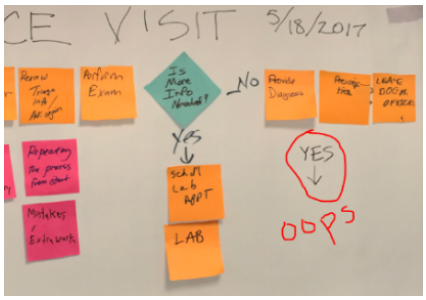
*On customer journey mapping: http://www.servicedesigntools.org/tools/8 and http://uxmastery.com/how-to-create-a-customer-journey-map/

9. Write who, verb, noun on steps

- If every step in your process is from the customer's perspective, you don't need to write "Customer calls Finance" – you can just write "Calls Finance" – because you know it's the Customer who is calling. If you introduce other roles in the process map, then include the Who.
- For example: "Customer calls Finance;" "Finance checks FAMIS."

10. Write decision points as Y/N questions

- For example: Was form completed correctly? Write "Y" and "N" on the arrows showing different routing.
- Note: Decision points don't get timed. If there is waiting involved with the decision, map the wait time as a separate step preceding the decision. For example: "Staff waits for Supervisor's decision."
- Tip: You may want to save drawing arrows on the map until you see that participants are getting close to identifying all the process steps. If you draw Y/N lines too early and find that sticky notes need to be moved to accommodate more steps it will make your map harder to read.



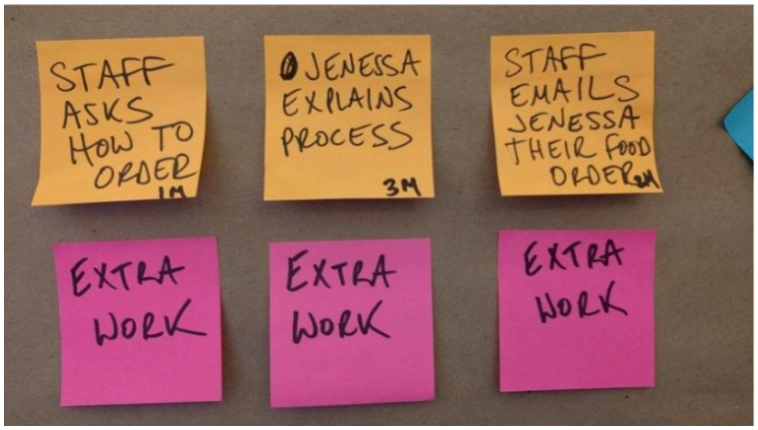
11. Keep the map as simple as possible

No need to map every single step in detail. Keep it relatively high level. You can always dig deeper into a part of the process with another process map. Start big, find your major pain points and go from there.

12. Write times on process steps

- One of the important activities of the Gemba observation is recording how long each process step takes. Because some processes occur over days, weeks or months, it's not possible to observe every step in the process in one Gemba. In those cases, it's important to talk to process workers and ask them to estimate how long each process step takes, on average.
- Remember, consider the process that occurs 80% of the time – not the outliers. If there is considerable variance in times of each step, use median instead of average.
- Note the average or median times on each sticky note, as shown in Figure 4.
- How do I deal with waiting times between steps? Typically, we do not worry about whether waiting time is captured consistently or not – the map is just a tool to identify problem areas and solutions and does not need to be precise – but if you want to capture precise time metrics, you should be consistent in how you handle waiting between steps. You can do one of two things:
  1. Include the waiting time associated with each step in each sticky (e.g., application review takes 3 days). If you do this, note that each sticky may include both value-added and non-value added time.
  2. Write only the "touch time" in each sticky, with the waiting time recorded in between steps (e.g., application review takes 20 minutes, with 3 days of waiting).

