

Process Mapping

**Clarifying understanding of key processes
and providing a path to significant improvement**

A Kaufman Global White Paper

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In preparing for a Lean launch, we need to learn how current processes work, and how well they deliver results. We need to identify disconnects and duplicated effort, understand how well business systems support processes, see the relationships between steps in the process and who performs them, and discover how we can change processes to ensure efficiency and quality in what they deliver. This process of learning forms a cycle that is repeated again and again, continuously improving the way we do work.

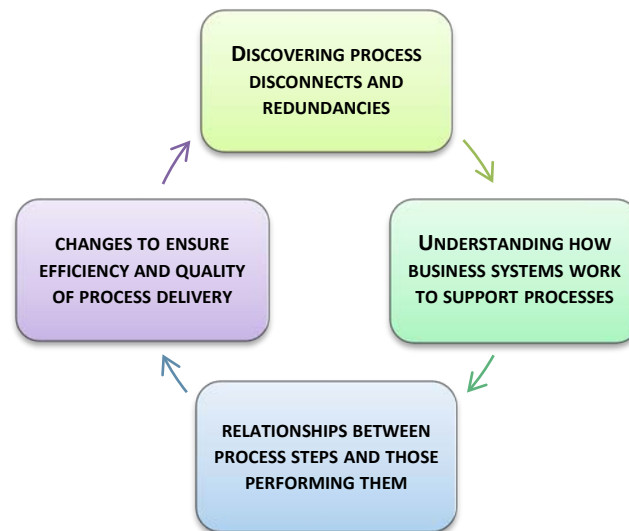


Figure 1 – Cycle of learning and improvement.

Process mapping helps us visualize that cycle of learning and reveals how work is performed. When we can see work processes clearly, we can identify opportunities for rapid improvement and introduce best practices. Effective mapping shows us how products and services flow and paves the way to sustainable improvement.

Process maps look at a number of aspects of work, and the method we use depends on what we want to investigate. In any process, we can look at the following dimensions:

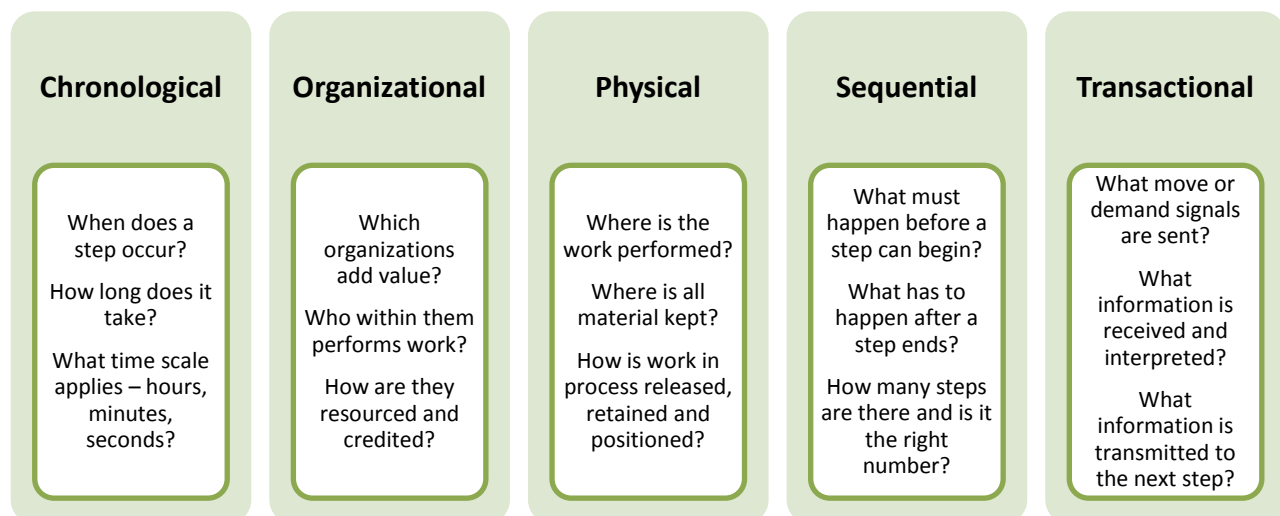


Figure 2 – Five dimensions of work.

