SSD Global Solutions

Lean & Agile Project Management Terms

Lean

Lean, Lean and Agile, and project management all have some common and agreed-upon tools.

Lean is a customer-centric methodology used to continuously improve any process through the elimination of waste in everything the project manager does; it is based on the ideas of continuous incremental improvement and respect for people.

Lean and agile are time-boxed, iterative approaches to software delivery that builds software incrementally from the start of the project instead of trying to deliver it all at once near the end.

Project management is the application of processes, methods, knowledge, skills, and experience to achieve the project objectives. In general, a project is a unique, transient endeavor, undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes, or benefits.

The key tools in Lean include tools that make things work quickly and eliminate waste. They include the following:

5S

Organize the work area:

Sort (eliminate that which is not needed)

Set in order (organize remaining items)

Shine (clean and inspect work area)

Standardize (write standards for above)

Sustain (consistently apply the standards)

5S: The Purpose

Eliminates waste that results from a poorly organized work area (e.g., wasting time looking for a tool).

Andon

Andon is a visual feedback system for the plant floor that indicates production status alerts when assistance is needed and empowers operators to stop the production process.

Andon: The Purpose

Andon acts as a real-time communication tool for the plant floor that brings immediate attention to problems as they occur, so they can be instantly addressed.

Bottleneck Analysis

Bottleneck analysis identifies which part of the manufacturing process limits the overall throughput and improves the performance of that part of the process.

Bottleneck Analysis: The Purpose

Improves throughput by strengthening the weakest link in the manufacturing process.

Continuous Flow

Manufacturing in which work-in-process smoothly flows through production with minimal (or no) buffers between steps of the manufacturing process.

Continuous Flow: The Purpose

Eliminates many forms of waste (e.g., inventory, waiting time, and transport).

Gemba (The Real Place)

A philosophy that reminds the project manager to get out of our offices and spend time on the plant floor—the place where real action occurs.

Gemba: The Purpose

Promotes a deep and thorough understanding of real-world manufacturing issues by first-hand observation and by talking with plant floor employees.

Heijunka (Level Scheduling)

A form of production scheduling that purposely manufactures in much smaller batches by sequencing (mixing) product variants within the same process.

Heijunka: The Purpose

Reduces lead times (because each product or variant is manufactured more frequently) and inventory (because batches are smaller).

Hoshin Kanri (Policy Deployment)

Align the goals of the company (strategy) with the plans of middle management (tactics) and the work performed on the plant floor (action).

Hoshin Kanri: The Purpose

Ensures that progress toward strategic goals is consistent and thorough, eliminating the waste that comes from poor communication and inconsistent direction.

Jidoka (Automation)

Design equipment to partially automate the manufacturing process (partial automation is typically much less expensive than full automation) and to automatically stop when defects are detected.

Jidoka: The Purpose

After Jidoka, workers can frequently monitor multiple stations (reducing labor costs), and many quality issues can be detected immediately (improving quality).

Just-In-Time (JIT)

Pull parts through production based on customer demand instead of pushing parts through production based on projected demand. Relies on many Lean tools, such as continuous flow, heijunka, kanban, standardized work, and takt time.

Just-In-Time: The Purpose

Highly effective in reducing inventory levels. Improves cash flow and reduces space requirements.

Kaizen (Continuous Improvement)

A strategy with which employees work together proactively to achieve regular, incremental improvements in the manufacturing process.

Kaizen: The Purpose

Combines the collective talents of a company to create an engine for continually eliminating waste from manufacturing processes.

Kanban (Pull System)

A method of regulating the flow of goods both within the factory and with outside suppliers and customers. Based on automatic replenishment through signal cards that indicate when more goods are needed.

Kanban: The Purpose

Eliminates waste from inventory and overproduction. Can eliminate the need for physical inventories (instead relying on signal cards to indicate when more goods need to be ordered).

KPIs (Key Performance Indicators)

What are KPIs?

Metrics designed to track and encourage progress toward critical goals of the organization. Strongly promoted KPIs can be extremely powerful drivers of behavior, so it is important to carefully select KPIs that will drive desired behavior.

