Recomputed Estimates, Schedule, and Updated Charts

Overview

This document presents the recomputed estimates for the AIU Trips & Events Management System based on actual performance data from PM2. The analysis includes variance analysis, effects on efforts and schedule, updated Gantt chart, and updated Burndown chart.

Document Version: 3.0
Date: December 5, 2025
Project Duration: Extended from 8 weeks to 10 weeks

Executive Summary

The recomputation of project estimates reveals significant variances between planned and actual performance, necessitating schedule adjustments and resource reallocation.

Key Findings

Metric	Original (PM2)	Actual	Variance	Impact
Total Story Points	122 SP	88 SP completed	-34 SP (-27.9%)	Scope reduction or delay
Planned Duration	8 weeks	10 weeks required	+2 weeks (+25%)	Schedule overrun
Planned Velocity	15.25 SP/week	11.0 SP/week	-4.25 SP/week (-27.9%)	Reduced productivity
Developer-Days	200 days	272 days required	+72 days (+36%)	Resource adjustment
Completion Rate	100% expected	72.1% achieved	-27.9%	Significant underdelivery

Critical Insights

1. **Velocity Degradation**: Team velocity decreased from planned 15.25 SP/week to actual 11.0 SP/week
2. **Burndown Gap**: Project ended with 34 SP remaining instead of 0 SP
3. **Estimation Error**: Original estimates were 27.9% optimistic
4. **Resource Impact**: 36% more developer-days required than planned
5. **Schedule Impact**: 2 additional weeks needed to complete remaining scope

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1. Variance Analysis

1.1 Burndown Variance Details

The burndown chart analysis reveals progressive velocity degradation throughout the project:

Week	Planned Remaining SP	Actual Remaining SP	Weekly Variance	Cumulative Variance
0	122	122	0	0 SP
1	107	117	-10 SP	-10 SP
2	92	109	-17 SP	-17 SP
3	77	101	-24 SP	-24 SP
4	61	93	-32 SP	-32 SP
5	46	85	-39 SP	-39 SP
6	31	69	-38 SP	-38 SP
7	15	52	-37 SP	-37 SP
8	0	34	-34 SP	-34 SP

Analysis:

- **Week 1**: Initial slowdown of 10 SP (6.6% behind schedule)
- **Weeks 2-4**: Variance grew to 32 SP (52.5% behind schedule)
- **Weeks 5-7**: Variance peaked at 39 SP (84.8% behind schedule)
- **Week 8**: Ended with 34 SP incomplete (27.9% scope unfinished)

1.2 Velocity Variance by Sprint

Sprint	Planned Velocity (SP/week)	Actual Velocity (SP/week)	Variance (%)	Contributing Factors
Sprint 1 (Weeks 1-2)	20	15	-25%	Learning curve, setup delays
Sprint 2 (Weeks 3-4)	28	25	-11%	Process improvements started
Sprint 3 (Weeks 5-6)	26	24	-8%	Better estimation accuracy
Sprint 4 (Weeks 7-8)	24	26	+8%	Team efficiency increased
Average	**24.5**	**22.5**	**-9.0%**	Overall underperformance

Root Cause Analysis:

1. **Initial Sprint Velocity Loss (25%):**

- Environment setup complexities
- Team learning curve with new technology stack
- Underestimated technical debt

2. **Mid-Project Variance (11-8%):**

- Integration challenges
- Unexpected dependency issues
- Testing bottlenecks

3. **Late Improvements (+8%):**

- Team maturity
- Streamlined processes
- Better task decomposition

1.3 Fibonacci Point to Actual Effort Variance

Original conversion rate: 1 Fibonacci Point = 5 Days
Actual conversion rate: 1 Fibonacci Point = 6.8 Days (36% increase)

Subsystem	Original FP	Original Days	Actual Days	Variance	Variance %
Authentication	5	25	34	+9 days	+36%
Event Management	9	45	61	+16 days	+36%
Booking & Ticketing	9	45	61	+16 days	+36%
Notifications	2	10	14	+4 days	+40%
Reports & Analytics	6	30	41	+11 days	+37%
Design, Implementation, Testing & Deployment	9	45	61	+16 days	+36%
Total	**40**	**200**	**272**	**+72 days**	**+36%**

2. Effects on Efforts and Schedule

2.1 Schedule Impact

Original Schedule:

- Start: October 21, 2025
- Planned End: December 13, 2025
- Duration: 8 weeks (40 working days)

Revised Schedule:

- Start: October 21, 2025
- Actual End: December 27, 2025
- Duration: 10 weeks (50 working days)
- **Extension: +2 weeks (+10 working days)**

2.2 Effort Impact

Team Capacity Analysis:

Member	Original Allocation	Actual Effort	Variance	Utilization
Member 1 (Implementation & Deployment)	58 days	79 days	+21 days	136%
Member 2 (Requirements & Testing)	25 days	34 days	+9 days	136%
Member 3 (Architecture & Design)	41 days	56 days	+15 days	137%
Member 4 (Architecture & Design)	38 days	52 days	+14 days	137%
Member 5 (Estimation & Testing)	38 days	51 days	+13 days	134%
Total	**200 days**	**272 days**	**+72 days**	**136%**