To uncover these five dimensions of work, we find four process mapping techniques to be relatively easy to apply and consistently useful: Value Stream Mapping, Brown Paper Mapping, Swim Lane Mapping, and Function Mapping (Bubble Charting). Besides being helpful on their own, when combined they often complement each other to describe something we didn't know or confirm something we suspected... with facts. With that knowledge, we can move to action. The four techniques are:

Value Stream Mapping (VSM)

A Value Stream Map is a visual representation of the movement of material and information through a process. Applying Lean logic to the map of our current state helps us develop a map of what we want our future state to be.

Brown Paper Mapping

Less rigorous than VSM, Brown Paper Mapping helps us see the full scope of a business process with its individual activities and decision points. It is simple to learn and apply, and promotes engagement and involvement by the team that is doing the mapping.

Swim Lane Mapping

While similar to VSM, Swim Lane Mapping uses horizontal “lanes” to document processes performed across functions, showing what each does in its own “lane.”

Function Mapping

Function Mapping—also called Bubble Charting—shows interrelationships between functional areas, along with opportunities for improvement. Mapping these opportunities against evaluation criteria helps leadership see where to focus improvement efforts for the best results.

Selecting the right technique

Although any of these process mapping techniques is likely to reveal something valuable, the choice of the most effective one for a particular situation depends upon the answers to four key questions:

- A. How much high-fidelity data is available to help us understand the process?
- B. How many levels of detail are required to understand the process?
- C. How broad is the scope of the process to be mapped?
- D. How much time is available to complete the mapping?

Based on the responses to those four questions, Figure 3 helps us decide which technique to use. While there is often more than one technique suitable for a particular mapping objective, the figure shows that some techniques are better suited than others in specific situations. For example, a half-day is inadequate for VSM, but may be enough time to use Function Mapping for guidance in prioritizing and directing improvement efforts. When the amount of data is too limited for VSM, Swim Lane Mapping can focus on a small part of the process in an organizational context. Using more than one technique or even a hybrid of several can promote a rich portrayal of the as-is state and lead the way to a potent future state solution.

Value Stream Mapping

A Value Stream Map provides high-level and comprehensive knowledge about an end-to-end process that delivers a product or service to a customer who values it. Value Stream Maps are best suited:

- For a high-level assessment of a complete function.
- Where there is already an understanding of Lean principles and a desire to implement them throughout the organization.
- When there is a need for cross-functional knowledge about a major segment of the business.
- When leadership needs help in prioritizing improvement opportunities.

Value Stream Maps capture:

- Major process steps and resources involved at each.
- Customer demand, overall lead time, and cycle times.
- Inventory movement and levels of inventory at each point where it “waits” for work to be performed.
- Customer and supplier information flows.
- Whether parts or information are “pushed” to the next step, or “pulled” by a signal from it.
- How much material or information moves through each process step.
- Which activities add value—that is, they change what is moving through the process—and which represent wasted effort, motion, time, or other resources.

With this information, we create a graphical view of the business. Although it doesn’t tell us how to fix problems, it helps pinpoint where they are. It is focused on the needs of the customer, as well as the capability of the business and its suppliers to meet those requirements.

VSM can reduce process friction, promote process ownership, and help us think in new ways about our company’s relationship to supply partners and the customer. After we capture and prioritize opportunities to eliminate waste and promote value, we can make our future-state “to-be” map, where material flows from process to process with minimal waiting time between steps and less work-in-process inventory throughout. Leadership can make fact-based decisions about where more detailed analysis is needed, and craft a portfolio for structured implementation.

