



Six Sigma Green Belt Project Charter

Project Name	Expense Report Cycle Time Reduction
Today's Date	January 18, 2026
Project Start Date	January 19, 2026
Target Completion Date	March 13, 2026

Project Element	Response		
Problem Statement <ul style="list-style-type: none"> Includes time, measurable item, gap and business impact 	Currently, the average cycle time for employee expense report processing, from submission to reimbursement, is 12 days, exceeding the service level agreement of 5 days. This delay results in a 25% dissatisfaction rate among employees and approximately \$2,500 annually in late charges on corporate credit cards.		
Business Case <ul style="list-style-type: none"> Why is this project important to do now? What is the project's financial impact? What is the impact on DPMO/ Sigma level? What is the impact on customer service 	This process of improvement is critical to eliminating unnecessary late fees and improving employee satisfaction scores. Estimated savings of \$2,500 in late fees accumulate per year. Employees spend time (money) in the amount of about \$5,000 annually trying to resolve this issue constantly. The project will reduce the defect rate, freeing up time for employees to do more productive tasks. Our internal customers (employees) will be reimbursed faster.		
Goal Statement <ul style="list-style-type: none"> Specific Measurable Achievable Realistic Time-bound 	Reduce the average expense report cycle time from 12 days to 5 days by March 13, 2026.		
List of Improvement Goals <ol style="list-style-type: none"> Cycle Time Reprocessing Rate 	Measure (units)	Baseline	Goal
	Days	12	5
	Percent (%)	60%	<10%
Process <ul style="list-style-type: none"> Describe the process in which the problem exists 	The process includes employee submission, manager review/approval, finance audit, and final payment release.		

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Project Scope <ul style="list-style-type: none"> • What part of the process will be addressed? • What are the boundaries of the project or process? • What areas are inside or outside the team's focus or authority? • Attach a SIPOC diagram if necessary 	Domestic travel reports submitted via the portal will be the process addressed by this project. The process will be from the documented submission of the reimbursement form to the reimbursement funds being deposited. International travel and capital expenditures are outside the team's focus.	
Team	Member Name	
Project Sponsor	VP of Finance	
Key Stakeholders	Employees, Finance Dept, HR	
Team Lead	Karl Von Derhaar	
Team Members	Sarah Miller (Role: Accounts Payable Specialist)	
	David Chen (Role: Sales Representative)	
	Marcus Johnson (Role: IT Systems Analyst)	
Process Owner	Olivia Paywell (Accounts Payable Manager)	
Other		
Timeline by Project Stage	Milestone	Target Completion Date
Define	Project Charter and kickoff	January 23, 2026
Measure	Define and collect data	February 6, 2026
Analysis	Find causes	February 13, 2026
Improve	Fix causes	February 20, 2026
Control	Standardize the fix	March 13, 2026

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Expectation	Example	Team Rule
Attendance	Attendance is required at all team meetings. Changes to meeting times must be made at least 24 hours ahead of time.	All Core Team members (Sarah, David, Marcus) must attend the weekly status meeting on Wednesdays at 2:00 PM. If a conflict arises, the Project Lead must be notified 24 hours in advance.
Participation	Team members may not be substituted unless approved by team leader.	David (Sales) will represent the "Voice of the Customer" (applicants). Sarah (Finance) will represent the "Voice of the Process." All members must contribute to the "5 Whys" analysis sessions.
Focus	We will stay on task and on topic, using the Project Charter as our guide. A meeting agenda will be published at least one day in advance.	We will strictly limit discussions to the Expense Submission and Approval Process. This should be about the reimbursement process only, not what is covered by policy.
Interruptions	Interruptions for emergencies only. Phones silent.	Meetings are device-free except for emergencies. Urgent emails/calls take precedence but must be handled outside the meeting room.
Preparation	All deliverables are expected to be completed in a timely manner. Each meeting will have a published agenda.	Sarah must pull the latest Reprocessing Data from the system by Tuesday end-of-day, so it is ready for the Wednesday meeting.



