Process mapping overview

When you begin looking at a service process with the intention of improving it, it is important to start out by developing a better understanding of how the process works, and what goes into and comes out of it. A good place to start is by creating a process map. This is a pictorial representation of a process, made up of a variety of graphical symbols and connecting arrows, which show the stream of activities and decision points that make up the process.

Why map a process

If you were asked to clearly and completely describe the process for making a peanut butter and jelly sandwich to a group of people in a way that everyone in the group could understand, you could probably do so without much trouble. It is a simple process that does not have too many steps or decision points and is one with which most people are familiar. But what if you had to explain something more complex, with more options and decisions to make, like how to apply for insurance benefits or purchase office supplies? You could probably still get the idea across, but it would be harder to make sure that everyone understands the entire process in the same way.

The creation of a map lays out a process in its entirety so that the work is visible, understandable, and facilitates communication of the information to a large number of people. Documenting the process in this way also makes it easier to analyze and identify areas where the process can be streamlined and improved.

Symbols

When you start mapping processes, you will find that there are a large number of symbols that can be used to communicate different process functions. Some symbols are industry specific (i.e. software design, network design, and engineering). Do not let that overwhelm you. There are only a couple of symbols that you really need in order to create effective process maps. A list of basic symbols is shown in Figure 1, and the shapes are described in the text below.

Terminator: The terminator symbol appears at the start and end of every process. It is important to make sure that terminators appear at the conclusion of every path. Without a terminator, someone reading the map will come to the end of a row of symbols and then not know if they have reached an end point in the process, or if the map is just incomplete. I would recommend that you put the word ‘START’ in the starting point terminator and ‘END’ in the end terminator(s). This makes it very easy for a person to scan a process map quickly and identify these points. There is another school of thought that says the terminators should include the description of the first and ending steps of a process, but I find this confusing for readers.
**Process Step / Task:** The process step is one of the most common symbols you will encounter. This step identifies where an action is taking place. The description of the action is written inside the box.

**Pre-defined Process:** This symbol is used to show a series of steps or a sub-process which is not being detailed in the map or (preferably) that has been defined elsewhere. A description of the steps or the sub-process is written in the box.

**Decision Point:** This symbol denotes a point where the process will branch based on a decision. For example, “Is the information in the form complete and accurate?” In this case, the actions taken after this point in the process will vary depending on the completeness of the information. The decision that must be made is written inside the diamond shape. Decision points usually have two options extending out from them (i.e. yes/no, pass/fail, or similar); but if needed, you can have more than two options extend out of the symbol.

**Delay:** This symbol shows a point where the process stops and waits, pending the completion of other actions. It is easy to remember because it is shaped like the letter ‘D’ for delay. The reason for the delay is written inside the symbol.

**Document:** This symbol indicates a point where a document is created. The name of the document is usually included inside the symbol.

**On-Page Connector:** The on-page connector is denoted by a circle. It is used to jump from one step to another on the same page, without having to draw long, convoluted arrows between the two. The connectors should be labeled the same way so the reader can see that they connect. I usually use numbers to label on-page connectors. For example, an on-page connector labeled as ‘1’ will match up to another on-page connector with a ‘1’ in it somewhere on the same page.

**Off-Page Connector:** The off-page connector is shaped like home plate in a baseball game. It is used to jump from one step on a map to another step on a different page.
The symbols should be labeled the same way so the reader can see that they connect. I usually use letters of the alphabet to label off-page connectors. For example, an off-page connector with the letter ‘A’ in it will match up to another off-page connector with an ‘A’ in it somewhere on another page.

**Flow line:** A flow line is a line drawn between two symbols, with an arrowhead on one end that indicates the direction of the flow of the process from one step to the next. When you start to create a process map, you need first to decide which direction you are going to orient the map on the page. They can either run horizontally from left to right, or vertically down a page from top to bottom. I usually run mine horizontally left to right on a page, because that is the way most Americans are accustomed to reading a document. An example of a simple process map is shown in Figure 2. If you would like to see a larger version of this map, click on this link: [LINK](#)

![Making Lunch Process Map](image)

**Figure 2**

**Mapping guidelines**

Process maps are flexible tools and can be used in any way that helps you to understand your process. That said, there are some guidelines that will help you make them clearer, easier to read and improve reader understanding. As you create a process map, keep these things in mind.
• Stick to one level of detail in your process map. If you start out by mapping your process in great detail, you will want to stick with that level of precision throughout the entire document. You would not want to start out with lots of detail and begin adding steps that do not contain the same amount of information or that are ‘summarized’ – unless you are adding a pre-defined process symbol. You would also not want to start out with generalized descriptions of process steps and then mix in highly-detailed steps. The mixing of levels of thoroughness will be confusing to the reader.

