

# Lab Title: Agile Estimation and Metrics

---

## Lab Number: 4

### Objective

The main objective of this lab is to understand the role of estimation techniques and performance metrics in Agile software development. Agile teams work in short, iterative cycles where accurate planning and timely delivery are critical. Through this lab, we aim to learn how to estimate tasks effectively and use relevant metrics to monitor progress and team performance.

### Theory

In Agile development, traditional time-based estimation is replaced by relative estimation techniques that involve team discussion and collaboration. These techniques help in forecasting the effort required to complete user stories without focusing on exact hours, which can be hard to predict accurately in software projects.

Agile estimation is more about comparing tasks based on complexity, uncertainty, and expected workload. After estimating tasks, Agile teams rely on metrics to track their progress, spot inefficiencies, and improve over time. These metrics provide a data-driven way to manage work and ensure continuous delivery of value.

Common Agile estimation techniques and metrics are described below.

### Implementation

During the lab, we explored and applied different Agile estimation techniques using a sample list of user stories. We also studied how performance metrics are used to evaluate the progress of an Agile team.

#### Estimation Techniques Practiced:

1. **Planning Poker** – This technique involved each team member assigning story points to user stories based on their understanding. We used a deck of cards (with numbers like 1, 2, 3, 5, 8, 13) to represent effort. After a round of voting, we discussed any differences in estimates and reached a consensus.
2. **T-shirt Sizing** – We grouped tasks into categories like Small, Medium, and Large. This method was especially useful in quickly sorting tasks without assigning exact point values. It gave us a broader view of how stories compare to one another in size.
3. **Bucket System** – We quickly estimated many user stories by placing them into predefined buckets of effort. This saved time and helped maintain consistency across similar tasks.
4. **Affinity Estimation** – Items were laid out in order based on complexity and effort through team discussion. This approach was effective when we had many similar tasks.

#### Metrics Studied:

We also looked at key Agile metrics and how they are calculated and visualized. These metrics help teams stay on track during a sprint and evaluate their delivery capabilities over time.

To summarize, here are two comparison tables to reinforce what we learned:

Table 1: Comparison of Agile Estimation Techniques

Estimation Technique	Description	Suitable For	Scale Used	Key Benefit
Planning Poker	Team members assign story points through discussion	Small to medium teams	Fibonacci sequence (1, 2, 3, 5, 8...)	Encourages collaboration and clarity
T-shirt Sizing	Tasks are categorized by relative size (XS to XL)	High-level early estimates	XS to XL	Fast grouping of stories
Bucket System	Items are placed into effort buckets	Large sets of user stories	Predefined numeric buckets	Efficient for bulk estimation
Affinity Estimation	Stories sorted by similarity and complexity	Teams estimating many tasks	Relative effort grouping	Quick alignment without argument

Table 2: Comparison of Agile Metrics

Metric	Description	Purpose	How It's Calculated	Visual Tool
Velocity	Measures the total story points completed in a sprint	Predicting sprint capacity	Sum of story points delivered	Velocity chart
Burn-down Chart	Tracks remaining work during a sprint	Sprint progress tracking	Story points remaining each day	Burn-down graph
Burn-up Chart	Tracks completed work vs total scope	Progress with scope change	Story points done vs scope line	Burn-up chart
Lead Time	Time from task request to completion	Tracks speed of delivery	Completion date - request date	Cumulative flow diagram
Cycle Time	Time from starting to finishing a task	Measures task efficiency	Done date - in-progress date	Kanban board or metrics tools

Result

By participating in the lab activities, we were able to estimate user stories using Planning Poker, T-shirt sizing, and other techniques. We also gained a clear understanding of how to calculate team velocity, interpret burn-down charts, and evaluate delivery performance using real-world Agile metrics.

We noticed how estimation techniques help build shared understanding among team members, and how metrics like velocity provide historical data to improve future sprint planning.

Conclusion

Agile estimation and metrics are foundational tools for delivering value effectively in Agile teams. Estimation helps break down complex requirements into manageable units and promotes team communication. Metrics provide transparency, track progress, and help identify problems early.

This lab helped us realize that there is no perfect estimate, but through collaboration and constant improvement, Agile teams can become more predictable and productive. Understanding how to estimate and measure performance makes Agile development more practical and manageable.