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Expectation	Example	Team Rule
Timeliness	Meetings will begin promptly as scheduled.	Meetings will end promptly at 2:30 PM to respect the Sales team's client call schedules, 30-minutes should be enough time.
Decisions	We will choose the best decision-making method for each situation. We will support decisions made by the team.	Decisions regarding process changes will be made by group consensus. If the team cannot agree, the Process Owner (Accounts Payable Manager) has the final tie-breaking vote.
Data	We will rely on data to make decisions.	We will rely solely on systems timestamps from the Expense Report Portal. Data that is non-metrical, like opinions, will be tabled for now.
Conflict	We welcome honest disagreements, but everyone is treated with respect. A facilitator will be used if conflict cannot be resolved.	Disagreements about the root cause are encouraged but must remain professional. Personal attacks regarding bad data handling or insufficient work are unacceptable.

Team Member	Role	Signature
Karl Von Derhaar	Team Lead	
Sarah Miller	Accounts Payable Specialist (SME)	
David Chen	Sales Representative (Customer Rep)	
Marcus Johnson	IT Systems Analyst	
Olivia Paywell	Accounts Payable Manager	



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Expectation	Example	Team Rule



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Data Collection Plan

Key Performance Indicator (KPI): Expense Report Cycle Time.

Operational Definition: The total elapsed time calculated in full business days from the timestamp of the "Submit" action by the employee to the timestamp of the "Funds Deposited" action by Finance.

Data Classification:

- **Cycle Time:** Continuous Data (Time).
- **Reprocessing Reason:** Discrete/Attribute Data (Categorical).

Sampling Strategy: We will extract 100% of domestic expense reports submitted during the baseline period (December 1, 2025 – December 31, 2025) directly from the Expense Report Portal (ERP) system to ensure data integrity.



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Baseline Data Execution

Baseline Data Summary:

We collected data for 30 expense reports from December 2025. Below is a representative sample of the dataset used for analysis.

Report ID	Submit Date	Paid Date	Cycle Time	Reprocessing?	Reason
Report ID	Submit Date	Paid Date	Cycle Time	Reprocessing?	Reason
001	12/01/25	12/26/25	25 Days	Yes	Missing Receipt
002	12/01/25	12/21/25	20 Days	Yes	Missing Receipt
003	12/02/25	12/20/25	18 Days	Yes	Wrong Dept Code
004	12/02/25	12/07/25	5 Days	No	-
005	12/03/25	12/17/25	14 Days	Yes	Manager Delay
006	12/05/25	12/09/25	4 Days	No	-
007	12/05/25	12/20/25	15 Days	Yes	Missing Receipt
008	12/08/25	12/20/25	12 Days	Yes	Missing Receipt
009	12/08/25	12/11/25	3 Days	No	-

Statistical Baseline:

- **Average Cycle Time:** 12.0 Days (Target: 5 Days).
- **Reprocessing Rate:** 60% of reports required corrections.