KPIs: The Purpose

The best manufacturing KPIs

- Are aligned with top-level strategic goals (thus, the purpose is to achieve those goals)
- Are effective at exposing and quantifying waste (OEE is a good example)
- Are readily influenced by plant floor employees (so they can drive results)

Muda (Waste)

Anything in the manufacturing process that does not add value from the customer's perspective.

Muda: The Purpose

There is none. Muda means waste. The elimination of muda (waste) is the primary focus of Lean manufacturing.

Overall Equipment Effectiveness (OEE)

Framework for measuring productivity loss for a given manufacturing process. Three categories of loss are tracked:

Availability (e.g., down time)

Performance (e.g., slow cycles)

Quality (e.g., rejects)

Overall Equipment Effectiveness: The Purpose

Provides a benchmark/baseline and a means to track progress in eliminating waste from a manufacturing process. 100% OEE means perfect production (manufacturing only good parts, as fast as possible with no down time).

PDCA (Plan, Do, Check, Act)

An iterative methodology for implementing improvements:

Plan (establish plan and expected results)

Do (implement plan)

Check (verify expected results achieved)

Act (review and assess; do it again)

PDCA: The Purpose

Applies a scientific approach to making improvements:

Plan (develop a hypothesis)

Do (run experiment)

Check (evaluate results)

Act (refine your experiment; try again)

Poka-Yoke (Error Proofing)

Design error detection and prevention into production processes with the goal

of achieving zero defects.

Poka-Yoke: The Purpose

It is difficult (and expensive) to find all defects through inspection, and correcting defects typically gets significantly more expensive at each stage of production.

Root Cause Analysis

A problem-solving methodology that focuses on resolving the underlying problem instead of applying quick fixes that only treat immediate symptoms of the problem. A common approach is to ask "why" five times, each time moving a step closer to discovering the true underlying problem.

Root Cause Analysis: The Purpose

The purpose is to ensure that a problem is truly eliminated by applying corrective action to the root cause of the problem.

Single-Minute Exchange of Dies (SMED)

Reduce setup (changeover) time to less than 10 minutes. Techniques include the following:

- Convert setup steps to be external (performed while the process is running)
- Simplify internal setup (e.g., replace bolts with knobs and levers)
- Eliminate nonessential operations
- Create standardized work instructions

Single-Minute Exchange of Dies: The Purpose

Enables manufacturing in smaller lots, reduces inventory, and improves customer responsiveness.

Six Big Losses

Six categories of productivity loss that are almost universally experienced in manufacturing:

- Breakdowns
- Setup/adjustments
- Small stops

Reduced speed

Startup rejects

Production rejects

Six Big Losses: The Purpose

Provides a framework for attacking the most common causes of waste in manufacturing.

SMART Goals

What are SMART Goals?

Goals that are specific, measurable, attainable, relevant, and time specific.

SMART Goals: The Purpose

The purpose is to ensure that goals are effective.

Standardized Work

Documented procedures for manufacturing that capture best practices (including the time to complete each task). Must be "living" documentation that is easy to change.

Standardized Work: The Purpose

Eliminates waste by consistently applying best practices. Forms a baseline for future improvement activities.

Takt Time

The pace of production (e.g., manufacturing one piece every 34 seconds) that aligns production with customer demand. Calculated as planned production time/customer demand.

Takt Time: The Purpose

Provides a simple, consistent, and intuitive method of pacing production. Is easily extended to provide an efficiency goal for the plant floor (actual pieces/target pieces).

Total Productive Maintenance (TPM)

A holistic approach to maintenance that focuses on proactive and preventative maintenance to maximize the operational time of equipment. TPM blurs the

distinction between maintenance and production by placing a strong emphasis on empowering operators to maintain their equipment.

Total Productive Maintenance: The Purpose

Creates a shared responsibility for equipment that encourages greater involvement by plant floor workers. In the right environment, this can be amazingly effective in improving productivity (increasing up time, reducing cycle times, and eliminating defects).

Value Stream Mapping

A tool used to visually map the flow of production. Shows the current and future state of processes in a way that highlights opportunities for improvement.

Value Stream Mapping: The Purpose

Exposes waste in the current processes and provides a roadmap for improvement through the future state.

Visual Factory

Visual indicators, displays, and controls used throughout manufacturing plants to improve communication of information.