Observations:

- All team members experienced 34-37% overtime
- Member 1 (Implementation lead) had highest absolute variance (+21 days)
- Consistent 36% effort increase across all roles

2.3 Cost Impact

Cost Category	Original Budget	Actual Cost	Variance	% Increase
Developer Labor (200 days @ $500/day)	$100,000	$136,000	+$36,000	+36%
Project Extension (2 weeks overhead)	$0	$5,000	+$5,000	N/A
Additional Testing	$5,000	$8,000	+$3,000	+60%
Infrastructure (extended timeline)	$2,000	$2,500	+$500	+25%
Total Project Cost	**$107,000**	**$151,500**	**+$44,500**	**+41.6%**

2.4 Feature Delivery Impact

Completed Features (88 SP / 72.1%):

- ☑ User Authentication (Registration, Login, Password Reset)
- ☑ Event Management (Create, Edit, View Events)

- ☑ Basic Booking System
- ☑ QR Code Generation
- ☑ Email Notifications
- ☑ Basic Reports

Deferred Features (34 SP / 27.9%):

- ⏳ Advanced Admin Dashboard
- ⏳ Comprehensive Analytics
- ⏳ Trip Management (full implementation)
- ⏳ Advanced Reporting (PDF/CSV exports)
- ⏳ Performance Optimizations
- ⏳ Mobile Responsiveness Enhancements

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3. Recomputed Estimates for Completion

3.1 Remaining Work Breakdown

Feature Area	Remaining SP	Estimated Days	Priority	Assigned To
Trip Management	8 SP	18 days	High	Member 1, 3
Advanced Analytics	6 SP	14 days	Medium	Member 3, 4
PDF/CSV Reports	5 SP	11 days	High	Member 1, 4
Admin Dashboard	8 SP	18 days	High	Member 1, 2
Performance Tuning	4 SP	9 days	Medium	Member 1, 5
Mobile Optimization	3 SP	7 days	Low	Member 4
Total	**34 SP**	**77 days**		**Team of 5**

With team of 5 members working in parallel:

- Parallel work: 77 days / 5 members ≈ 15.4 days
- With 36% overhead: 15.4 × 1.36 ≈ **21 days (≈ 2 weeks)**

3.2 Revised Conversion Factors

Metric	Original	Recomputed	Adjustment Factor
Story Point to Developer-Days	1 SP = 1.67 days	1 SP = 2.27 days	1.36x
Fibonacci Point to Days	1 FP = 5 days	1 FP = 6.8 days	1.36x
Team Velocity	15.25 SP/week	11.0 SP/week	0.72x
Sprint Capacity	24.5 SP/sprint	17.6 SP/sprint	0.72x

Recommended Safety Buffer: Add 20% contingency buffer to all future estimates

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4. Updated Gantt Chart

The following Gantt chart reflects the **recomputed timeline** including the 2-week extension and adjusted task durations:

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    section Data & Auth
    DB Schema (B)            :crit, B, 2025-10-25, 7d
    Auth Backend (D)         :crit, D, 2025-11-03, 10d
    Auth Frontend (E)        : E, 2025-11-13, 8d

    section Core Features
    Event Backend (F)        :crit, F, 2025-11-13, 7d
    Event Frontend (G)       : G, 2025-11-20, 8d
    Booking Backend (H)      : H, 2025-11-20, 9d
    Booking Frontend (I)     : I, 2025-12-01, 8d
    QR Integration (J)       :crit, J, 2025-12-01, 6d
    Notification System (K)  : K, 2025-11-13, 5d

    section Reporting & Admin
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    Admin Backend (N)        : N, 2025-11-20, 7d
    Admin Frontend (O)       : O, 2025-11-27, 5d

    section Quality & Testing
    Unit Testing (P)         : P, 2025-11-21, 10d
    Integration Testing (Q)  : Q, 2025-12-07, 12d
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```
    UAT (R)                  : R, 2025-12-19, 6d
    Performance Testing (S)  : S, 2025-12-19, 8d

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    Documentation (T)        :crit, T, 2025-12-02, 4d
    Deployment Setup (U)     :crit, U, 2025-12-06, 5d
    Production Release (V)   :crit, V, 2025-12-11, 3d

    section Extension Period
    Remaining Features (W)   :crit, W, 2025-12-14, 7d
    Final Testing (X)        : X, 2025-12-21, 5d
    Final Deployment (Y)     :crit, Y, 2025-12-28, 3d
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Gantt Chart Key Changes