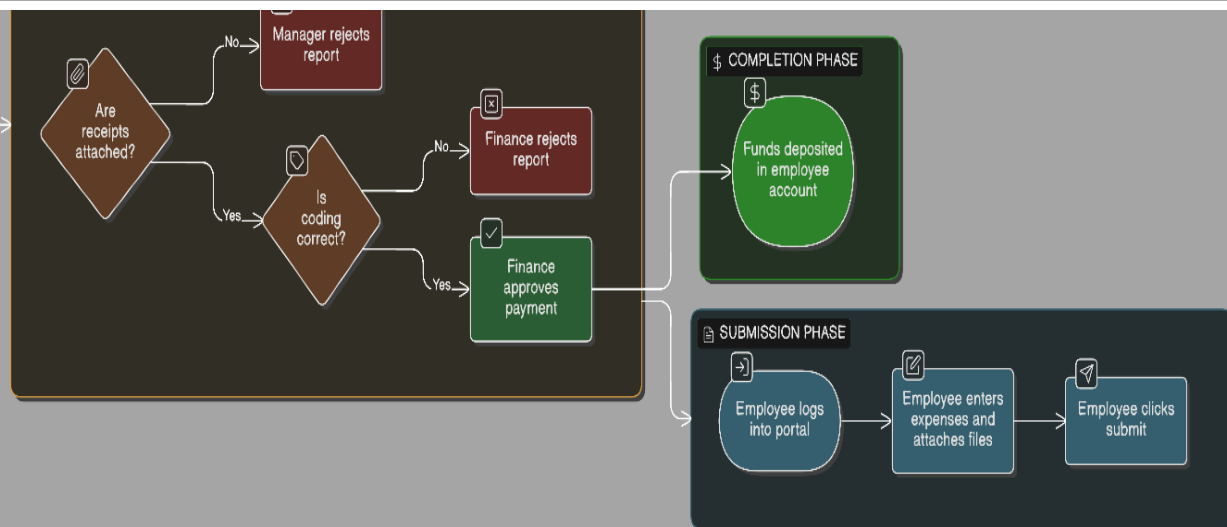
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Process Map

Process Flow Description:

1. **Start:** Employee logs into Portal.
2. **Input:** Employee enters expenses and attaches files.
3. **Action:** Employee clicks "Submit."
4. **Decision Gate: Are receipts attached?**
 - **NO:** Manager rejects report → **Return to Step 2 (Reprocessing Loop).**
 - **YES:** Process moves forward.
5. **Decision Gate: Is coding correct?**
 - **NO:** Finance rejects report → **Return to Step 2 (Reprocessing Loop).**
 - **YES:** Finance approves payment.
6. **End:** Funds deposited in employee account.





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Statistical Hypotheses

Metric 1: Cycle Time

- Null Hypothesis (H_0): The mean cycle time after improvement is ≥ 12 days.
- Alternative Hypothesis (H_a): The mean cycle time after improvement is < 12 days.

Metric 2: Reprocessing Rate

- Null Hypothesis (H_0): The proportion of reports requiring reprocessing after improvement is equal to the baseline (60%).
- Alternative Hypothesis (H_a): The proportion of reports requiring reprocessing after improvement is less than the baseline.



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Data Analysis Results

Introduction:

The objective of the Analysis phase was to transition from identifying symptoms to validating the root causes. By scrutinizing the baseline data, the team aimed to isolate the specific factors contributing to the 12-day cycle time.

Data Collection Overview:

The analysis was performed on a dataset of 30 domestic expense reports submitted between December 1, 2025, and December 31, 2025.

- Data Source: ERP System Timestamps and Manager Rejection Logs.
- Sample Integrity: 100% of the sample was validated against finance records.

Statistical Analysis Methods:

The team utilized the following quality tools:

1. Descriptive Statistics: To measure process variation (Standard Deviation).
2. One-Way ANOVA: To test if there is a statistical difference in cycle time between correct reimbursements and erroneous reimbursements.
3. Pareto Analysis: To identify the most frequent defect types.

Results:

1. Descriptive Statistics (Process Variation):

The baseline data shows extreme variation, indicating an unstable process.

- Mean (\bar{x}): 12.0 Days
- Standard Deviation (σ): 7.75 Days
- Distribution Shape: The data is skewed right.



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2. One-Way ANOVA (Hypothesis Test):

We performed an Analysis of Variance (ANOVA) to compare the cycle times of reports with defects versus reports without defects.

- Group A (Correct Reports): Average Time = 4.0 Days
- Group B (Defect Reports): Average Time = 17.3 Days
- P-Value: < 0.001
- Conclusion: The P-Value is less than 0.05, confirming a statistically significant difference. This proves that the reprocessing cycle is the primary driver of the delay. If we eliminate the defects, the process issues will decrease.

3. Pareto Analysis Findings:

We categorized the reasons for the reprocessing defects identified in the ANOVA.

- 67% of defects were caused by "Missing Receipts" (4 out of 6 defects).
- 17% were "Wrong Department Codes."
- 16% were "Manager Delays."