Figure 4. Note times on each process step



13. Perform Value-Added Analysis (VA, LR, NVA)

Value-added (VA) steps (green dots) are:

- Steps that improve the process, service or product
- Steps that the customer is willing to pay for
- Steps that improve the customer's experience

Legally required (LR) (yellow dots) steps are:

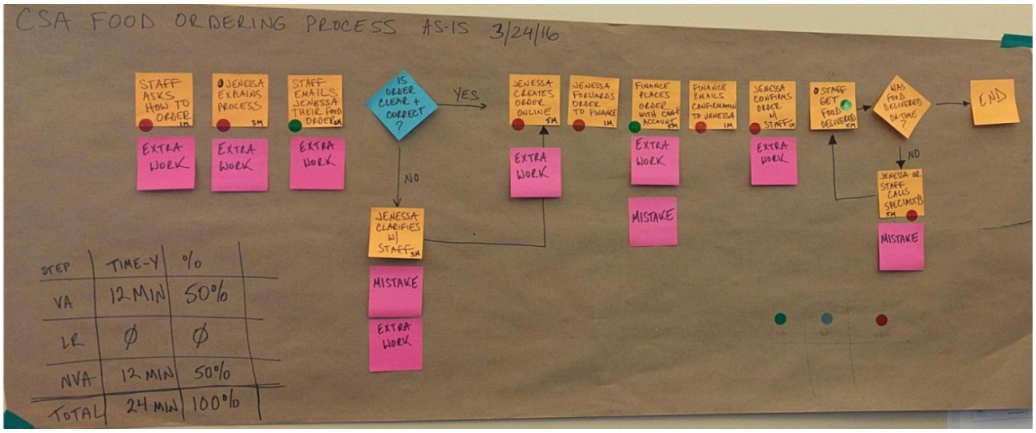
- These steps are called "Business Necessary" in Lean. However, these are steps that are required by law. These are not steps that are required by internal policy. They are in the Administrative Code or Charter or mandated by state or federal law.

Non-value added (NVA) steps (red dots, or left blank) are any steps that:

- Haven't been included in VA or NVA. They are the opposite of VA steps: they do not improve the process, service or product in any way. Think about "gold-plating" your product – putting your report in a fancy binder or spending more money on color printing when B&W is fine.

Now, tally your totals: When calculating the total process time, start with calculating the times that do not include any special routing or loopbacks. For example, the time it takes to go through the process answering "YES" to your decision point questions. You can also calculate the variances (when you say "NO" to the decision points to show how much longer it takes when you answer NO – this can show you how much mistakes cost you in terms of time).

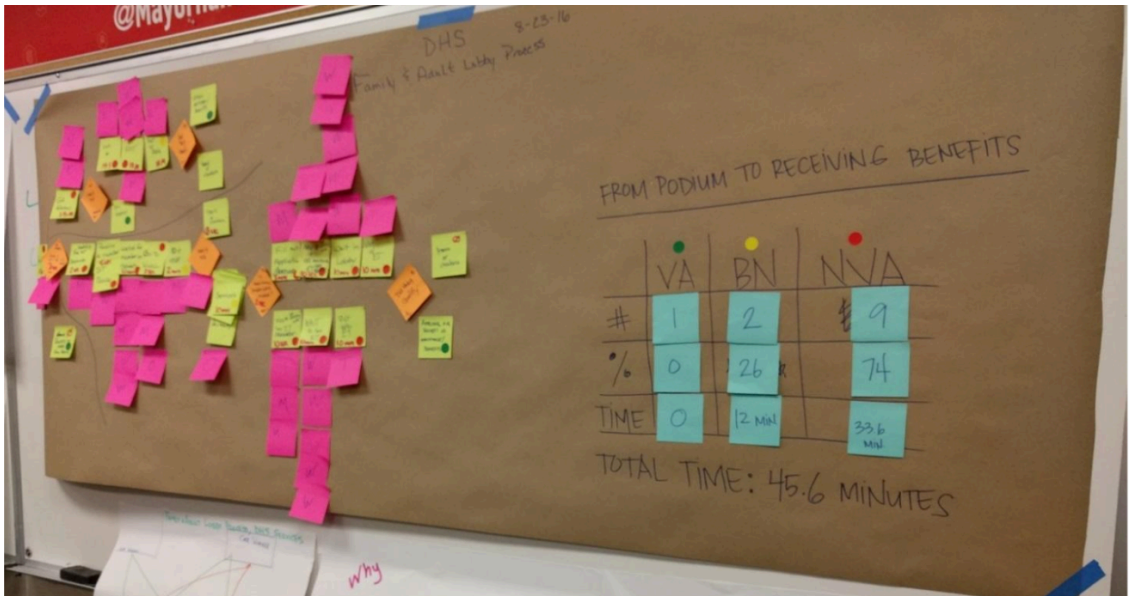
Identify VA, LR, and NVA steps with dots or other indicators