There are a few disadvantages to Value Stream Mapping:

- Resources—people and time—are required to get ready for a VSM workshop and for real-time review and validation of its findings by various stakeholders.
- It is optimized for production activities, although, with special attention, it may be applied in other value streams like service delivery, purchasing, and order processing.

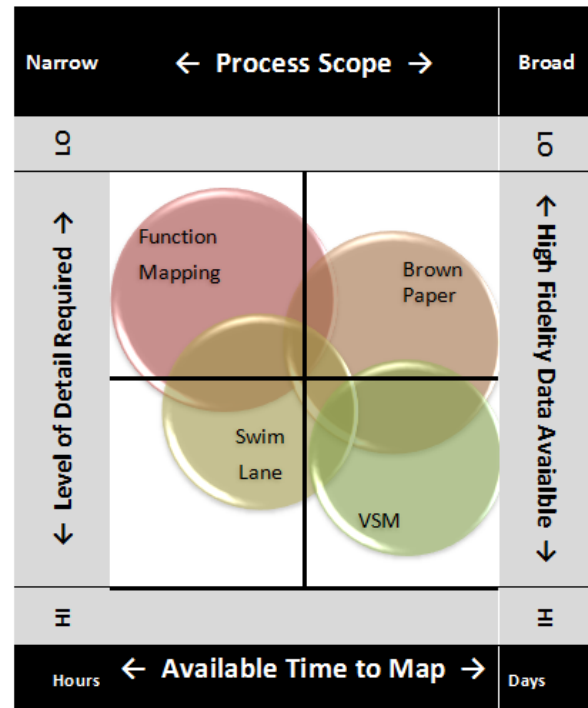


Figure 3 – Process mapping techniques are often selected by considering speed, available data, process complexity, and how much of the total process is under review.

- Technical aspects such as icons and diagrams can require additional learning.
- Results tend to be better when participants are already knowledgeable about Lean concepts.

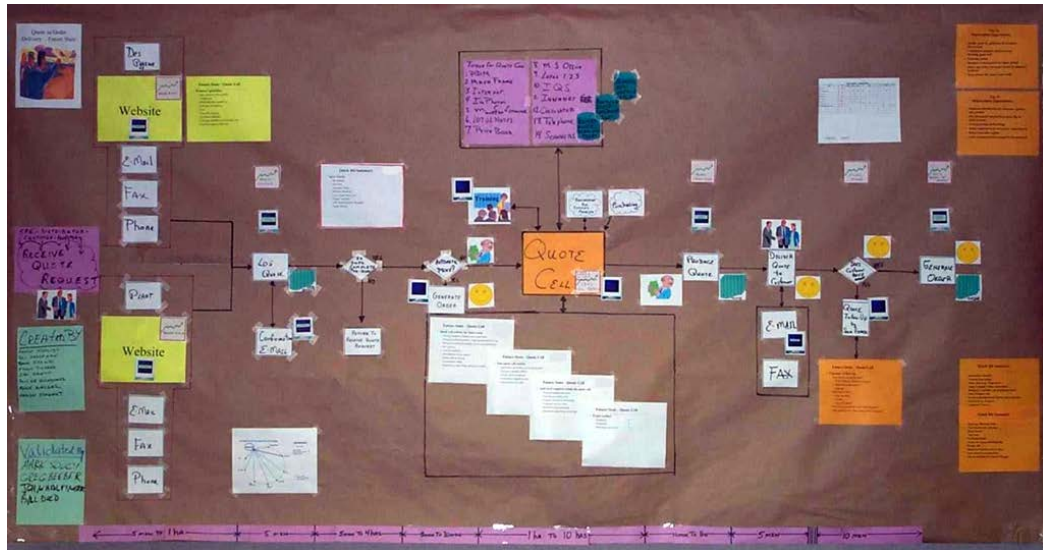


Figure 4 – A manually prepared Value Stream Map. Although mapping software exists, a low-tech approach usually promotes engagement by allowing teams to work out what actually goes on in a process. A more formal process flow diagram can be drawn later, if desired.

