GANDAKI COLLEGE OF ENGINEERING AND SCIENCE

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LAB REPORT OF

Agile Software Development

LAB – 5

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LAB 4: Agile Estimation Metrics

Objective

To investigate and analyze various agile estimation techniques and metrics, evaluating their effectiveness in project planning, sprint capacity determination, and team velocity measurement through practical implementation and comparative analysis.

Theory

Agile Estimation Basics

Agile estimation focuses on team-based, relative effort estimation instead of exact time predictions. It supports better adaptability and forecasting through collaborative practices.

Core Principles:

- Emphasis on relative sizing (not hours or days)
- Team consensus and discussion
- Regular re-evaluation of estimates
- Forecasting based on team velocity

Key Estimation Techniques:

- **Story Points:** Use a non-linear scale (often Fibonacci) to capture complexity, effort, and risk.
- **T-Shirt Sizing:** Uses sizes (XS to XL) to quickly assess and group work items by relative size.
- **Planning Poker:** Interactive team estimation using cards to reach consensus on story point values.

Tools and Technologies

Digital Estimation Tools

- **Jira & Plugins:** Integrated support for planning poker, velocity tracking, and estimation fields
- **Online Estimation Tools:** Platforms like PlanITPoker and Scrum Poker for remote teams **Physical Aids:** Estimation cards and boards for co-located teams
- **Analytics Tools:** Velocity charts, burnup/down, and forecasting dashboards

Methodology

Three agile teams worked on similar e-commerce web projects over 6 sprints using different estimation methods:

- **Team A:** Planning Poker with Fibonacci sequence
- **Team B:** T-Shirt Sizing (converted to story points)
- **Team C:** Hybrid of both methods (T-shirt sizing during grooming, poker for sprint planning)

Execution Phases:

1. **Setup:** Standardized stories, team training, tool configuration
2. **Implementation:** Teams applied assigned estimation methods across sprints
3. **Tracking:** Monitored story progress, accuracy, and velocity
4. **Analysis:** Collected data on performance, satisfaction, and estimation precision

Observations

Team A (Fibonacci Poker):

- Estimation accuracy: ~85%
- Better for detailed discussions and mid-size stories
- Higher engagement, but time-consuming

Team B (T-Shirt Sizing):

- Faster estimations (~1.8 min/story)
- Lower accuracy (~72%) due to vague size boundaries
- Effective for high-level planning, less so for sprint planning

Team C (Hybrid):

- Best balance of speed and accuracy (88% accuracy)
- Most consistent velocity
- Higher satisfaction due to flexible planning

Tool Feedback:

- Digital tools favored for distributed teams
- Jira plugins improved tracking and reduced context switching
- Stakeholders preferred T-shirt sizing for roadmaps, story points for release planning

Metric	**Team A**	**Team B**	**Team C**
Estimation Accuracy	85%	72%	88%
Sprint Completion Rate	82%	74%	87%
Velocity Stability (Variance)	18%	28%	14%
Team Satisfaction (1-10)	8.2	7.1	8.7

Conclusion and Recommendations

- **Fibonacci Poker** is best for accurate sprint planning with mature teams.
- **T-Shirt Sizing** works well for quick estimation and early-stage planning.
- **Hybrid Approach** offers a strong mix of speed, clarity, and precision.

Best Practices

- Define reference stories for consistency
- Recalibrate regularly (every 4–6 sprints)
- Choose methods based on team maturity and planning level
- Use digital tools for visibility and remote collaboration
- Involve stakeholders through intuitive sizing and regular updates

Suggested by team type

- **New Teams:** Start simple with T-shirt sizing, introduce story points later
- **Experienced Teams:** Use hybrid methods and historical velocity for forecasting
- **Remote Teams:** Leverage online estimation tools and clear facilitation
- **Stakeholders:** Communicate using T-shirt sizes and business-aligned metrics