What is Lean Six Sigma?

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The foundation of Lean Six Sigma centers on:
- Delighting customers, delivering higher quality service in less time (with speed and quality).
- Improve processes by eliminating defects (anything that was unacceptable to a customer) and focus on how the work flowed through the process.
- Teamwork
- Decisions are based on data.

Six Sigma focuses more on quality than speed.
The methods known as "Lean" are better at improving process flow and speed than on improving quality.
Combining the two makes Lean Six Sigma a powerful improvement tool.

Developing a focus on customers means more than just doing a survey now and then.
It means developing awareness that customer needs that shape most of the work we do every day.

Improving processes include:
- Documenting how work gets done (the steps that comprise the process)
- Examining the flow of work between people or workstations
- Giving people the knowledge and methods needed to constantly improve work

The two purposes of process improvement are to eliminate variation in quality and speed and to improve process flow and speed.

Sigma is used in statistics to stand for the amount of variation seen in a process, a set of data or anything you can measure. A low sigma number means low yield and a high number means a high yield. The difference in yield gets smaller and smaller as you increase the sigma level. It gets harder and harder to make improvements in yield the better a process operates.
It's easy to make improvements in a bad process –i.e. one with a sigma of 1 or 2, but very difficult to improve a process that is already working fairly well.
The goal is to make your work in your area more reliable, more predictable to reach high levels of quality which means elimination variation.
Variation is one of the most common sources of problems in a process. But another source is how the work flows through the process that hand offs from one person or workstation to another, the physical path that the work follows in an office or on the factory floor. One of the best ways to speed up a process is to eliminate process steps that are not really necessary, meaning they do not meet a customer need. Another way is to redesign how work flows in the workspace. Outcome is eliminating waste, improve customer outcomes.

Teamwork, the skills of collaboration:
   a. Listening skills, b. Brainstorming and discussion, c. organizing ideas, d. decision making

Additional skills for effective teams:
   a. Set goals, b. assign accountability, c. Handle conflict, d. Pay attention to how decisions are made, e. Make sure you have effective meetings, f. Foster continuous learning, and g. Collaborate with other groups.

You need data and facts because they will save you a lot of trouble and prevent a lot of wasted dollars and time. Having data can make a huge difference in the decisions we make every day on the job and are particularly important in improvement projects. A lack of available data limits knowing how long, or on average, or how long it takes you to handle work items, which brings about customer satisfaction and/or dissatisfaction.

Kinds of data to collect:
   a. Customer satisfaction (a result measure) Data gathered through surveys or interviews on what customers think about your product or service.
   b. Financial outcomes (a result measure) What impact the quality and/or problems have on revenue, expenses, costs, etc.
   c. Speed/lead time(result or process measure) Data on how fast(or slow) your process is. "Lead time" is how long it takes for any individual work item to make it all the way from the beginning to the end of the process.
   d. Quality/defects(result or process measure) How many errors are made, whether the product or service has flaws that affect the customer, etc.

Key themes of Lean Six Sigma:
1. Customers are important
2. Speed, quality, and low cost are linked
3. You need to eliminate variation and defects, and focus on process flow, if you want to deliver quality, speed, and low cost
4. Data is critical to making sound business decision
5. People have to work together to make the kinds of improvements that customers will notice

Laws of Lean Six Sigma:
1. The law of the market. Customer needs define quality and are the highest priority for improvement.
2. The Law of flexibility. The speed of any process is proportional to its flexibility. How quickly can people switch between tasks.
3. The law of Focus. Data shows that 20% of the activities in a process cause 80% of the problems and delay.
4. The Law of Velocity. The speed of any process is inversely related to the amount of work or things in process.
5. The law of complexity and cost. The complexity of the service or product offering generally adds more costs and work in process than either poor quality (low sigma) or slow process problems.

Lean Six Sigma usually begins at the top levels of a company with executive training and planning. Implementing Lean Six Sigma through various positions include:
- **Champions**: An executive level manager who has the responsibility for managing and guiding Lean Six Sigma efforts.
- **Black Belts**: Employees who receive a minimum of 4 to 5 weeks of training on leadership and problem solving.
- **Master Black Belts**: Those who receive advanced training in more sophisticated problem solving techniques.
- **CEO & executives**: One who determines whether the organization will adopt Lean Six Sigma.
- **Business unit managers**: Managers working closely with the Champions.
- **Line managers/process owners**: The people who own the processes that will be improved by Lean Six Sigma. They are responsible for authorizing changes in the process procedures.
- **Green Belts/Yellow Belts/White Belts**: Team members. Those can be anyone in the organization who receives some level of awareness education or skill training.

Most projects go through a standard sequence of activities know as **Define, Measure, Analyze, Improve and Control (DMAIC)** performance. This is called a tollgate review. The purpose of these reviews are to: update management on the team's progress, make sure the project is still critical to the organization, adjust or realign the project as necessary, let management know what they can do to remove barriers for the team.

DMAIC has proven itself to be one of the most effective problem solving methods ever used because it forces teams to use data to:
- Confirm the nature and extent of the problem,
- Identify true cause of problems,
Find solutions that evidence shows are linked to the cause,  
Establish procedures for maintaining the solutions even after the project is done.

**Define** the purpose through discussing the project charter as a team, getting customer data, develop a shared understanding of the business priorities of your project, confirm the opportunity, agree on how success will be measured, and set the team up for success.  
Three examples of tools used to define the project are:  
1. The SIPOC diagram, a high level process map. SIPOC stands for Supplier, input, process, outputs, and customer. This includes observing/watching what's taking place.  
2. Value Stream Map. These maps show the process flow, displays actual process data and how time is spent in the process. This helps teams pick out specific points in the process that have problems such as long wait times or lot of errors.  

**Measure** is the heart of what makes Lean Six Sigma work when other approaches haven't. Learn to trust your data, base decision on facts and reality, document what's really going on in the process, and understand what's really important to improve. One of the most common tools used to help focus a teams' efforts is a type of bar chart called a Pareto chart. Pareto charts help focus a team on the biggest contributors to a problem.  

In the **Analyze** phase, this is where you make sense of all the information and data collected in Measure and use that data to confirm the source of delays, waste, and poor quality. Look for patterns in the data. This will allow you to find clues to the real causes, and identify the most critical process factors to control. The cause and effect diagram is a thinking tool that helps a team organize the ideas they have about potential causes of a problem.  

The sole purpose of **Improve** is to make changes in a process that will eliminate the defects, waste, costs, etc., that are linked to the customer needs identified in the define stage.  

The purpose of **Control** is to make sure that any gains your team makes will last. That means creating procedures and work aids that will help people do their jobs differently from now on by reacting quickly to future problems, and share the learning. The most common tool here is the control chart, which sets your upper and lower limits.  

How to support Lean Six Sigma:  
a. Pick the right projects. Projects linked to corporate strategies and priorities, realistic in scope, have identifiable and measurable hard results.  
b. Pick the right people, as identified earlier.
c. Follow the method.

d. Clearly define roles and responsibilities, which include responsibility, accountability, consultation and information.

e. Communicate with bosses, project team members, to and from staff.

f. Support education and training.

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