Brown Paper Mapping

This mapping approach starts with a large sheet of brown paper taped to a wall. It is used when we need to understand the details of the steps in an activity, improve a specific process in a value stream, or find the root cause of a problem. Holding a “Brown Paper Fair” is a good way to engage a larger number of people in the activity.

Brown Paper Maps are most useful:

- When less time is available than required for a VSM.
- When only minimal training in map building has already taken place or is practical.
- When scope is limited to a specific function or operational area.
- When we need to understand a process down to the lowest practical task level.
- When the “worker bees,” not skilled analysts, are building the map.
- When we are trying to pinpoint specific problems that need to be fixed.



Figure 5 – Brown Paper Mapping teams review and discuss opportunities during a waste identification breakout exercise.

Brown Paper Maps are useful for deeper study of activities we identified as improvement opportunities in our Value Stream Map. They show the sequential flow of tasks within an activity and indicate decision points and alternate flows for different situations, who performs each task, how long it takes, and where information is involved.

Advantages are that Brown Paper Mapping:

- Is simple to do and easy to understand.
- Is one of the fastest ways to analyze or identify process problems.
- Works in office, manufacturing, or other areas.
- Can do double-duty as a training tool.
- Quickly reveals problems at the task or activity level.
- Visually represents processes without specific symbols, diagramming methods, or strict iconology.
- Includes lead time, step durations, and other time factors.
- Documents process ownership.
- Records information transactions.

There are a few disadvantages:

- Accelerating the mapping by making quick estimates can compromise accuracy.
- The number of people required to build broad consensus requires careful resource management.

Swim Lane Mapping

Similar to Brown Paper Mapping, Swim Lane Mapping uses horizontal “lanes” to document processes performed across functions, showing what goes on in each one.



Figure 6 – 60 improvement opportunities were identified in this swim lane map depicting the Budget to Actual reporting activities for a state government agency.

Swim Lane Mapping is best used:

- Where roles and responsibilities are ambiguous.
- Where we need to align processes across functions, remove redundancies, and coordinate actions.
- To increase process awareness among all participants.

Swim Lane Mapping has many of the same strengths and weaknesses as Brown Paper Mapping. Advantages are that it:

- Brings clarity to sub-process details.
- Highlights disconnects between functional areas.
- Reveals integration issues.
- Identifies process redundancies and duplication of effort (example: keeping duplicate records).
- Shows people in one functional area what’s going on in others.

There are some disadvantages to this technique. A large number of tasks must be recorded because activities are often duplicated across swim lanes. In addition, reconciling a Swim Lane Map with a high-level flow diagram can be tedious.

Function Mapping

Function Mapping, or “Bubble Charting,” makes functional interrelationships visible. We begin with discussions that firm up exactly what the organization is trying to learn. For example, we might want to improve alignment between functions such as IT, sales, and finance. Or, we could need a company-wide overview of current initiatives in order to better prioritize them. Bubble Charting is also useful for gathering information before embarking on corporate Lean initiatives.

The first step is to construct a big-picture as-is view of the organization's business processes for each major functional area (Figure 7). Then people across the enterprise work together to determine high-priority issues and opportunities. That's followed by recommendations for continuous improvement activities and resource allocation. With input from all levels and all functions in the organization, a consensus-based portfolio of actions for improvement can be created.

