



Finding the Right Tool for the Job...

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It's been said that when all you have is a hammer, everything looks like a nail.

Such is not the challenge we face today! Over the past 50 years, a tremendous number of analysis and problem-solving tools have been developed and are available to deploy in the unending quest for better service to customers, producing greater value with less waste. In today's world, the efficiency and efficacy of continuous improvement depends on selecting the best analysis and problem-solving tool at the right time.

Perhaps the most important tools for success start in the scoping.

Defining and Scoping Improvement Projects

One of the most valuable tools early on to effectively define the process, problem, and project is the **SIPOC** (Suppliers, Inputs, Process, Outputs, Customers). Some organizations always start with the SIPOC to get the team on the same page so they can answer:

- What is the process?
- Its purpose (why are we doing this)?
- Who owns the process (surprisingly sometimes not obvious/known)?
- Who are the customers/suppliers?
- Who is the primary customer?
- What do they get out of the process or provide for the process?

And then there is a lot of learning about the high level process flow (7-8 steps) and the process measures for each step.

- What's the ideal?
- Is the data available?
- Are we already measuring it?
- What is the goal?
- What is the impact?



Once the team members have a shared high-level understanding of the process using the SIPOC, and have gathered the data that enables them to measure the gap between the current situation and the ideal, they can create a good problem statement, objective, scope, and timetable. These together are key components of a **Project Charter**, the 'North Star' of a project that helps keep the project moving forward to successful completion.

Two additional tools we have found helpful at the start of the project are the **Waste Calculator** and the **Project Success Predictor**. The Waste Calculator helps a team to quantify that gap between today's reality and what it would be like if everything were right. By quantifying the impact of wasted time, material, capital, and opportunity, this tool helps an organization select the best opportunities and give them the correct level of urgency. The Project Success Predictor is a tool developed by Conway consultants to help teams identify weak spots in the project definition so they can address them early and increase the chances of success. It is an easy to use checklist that every project leader and sponsor should review before launching a major project.

Increasing Throughput (at 1st time Quality)

Often we have a process through which we want to increase the throughput or output without adding resources. In these situations a Process Flow Chart or Process Evaluation Chart is an excellent tool to start with. A **Process Flow Chart** or **Process Evaluation Chart** (the latter is populated with measurement data) can be created by bringing together the participants in the process and mapping it out together. Some organizations believe that mapping the processes with the frontline associates always results in lightbulbs going on and the associates voicing concerns and ideas once their process is on the wall. There are always surprises, they find 'black holes' or dead ends, see the 'wastes', waiting and handovers get visible and they learn what the other 'swim-lanes' (teams or team members) do and how what they do impacts others and vice versa. They always start to create action logs based on the concerns/ideas and they serve as the basis for the improvement project

Another approach is to start with observation. Follow the process, observe the work and gather what data is available about the current process. This can be compiled into a draft of a flow chart to bring to a meeting with participants from all areas of the process under study. At this meeting, the group goes through the draft, discussing, adding to, questioning, and correcting the draft to better reflect reality. This process often surfaces important problems to solve and these problems will vary:

- Sometimes inspection and rework are major obstacles to throughput. Moving forward with **tools to improve first time quality** (see below) would be the next logical step.
- Sometimes the work is done in batches to compensate for time-consuming and/or expensive changeovers. In these circumstances, **tools that help in reducing change-over time (SMED)** are going to be most useful.
- Often, it turns out that poorly defined interfaces or hand-offs slow the throughput. For example, until working together on a process flow, the supplying people may have had only a vague or even outdated understanding of what the customers need from the product or service, and may be under-processing (causing rework downstream) or over-processing — spending time and money on steps that are not needed. In these situations, the problem is usually solved then and there with a revision to the process.
- If the throughput is slowed because of a bottleneck, Theory of Constraint's **drum/buffer/rope** method will increase throughput to the maximum permitted by the bottleneck. Working to widen that bottleneck will raise throughput to the next level.
- If the throughput is constrained by intermittent bottlenecks caused by variation in throughput at component steps, **Root Cause Analysis** of the variation will enable improvements. **Check Sheets** and **Pareto Charts** can help to identify the causes of the variation.



Once you have addressed the problems that have been quickly surfaced in the process flow chart or process evaluation tool, and want to go further, a **Time Value Map** can help you identify what next to tackle in order to increase throughput.

Increasing Customer Satisfaction

There are a variety of approaches to hearing the **Voice of the Customer**.

We can know all there is to know about our internal processes and still not know enough about them to increase client satisfaction. For this sort of challenge we need additional tools and methods. Customer Surveys are a staple for measuring and possibly surfacing areas for improvement. A popular tool for measuring customer satisfaction is the **Net Promoter Score**. Studying variation in the Net Promoter Scores by area, customer type, and over time can help pinpoint trouble spots that are impacting customer satisfaction.

