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OPTIMIZING REPORTING AND PROCESS EFFICIENCY: A PRODUCT MANAGEMENT FRAMEWORK FOR DRIVING KEY PERFORMANCE METRICS IN SOFTWARE MANAGEMENT

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Abstract

This proposal introduces a tailored Portfolio Management Solution for financial institutions, designed to improve portfolio visibility, prioritize high-risk projects, and standardize project remediation processes. While recent advancements in service-oriented architecture (SOA) and data management have streamlined operations, challenges remain in resource allocation, financial oversight, and comprehensive project health monitoring. Current reporting lacks a holistic view of portfolio status, limiting timely decision-making. The proposed solution addresses this gap with structured reports, including project health visualizations, burndown charts, and resource allocation metrics. Through a report-driven approach, the institution can swiftly identify and address time, resource, and financial risks to critical projects, promoting strategic alignment and efficient resource utilization across the portfolio. This solution is deployable within three weeks, establishing a sustainable foundation for project prioritization and effective portfolio management.

Keywords: Portfolio Management, Product Management, Project Prioritization, Resource Allocation, Financial Oversight, Project Health Visualization, Decision-Making, Report-Driven Methodology, Burndown Charts, Velocity Reports, Service-Oriented Architecture (SOA), Database Management System, Resource Planning, Financial Tracking, Project Remediation, Portfolio Transparency, Project Complexity, Strategic Alignment, Risk Management, Project Portfolio Optimization.

I. INTRODUCTION

This proposal outlines the business objective to produce a Portfolio Management Solution for a financial institution. The recommendation details a set of reports and process management initiatives that allow the team to meet their portfolio management goals. The estimated time to implement these changes is three weeks. The critical goals identified are:

- Relevant Reporting
- Process Management

Reports like individual project details, burndown charts, and velocity reports do not adequately show the health and status of the portfolio as a whole. The current myopic project tracking sheet does not allow the team to review the relevant data needed to make timely project decisions like

resource planning.

To assist the project management team, we reviewed the current project list. Upon analyzing the current project portfolio, the team observed that three-issue trends could impact a project's health. We broke these issues, or project threats, into three categories: time, resources and financial impact. This proposal recommends that financial institution use the guidance from this proposal to make the following changes:

- Prioritize the Project Portfolio
- Identify High Priority Projects that are at Risk Quickly
- Use a Consistent Process to Manage Project Remediation

II. BACKGROUND INFORMATION

1. Current State

Over the past two years, the financial institutions made significant changes to how they deliver and maintain their platforms and release customer-facing services.

There were two significant changes for the bank:

- Moved to a new service-oriented architecture (SOA) for all its IT software
- Migrated its data to a new database management system that could support the bank's anticipated growth and increased diversity of products.

The benefits from these changes were immediately apparent as the time to deliver products and services noticeably reduced. Product definition templates and automated system reports made it easier for teams to update business rules. However, the teams still struggled to manage the full complexity of the project portfolio.

Two key challenges:

- Resources: Managing resources to meet requirements
- Finances: Accurately leading project financial status

2. Project Prioritization

To address the critical problems and to create a framework that allows the project manager to make quick decisions, the team decided to adopt elements of a report-driven methodology:

- Visualize project health and status
- Identify gaps in resourcing, funding or scope
- Identify and implement a process for scheduling, resource, and financial remediation

3. Challenges and Goals

The significant problems for the team currently are:

- Effectively prioritizing and assessing the risk to projects
- Tracking and controlling project financial health
- Accurately staffing projects
- Controlling schedule slippage and project over-all

Given these challenges derived by a fast-changing and growing platform, this proposal addresses the Portfolio Manager's goals to create an effective project portfolio management strategy.

III. GOALS AND OBJECTIVES

To better understand the key goals and objectives for the project portfolio, the goals objectives are further defined via a SMART [1] framework

SMART Goal 1

Control project prioritization and enable visibility and access to crucial information that helps drive decisions that support the financial, resource and project prioritization across the portfolio.

Specific	Control project prioritization
Measurable	By the schedule, budget health, and resource needs
Attainable	All information is available and consistent across the projects within the portfolio
Relevant	When updated by the PPM
Time-limited	When updated by the PPM

SMART Goal 2

Process management process to enable the PMM control of the project portfolio and the ability to make quick informed decisions

Specific	Process for making decisions for projects that are prioritized
Measurable	By the schedule, budget health and resource needs via supporting reports
Attainable	All information is available and consistent across the projects within the portfolio
Relevant	When updated by the PPM
Time-limited	When updated by the PPM

Key Stakeholder Responsibility

To meet and achieve the key goals and objectives outlined above, the Portfolio Managers will need to adopt the following responsibilities:

- Prioritize the project portfolio by market demands, revenue and user reward
- Track weekly project process
- Alert the team to potential resourcing, funding and scheduling issues
- Take remedial action to control project deliverables

IV. REPORTS

This section gives a detailed analysis of the portfolio reports created for any financials. The primary stakeholders of these reports are the portfolio and project managers as well as the core business customers. It is assumed that the project manager would review these charts on a weekly basis.