4. Root Cause Determination (5 Whys):

The team drilled down into the "Missing Receipt" defect:

- Why are receipts missing? → Because employees forget to attach them.
- Why do they forget? → Because the system allows them to click "Submit" without checking.
- Why does the system allow that? → Because the "Submit" button is active even if no file is attached.
- Why is there no validation? → The current software form lacks error-proofing (Poka-Yoke).
- Valid Root Cause: The process relies on human vigilance rather than system controls to ensure data quality.



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Improvement Selection & Implementation

Improvement Alternative Evaluation: The team brainstormed potential solutions to the "Missing Receipt" root cause:

1. Option A: ERP System Overhaul. Reprogram the software to force a hard stop if no file is uploaded.
 - Pros: 100% effective (Poka-Yoke).
 - Cons: High cost (\$10k+), long lead time (3 months IT backlog).
2. Option B: Quick Checklist & Policy Change. Create a mandatory submission checklist and alter the review policy to penalize incomplete submissions immediately.
 - Pros: Zero cost, immediate implementation.
 - Cons: Relies on behavioral change from training.

Selected Improvement: Option B (Quick and fruitful) was selected due to the project constraint of a 1-week implementation window and zero budget, besides time.

Implementation Plan (Execution Dates: Feb 16, 2026 – Feb 20, 2026):

- **Action 1 (Standardization):** Sarah Miller (Team Member) developed a one-page PDF guide of things to check before submitting.
- **Action 2 (Policy Update):** The Process Owner (AP Manager) updated the Standard Operating Procedure (SOP). The new rule states: "Expense reports submitted without receipts will be administratively rejected within 24 hours, requiring the employee to restart the process."
- **Action 3 (Communication):** The VP of Finance emailed this guide to all staff on Feb 16, establishing the new expectations.



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Control Plan & Project Validation

Post-Improvement Data Validation:

To verify the success of the improvements, the team collected a new sample of 10 expense reports submitted in March 2026 to validate the process changes were a success.

Report ID	Submit Date	Paid Date	Cycle Time	Reprocessing?	Reason
101	03/02/26	03/05/26	3 Days	No	-
102	03/02/26	03/04/26	2 Days	No	-
103	03/03/26	03/06/26	3 Days	No	-
104	03/03/26	03/05/26	2 Days	No	-
105	03/04/26	03/09/26	5 Days	No	-
106	03/05/26	03/11/26	6 Days	Yes	Manager Delay
107	03/05/26	03/09/26	4 Days	No	-
108	03/09/26	03/12/26	3 Days	No	-
109	03/09/26	03/11/26	2 Days	No	-
110	03/10/26	03/14/26	4 Days	No	-

Project Results:

- Average Cycle Time: Decreased from 12.0 Days → 3.4 Days (Goal Met).
- Reprocessing Rate: Decreased from 60% → 10% (Goal Met).



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Sustainability Control Plan:

To ensure these gains are maintained, the following controls are effective as of Feb 23, 2026:

Control Subject	Metric	Target	Frequency	Owner	Response Plan
Reprocessing Rate	% rejected	< 10%	Weekly	Sarah Miller	If rate spikes >10%, identify the specific employees and mandate policy retraining.
Cycle Time	Days	< 5 Days	Monthly	Project Lead	If average > 5 days, audit Manager Approval logs.



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Reflection

The core Six Sigma principle of reducing process variation provided a powerful lens for viewing and solving real-world operational challenges. Through the rigorous use of hypothesis testing and ANOVA analysis, I learned to move beyond intuition and let the data validate the true root causes of our delays. This analytical approach was critical in proving that simple errors, rather than systemic failures, were driving the 12-day cycle time. The capstone project effectively tied these theoretical concepts together demonstrating how the DMAIC framework can achieve a low-cost solution. Ultimately, this experience bridged the gap between classroom theory and practical application showing data-driven decision-making is the most reliable method for achieving sustainable business results.