Analyzing customer **Complaint Logs** can help identify and address the problems that customers have identified and shared, but this is a bare minimum in the effort to increase customer satisfaction. The Complaint Log is a place to seek information about where we are falling short on what the Kano Model calls "Must-Be Quality." The absence of the quality dissatisfies even though the presence in itself will not please the customers because it is assumed. **Addressing gaps in the Must-Be Quality can lift one out of the hole, but will never lift customer satisfaction any further.**

To effectively increase customer satisfaction, we need to create and deliver work that will delight the customers. One client described his method as the **Ambassador Visit**: "I go to meet with the customer, I say thank you for your business, and then I shut up. And listen." Providing a good forum and opportunity for the customer to express what they like and don't like is very useful. What's more, the Ambassador Visit provides a forum to discuss what the customers see coming down the road, so we can proactively anticipate and address their needs.

Another client finds tremendous value in visiting clients as they work with the product – meeting them in the field to watch, listen, and study the customer's challenges and how the product currently helps them – and how it could help them if something were to be changed. This approach, sometimes called **Contextual Inquiry**, provides value in understanding what is truly working as expected for the customers and how we can solve problems for the customers that they did not even think to mention.

Increasing Employee Engagement

The tools most immediately useful when trying to increase employee engagement are Surveys to capture the baseline. Some organizations use a three-question approach to measure employee engagement:

- Would you recommend working here to friend and family?
- Do you feel able to work to fullest potential?
- Have you considered looking for another job in the last 30 days?

The organization measures their Employment Engagement as the percent of employees who give favorable answers to all three questions. Improved training and enhanced communication techniques such as Town Halls can lead to increased engagement. However more extensive surveys can help an organization identify the underlying causes of low engagement. Using **Root Cause Analysis** tools will help at this point.

Increasing Market Share

In order to increase market share, we need to gather better information about the market. Some of the tools that can be useful in finding ways to increase market share include **Competitive Analysis** and **Market Surveys**. Another approach, **A/B Analysis**, can be used to test whether we get a better response from one approach versus another.



"The more inventory an organization has... the less likely they are to have what they need."

Taiichi Ohno

Reducing Inventory

Value Stream Mapping helps to identify where the inventory is piling up, a first step to identifying and addressing the causes of excess inventory. Inventory tends to build in excess for several different reasons and understanding the main reason is a good place to start.

- Often excess inventory builds because the purchasing or production leadtimes exceed the window of visibility into true demand for the product. It is hard to get a clear crystal ball, so it is generally easier to work on accelerating information about true demand and building agility into the supply chain to respond efficiently to changes in demand. **Kanbans** help to align production and supply with demand.
- Another cause of excess inventory (and contributing to the slower production and supply chain mentioned above) is large batch sizes. Batch sizes are typically set high in order to minimize the lost production from change-overs and set-up time. The **SMED** and **Rapid Change Overs** toolkit can reduce changeover time, enabling smaller batch sizes, and lowering inventory.
- Often inventory will pile up in front of a bottleneck. Applying Theory of Constraints (TOC) to subordinate other processes to maximize throughput through the bottleneck can reduce both shortages and excess inventory.
- Shortages of critical parts often leads to excess inventory because we cannot build and ship without having all the required components. Understanding and addressing **Variation** in the supply chain can also reduce excess inventory.
- Another cause of excess inventory can be poor organization. Taiichi Ohno once observed that the more inventory an organization had, the less likely they were to have what they needed. If inventory is in excess because of poor organization, applying **5-S (Sort, Straighten, Shine, Standardize, Sustain)** can help an organization maintain a tight and clear view of exactly what is needed.

Reduce Defects and Errors

When the goal is to reduce errors, it helps to understand more about the defects and errors. Using multiple **Pareto Charts** to stratify the data in different ways can help determine what variation is random and what variation is pointing to an underlying cause. Pareto Charts can be created to show defect or error rates by location, product type, suppliers, shift. **Run Charts** and **Control Charts** can help us understand the variation in quality over time. The **Fishbone Diagram** can help us surface a variety of possible contributors and the **Five Whys** can help us drill down into a deeper cause. A **Correlation Chart** can help test hypotheses about the impact of a causal factor.

Design of Experiments can help us evaluate which approach produces better results. An **FMEA** can help identify what can possibly go wrong and prioritize changes. Then **Poka-yokes** or error proofing aimed at the highest risk scores will generally produce very significant reductions in defects and errors. Setting up **Visual Job Aides** and color-coding can make it easier to do the job right every time.

With so many tools available, the main question for process improvers today and into the future is how to approach a problem or objective with the best tool for the situation. What analysis tools, in what sequence, will get us fastest to the improvement we want?

And new tools will continue to be developed – and are being deployed already! One Conway client plans the



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manufacturing in a virtual reality scenario then uses it on the floor – taking **Design for Manufacturing** to a new level!

As you continue along the journey to lead and execute process improvement, please share with us your thoughts and insights about what tools can best help us along the way.