14. Identify Obstacles (waste)

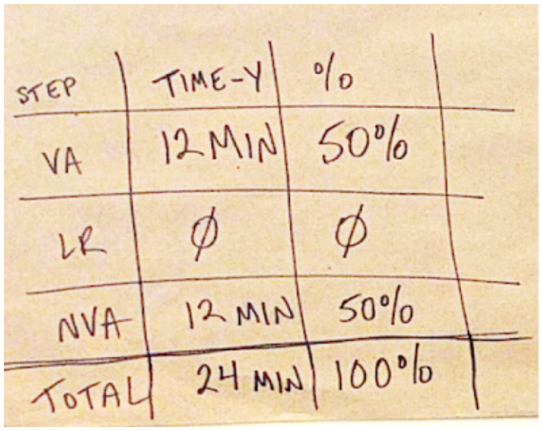
Ask the team to place pink stickies under any process step that contains one of the seven obstacles. Post the list of obstacles somewhere prominently and near your process map for easy reference.

It is best to ask every team member to identify anything they consider an obstacle (that is, explicitly ask the team to flag problems multiple times – you will have to press them on this). In the picture below, note pink stickies clustered like a histogram to indicate areas where the team agrees that significant obstacles happen. You can circle this area and use this as an opportunity to say that process mapping helps to "shrink the change," to start making incremental improvements to the process.



15. Calculate time metrics

Once you have assigned times to steps and performed value-added analysis, you can calculate summary time measures for the process. Add up the times on the VA, NVA, and LR steps and summarize in a table on your mapping paper/Miro board. Calculate the percent of time and the number of steps that are VA, NVA, and LR.



Notes on time metrics:

- A typical non-improved process will be less than 10% VA time. Reassure the team that this is fine.
- If desired, you can separate "touch time" from waiting time – see the section above on time recording for a discussion on the difference.
- These time measurements make for an easy improvement metric, especially if you also create a future state process map. Remember, however, that your times are likely based on participants' best guess, so be careful how much weight you put on them.

Tips

- **Avoid discussing solutions.** Map and analyze the process before discussing/brainstorming solutions. This is important because you need to identify the problems before you determine the right solutions.
- **Get everyone involved.** As the facilitator, aim to have none of your own handwriting on the map. Give every participant their own stack of stickies and a sharpie. To minimize bottlenecks, you could have some people start at the end of the process and work backwards while others start at the beginning, or you could ask some people to assign times to steps while others fill in the map.
- **Avoid too much discussion.** A process mapping session can quickly get derailed if the team devolves into endless discussion about every step. ("Should completing the intake be recorded as one step or three? Let's debate.") A surprisingly effective strategy is to challenge the team not to speak while creating the map. You wind up with a finished product more quickly, and you can then check in with the team about anything that's missing or incorrect.
- **Stick to the most common path.** Do not try to map every variation of the process. The easiest process maps to work with are those that have no branches at all. Only map branches of the process if they are needed for the rest of your improvement project. Otherwise, note the decision point with a diamond, but just map the most common path forward.
- **Create a future state map.** The process map can also be used as a tool to eliminate obstacles by re-designing the map to match an envisioned future state. You can make an idealized future state map early in an improvement process by pulling the VA and LR steps from your map and making a new map that includes only the minimum amount of NVA steps required to connect the others. Alternatively, you could revisit the process map again towards the end of your process to show how the innovations you're implementing will affect the future process. Creating a future state map is particularly useful when:
  - there is no clear current state process,
  - the current state is unclear or not standardized, or
  - your improvement team makes enough changes to the process that the future state steps deviate significantly from the current state.
- **The process map is standard work.** Once you have a future state process map, it is a visual representation of how the process should go. You can put the physical map up in the office or create an electronic version in Visio, PowerPoint, or Miro.
  - The team can keep the map updated to show future changes to the process!