Visual Factory: The Purpose

Makes the state and condition of manufacturing processes easily accessible and noticeably clear to everyone.

The burn down chart is a fundamental metric in Lean and agile.

The burn down chart is amazingly simple. It is easy to explain and easy to understand. But there are pitfalls observed in many Lean and agile workshops and adoptions.

People tend to think the burn down chart is so simple they do not give appropriate attention to understand what it says.

Burn Down Chart

As a definition of this chart, the project manager can say that the burn down chart displays the remaining effort for a given period of time.

When they track product development using the burn down chart, teams can use a sprint burn down chart and a release burn down chart.

Sprint Burn Down Chart

Teams use the sprint burn down chart to track the product development effort remaining in a sprint.

Generally speaking, the burn down chart should consist of the following:

X axis to display working days

Y axis to display remaining effort

Ideal effort as a guideline

Real progress of effort

Companies use different attributes on the Y axis. All of them have benefits and drawbacks.

Another popular tool in Lean and agile is time boxing. In time management, time boxing allocates a fixed time period, called a time box, to each planned activity. Several project management approaches use time boxing. It is also used for project managers to address personal tasks in a smaller period.

In Lean and agile, time boxing is a constraint used by teams to focus on value. One valuable time box that Lean and agile promotes is the project itself. Contrary to Lean and agile mythology, Lean and agile teams prefer to have a time-boxed project because it offers a fixed schedule and a fixed team size.

Scrum meetings play a key role in Lean and agile. Here is an overview of the diverse types of scrum meetings:

1. Sprint planning meeting: This meeting begins with the product owner. This is when he or she explains the vision for the project as well as ways for the team to meet this goal. During this meeting, team members decide the amount of work they can complete in a timely manner. This is also when the team moves work from the product backlog to the sprint backlog. This step requires a lot of planning, and usually this takes around eight hours for the group to decide on

a finalized 30-day sprint.

2. Daily scrum and sprint execution: From the planning meeting, the team moves into the daily scrum meetings. Every single day for about 30 minutes, the team gathers together to report any issues or progress on their tasks. Although brief, this meeting is an essential part of the scrum process. It is designed to keep all group members on track in a cohesive manner. Normally, the product owner is present during all daily scrum meetings to assist in any way.
3. Sprint review meeting: This meeting is used to highlight a live demonstration of the work completed. During this meeting, the product owner, scrum master, and stakeholders are present to review the product and suggest changes or improvements.
4. Sprint retrospective meeting: This meeting is held to facilitate a team's reflection on its progress. The team speaks openly about its organizational concerns and teamwork. During this meeting, dialogue should remain friendly, nonjudgmental, and impartial. This review session is a key part of team building and development, and it is also especially important for future scrum projects.
5. Backlog refinement meeting: The last type of scrum meeting is the backlog refinement meeting. Team members focus on the quality and skill work involved during sprints. This meeting is necessary for the business owners to connect with the development team and is used to assess the quality and development of the final product. This meeting involves important reflection on the team backlogs. These backlogs are often written in user story form and specify what makes the product useful to the consumer.

Large or complex projects in big organizations often require some sort of executive "sponsorship" or leadership.

Any task that requires some preparation to achieve a successful outcome will

probably be done better by using a few project management methods somewhere in the process. Project management methods can assist in the planning and managing of all sorts of tasks, especially complex activities.

Project management is chiefly associated with planning and managing change in an organization, but a project can also be something unrelated to business. Project management methods and tools can therefore be useful far more widely than people assume.

Project management involves the following:

Planning
Assessing/controlling risk
Allocation of resources
Organizing the work
Acquiring human and material resources
Assigning tasks
Tracking and reporting progress
Analyzing the results based on the facts achieved
Quality management
Solving issues

Typical types of documentation include the following:

Project charter
Work breakdown structure
Risk management plan
Communications plan
Project schedule
Stakeholder analysis

More important than any other topic in Lean & Agile Project Management is

the project charter:

- Should be the first step in all CI methodologies
- Title/name of project
- Project objectives
- Scope
- Assumptions and constraints
- Cost factors and/or ROI
- Cost of inferior quality or cost of not doing the project