To regain the project control focus, the following reports utilize a consistent way for the portfolio manager to assess project priority rank, and project risk accurately and quickly.

1. Relevant Reporting:

- Project Priority
- RAG Status

Now that the projects are properly assessed, this assessment is visualized. The team will use the following reports to analyse the reported risk and use the reports below to assist in crucial project remediation next steps.

2. Process Management

- Gantt Chart
- Resource Utilization
- Cost Overrun

Project Priority [2]

Project Priority Report is used by the PPMs to prioritize the projects in the portfolio based on its ranking which will further help them prioritize the associated risks and make informed decisions to mitigate them. All the projects are ranked based on the two parameters "Strategic Goal" and the "Economic Impact." Please refer to the ranking criteria in Appendix 1 to view the criteria used to rank the projects.

Metrics Used:

- G1.Q1.M1 - Number of users: Customers reward from the project
- G1.Q1.M2 - Profitability: Estimated revenue generated by the project

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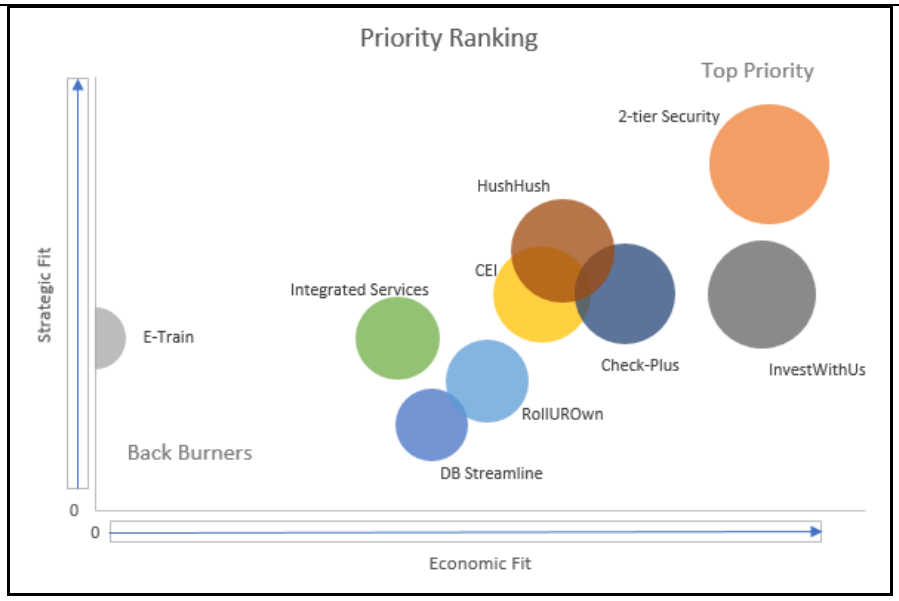

Figure 1 - Project Priority

Use	Decision-Aid
It helps PPM focus more on the performance of the top priority projects and make effective decisions in mitigating the risk	Allow PPM to identify the top priority projects and assess project risk
	In the case of project risk due to time, cost, scope, and resource availability, PPM can decide to put the low priority projects on the back burner and utilize the project resources in the top priority projects

V. RAG STATUS

RAG status report would help PPM visualize the overall health of the project and will act as a starting point to view the risk factors causing the delay in the project.

The report is built using four risk criteria:

- Time - Progress of the projects based on the schedule
- Scope - Number of tasks and activities to be performed in the project
- Budget - Budget allocated to the project
- Resource - Resources required for the project

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Metrics Used:

Metrics	Measures		
G1.Q2.M3 - Scope creep	>20%	0 to 20%	No Additional requirement
G1.Q5.M9 - Schedule Variance	>20%	0 to 20%	No Delays
G1.Q1.M2 - Cost Variance	>50000	0 to 50000	Within budget
G1.Q3.M5 - Resources available G1.Q3.M4- Resources required based on skill set	<50% Resources available	>50% Resources available	No Resource constraint

Figure 2 - RAG Status Metrics

Based on the four parameters the projects overall status is decided.

Projects / Assets	Priority	Time	Scope	Budget	Resource	Overall
2-tier Security	1					
InvestWithUs	2					
Check-Plus	3					
HushHush	4					
CEI	5					
Integrated Services	6					
RollUROwn	7					
DB Streamline	8					
E-Train	9					

Figure 3 - RAG Status

Use	Decision-Aid
Portfolio managers get meaningful insights of the projects in one glance of the report that will help PPM identify the flags and make decisions accordingly	RAG status report allows PPM to visualize and focus on bringing the project on track. For example - InvestWithUs project is high in ranking and is off-schedule due to resource constraint.
PPM could track the progress of multiple projects and has relevant tools to help them make informed decisions. As a result, they can now have effective meetings among other PPMs and can also allocate resources effectively	Enables PPM to decide to allocate resources in the project. They can either choose to loan resources from low priority projects or make a hiring decision to bring the required skill in the project.