Task	Original Duration	Recomputed Duration	Change	Reason
Project Setup (A)	3 days	4 days	+1 day	Environment complexity
DB Schema (B)	5 days	7 days	+2 days	Schema refinements
Auth Backend (D)	7 days	10 days	+3 days	Security requirements
Auth Frontend (E)	7 days	8 days	+1 day	UI enhancements
Event Backend (F)	5 days	7 days	+2 days	Business logic
Event Frontend (G)	6 days	8 days	+2 days	Complex UI components
Booking Backend (H)	7 days	9 days	+2 days	Payment integration
Booking Frontend (I)	6 days	8 days	+2 days	User flow complexity
QR Integration (J)	4 days	6 days	+2 days	Third-party API
Notification System (K)	4 days	5 days	+1 day	Email template design
Reports Backend (L)	5 days	7 days	+2 days	Data aggregation
Reports Frontend (M)	4 days	5 days	+1 day	Chart visualizations
Admin Backend (N)	5 days	7 days	+2 days	Permission management
Admin Frontend (O)	4 days	5 days	+1 day	Admin dashboard
Unit Testing (P)	8 days	10 days	+2 days	Increased test coverage
Integration Testing (Q)	10 days	12 days	+2 days	Integration issues
UAT (R)	5 days	6 days	+1 day	User feedback cycles

Task	Original Duration	Recomputed Duration	Change	Reason
Performance Testing (S)	6 days	8 days	+2 days	Load testing
Documentation (T)	3 days	4 days	+1 day	Comprehensive docs
Deployment Setup (U)	4 days	5 days	+1 day	DevOps configuration
Production Release (V)	2 days	3 days	+1 day	Deployment validation
Extension Tasks	**0 days**	**15 days**	**+15 days**	**Complete remaining scope**

5. Updated Burndown Chart

The following burndown chart shows the **corrected** remaining effort vs. time, incorporating actual performance data and recomputed estimates:

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    line "Actual (PM2)" [122, 117, 109, 101, 93, 85, 69, 52, 34, 34, 34]
    line "Recomputed Plan" [122, 110, 98, 86, 74, 62, 50, 38, 26, 13, 0]
```

Burndown Analysis Table

Week	Original Planned	Actual PM2	Recomputed Plan	Variance from Original	Projected Completion
0	122 SP	122 SP	122 SP	0 SP	Baseline
1	107 SP	117 SP	110 SP	-10 SP	3 SP less progress

Week	Original Planned	Actual PM2	Recomputed Plan	Variance from Original	Projected Completion
2	92 SP	109 SP	98 SP	-17 SP	6 SP less progress
3	77 SP	101 SP	86 SP	-24 SP	9 SP less progress
4	61 SP	93 SP	74 SP	-32 SP	13 SP less progress
5	46 SP	85 SP	62 SP	-39 SP	16 SP less progress
6	31 SP	69 SP	50 SP	-38 SP	19 SP less progress
7	15 SP	52 SP	38 SP	-37 SP	23 SP less progress
8	0 SP	34 SP	26 SP	-34 SP	26 SP remaining
9	0 SP (complete)	20 SP	13 SP	N/A	Extension week 1
10	0 SP (complete)	13 SP	0 SP	N/A	Completed: 109 SP (89.3%)

Final Outcome: 109 SP completed (89.3%), 13 SP deferred as optional enhancements

Key Burndown Metrics

Metric	Original Plan	Actual PM2	Recomputed	Notes
Ideal Velocity	15.25 SP/week	11.0 SP/week	12.2 SP/week	Adjusted for reality
Actual End Week	Week 8	Week 8 (incomplete)	Week 10	2-week extension
Story Points Remaining	0 SP	34 SP	13 SP (at week 10)	89.3% completion
Completion Percentage	100%	72.1%	89.3% (achieved)	With extension

6. Lessons Learned

6.1 Estimation Accuracy

Key Findings:

- Original estimates were 27.9% optimistic
- Conversion factor (FP to days) needs 36% increase
- Velocity was overestimated by 28%

Improvements for Future Projects:

1. Add 20-30% safety buffer to estimates

2. Use actual velocity data from past sprints
3. Include more granular task breakdown
4. Account for integration complexity

6.2 Resource Planning

Observations:

- All team members worked 136% of planned capacity
- Even distribution of overwork across team
- Need for better workload balancing

Recommendations:

1. Plan for 80% capacity utilization (not 100%)
2. Include buffer time for unforeseen issues
3. Schedule regular resource reviews
4. Monitor team velocity weekly

6.3 Risk Management

Identified Risks:

- Technical complexity underestimated
- Integration challenges not fully anticipated
- Testing bottlenecks emerged late

Mitigation Strategies:

1. Early technical spikes for complex features
2. Continuous integration from day 1
3. Parallel testing with development
4. Regular risk assessment meetings

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7. Conclusion

The recomputed estimates provide a realistic picture of project completion:

Summary

- **Original Plan**: 8 weeks, 200 developer-days, 122 SP
- **Actual Performance**: 8 weeks, 272 developer-days, 88 SP completed
- **Recomputed Plan**: 10 weeks, 272 developer-days, 122 SP target

Recommendations

1. **Accept 2-week extension** to complete all features
2. **Apply 36% effort multiplier** to future estimates
3. **Reduce planned velocity** to 11-12 SP/week
4. **Add 20% contingency buffer** to all estimates

5. **Implement weekly velocity tracking** for early warning

Next Steps

1. Approve extended timeline through Week 10
2. Prioritize remaining 34 SP of features
3. Allocate resources for extension period
4. Update stakeholder communication plan
5. Apply lessons learned to future milestones

The recomputed estimates ensure realistic expectations and successful project completion with proper resource allocation and schedule adjustment.