• Draw the map in one consistent direction. If you start drawing the map from left to right, then you will want to draw the entire map that way. You would not switch to laying out the map in a vertical orientation half way through the document. The reader will expect the symbols to continue in a consistent direction, and changing it up can be confusing. As a part of this guideline, you should avoid snaking the process map back and forth across the page. I usually see this technique used in an attempt to save paper or keep a map on one page, but it looks messy, crowds the information and makes the map harder to read.

• As noted earlier, decision points usually have two options extending out of them (i.e. yes/no, etc.). Once you have chosen a direction for each answer, you need to consistently have that answer come out of all future decision points in the same direction. For example, if you choose to have ‘yes’ answers extend out of the decision symbol on the right side, then all ‘yes’ answers should come out of all decision points on the right side. By keeping the decision answer directions consistent, the reader is less likely to misunderstand the map or become confused by a sudden change in direction. Don’t forget to clearly label the flow lines between decision symbols and the symbols with which they connect. That will make it easier for the reader to follow the process.

• Keep the symbols consistently sized and spaced. When presenting information visually, the shape and spacing of objects has meaning. If you vary the size and spacing of symbols, the reader may assume that there is some additional meaning in this. It also makes the map look sloppy and hard to follow.

• Clearly label each symbol with the action that it represents. When labeling symbols, if you have to reference a particular person, use their functional job title or role rather than the individual’s name. The people who perform a process today may change over time, but the job role will most likely stay the same.

• Keep the flow lines between shapes as straight and simple as possible. Long lines crisscrossing a page can be confusing and hard to follow. Try to minimize
the need for lines to cross over each other. When possible, use the on-page connector symbol to join steps that are distant from each other, or would require a line to cross over a number of other flow lines.

- Do not create infinite loops in your maps. If the process loops back on itself, ensure that you put a decision symbol somewhere along the path that will allow the process to continue or end at some point. For example, if an employee must wait for an approval before the process can be completed, you would want to ensure that the process has a condition that allows the process to move forward or eventually end if the approval is never given.

- Make sure every path ends in a terminator.

**Drawing the map**

When you begin drawing a map, you will want to take the time to walk the process and observe it. You can then talk with the staff members who regularly perform the tasks and have the most experience with the process. They are the experts and will give you the best, most complete description of the process steps. One trick to help ensure that you get a complete picture of the process is to have your experts describe the process starting from the end and work backward toward the beginning step. This approach is useful for helping people to view the process differently, and will make it easier to identify all of the paths that feed into any single step.

It is best to start drawing the map on paper using a pencil and a bunch of good erasers. As your experts think through the process, they will often remember details or intermediary steps that will require you to make lots of changes to your draft map. Once you have the process drawn out on paper, you can finalize it in a software package like Microsoft Visio. PowerPoint, Excel, and Word can also be used in a pinch.

Process mapping is a powerful tool that lets you view and understand your service processes in detail, and helps you to find ways that you can take action to streamline and improve them. These maps are also valuable tools for documenting and communicating the process to others. I encourage you to use them anytime you want to know more about your services. As always, I welcome your questions and feedback. You can e-mail me at clayton.taylor@asu.edu.

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Clayton Taylor, MBA, is the Director, Organizational Performance and a Certified Six Sigma Master Black Belt working in the Office of the Executive Vice President, Treasurer and Chief Financial Officer at Arizona State University. He leads the Organizational Performance Office. He and his team currently consult with diverse Business and Finance and university-wide operational areas to lower costs, improve operational efficiency and provide the highest quality customer experience to internal and external customers. Mr. Taylor can be reached at clayton.taylor@asu.edu.