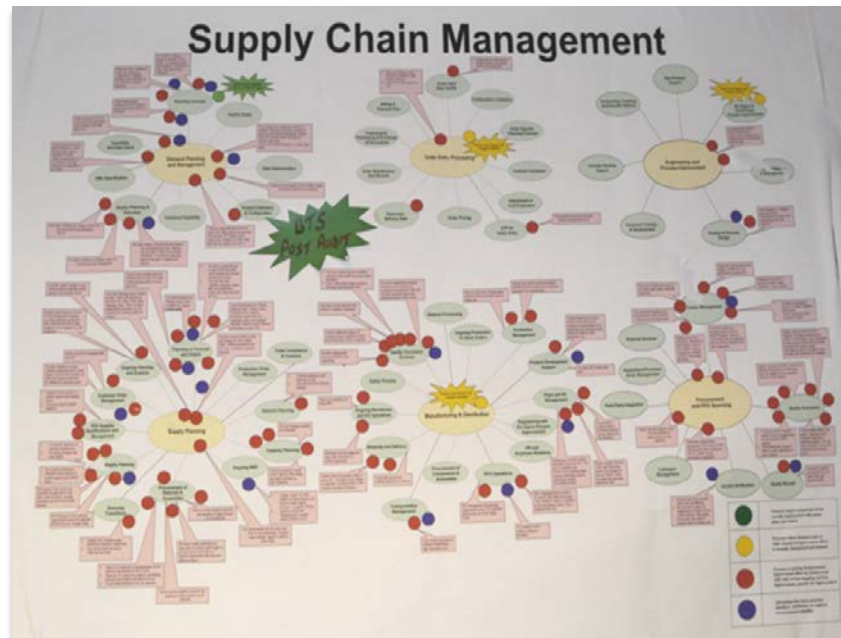


Figure 7 – A Bubble Chart for a single function with opportunities identified.

- Pale yellow ovals--function
- Pale green ovals--associated processes
- Yellow starbursts--planned kaizen events
- Green starbursts--completed kaizen events
- Red dots--process improvements
- Blue dots--IT improvements
- Pink boxes--improvement ideas

Besides the visual impact of its information-rich “bubbles,” a benefit of this mapping technique is its flexibility of facilitation. It is easy for people to participate in, so it can be applied rapidly. Redundancies and gaps become visible. Because of its cross-functional scope, it helps build motivation and agreement about where to focus improvement efforts.

A Bubble Charting assessment typically produces:

- Multi-functional, multi-level lists of process improvement opportunities.
- A categorized and prioritized spreadsheet of findings.
- An understanding of how various courses of action would affect strategic objectives.
- Implementation recommendations for leadership.

Once improvement ideas are captured for each functional area, ideas are linked with business goals and objectives. Teams then consider how ideas match up with factors like organizational alignment, business data integrity, and training and development needs. Then, depending on the company's situation at the time, ideas and opportunities are prioritized.

After Bubble Charting, we identify process owners, develop implementation plans, allocate resources, and report out to sponsors and leadership—a lot of work, but the ideas coming from the assessment are likely to substantially benefit the organization.

Advantages include: Cross-functionality, speed, rich and open brainstorming, and an improvement portfolio with broad buy-in – all very visual. Disadvantages include imprecise measures and the careful facilitation needed to manage participants with strongly-held beliefs rooted in the past.

Summary

Learning how our processes work begins a cycle of continuous learning and improvement. Process mapping looks at time, the functional organization of the company, where work is performed and how it flows, the steps in the process, and how information moves among them.

Kaufman Global recommends four techniques—Value Stream Mapping, Brown Paper Mapping, Swim Lane Mapping, and Function Mapping. Selecting among them to solve varying problems and create a path to a better future state is part art and part science, and depends on a number of factors. In practice, we often compose hybrids of these four techniques to help us see, understand, and reconfigure processes. Well thought out and executed process mapping makes it much easier to envision and achieve the robust, agile, and waste-free performance we seek for predictable growth and profits.

About Kaufman Global

Kaufman Global is a proven implementation partner that focuses on accelerating performance. For 20 years we have worked with clients around the world to drive enterprise-wide change initiatives and cultural transformations. Leveraging Lean, Six Sigma and proprietary change management techniques, Kaufman Global delivers structured implementation and transformation projects that enable sustainable operational and financial results.

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