VI. GANTT CHART

Gantt chart is a visual representation of multiple projects involved in a portfolio shown against a timescale. [2]

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The PPM would view the GANTT chart to understand the schedule and progress of each project based on their rankings. It will help PPM see the projects running on-schedule or off-schedule so that they could use the information and work on identifying the root cause of the delay.

Metrics Used:

- G1. Q5.M9 - Schedule Variance Depicts the Projected timeline based on the planned start date and its completion date, and how much the project varies from its current planned state.

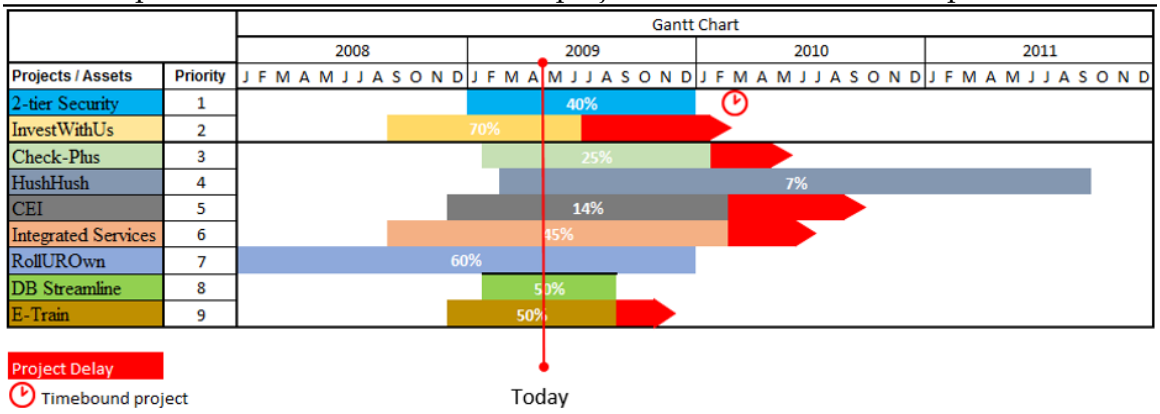

Figure 4 - Gantt Chart

Use	Decision-Aid
It reduces the complexity of managing the projects for Project portfolio managers	Gantt chart will help PPM control a large number of projects and ensure they are completed on schedule
It helps PPM identify the projects running off schedule so that the necessary actions can be taken to bring the project on schedule	Allows PPM to keep the team and sponsors informed on the progress of each project and its estimated time of completion and would use the report to further drill down on the cause of delay

VII. RESOURCE UTILIZATION

The report visualizes resource availability for each project in comparison to the required resources in the plans. The story will help PPM know the scarcity of resources in the project due to which the project might or is getting delayed. Please refer to the resource timeline chart in Appendix 2 to view the schedule of the resources are spending their time

Metrics Used:

- G1.Q3.M4 - Resources required based on the skill set
- G1.Q3.M5 - Resources available

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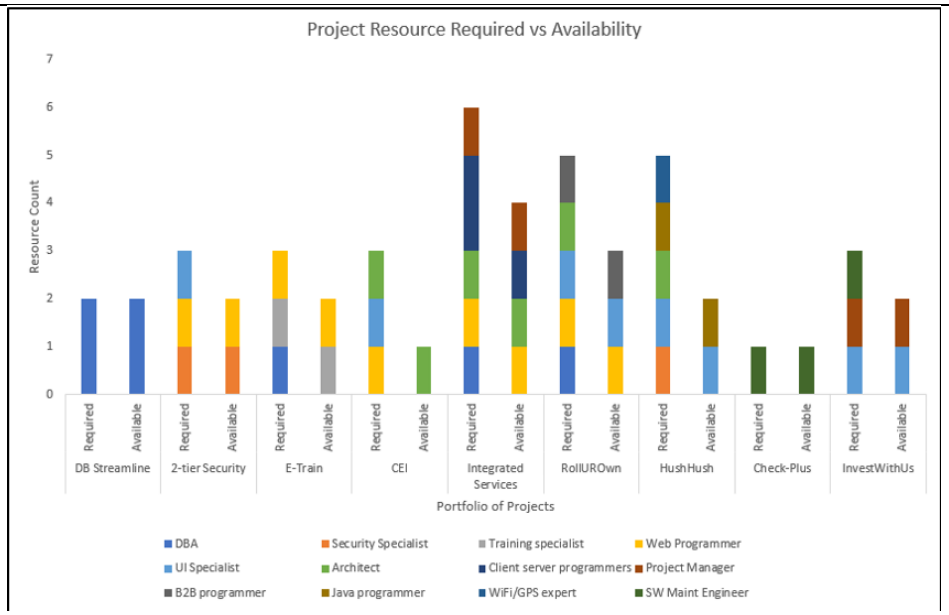

Figure 5 - Resource Utilization

Use	Decision-Aid
It helps PPM plan and allocates resources based on the priority of the project	In the report, the skill required in the project is compared against the skill available in the project and based on that PPM would know the unavailability of the skill in the project
It helps PPM make informed decision to hire the resources from outside or loan the resources from other projects which are running ahead of time	In the Project ranking report, the PPM would know that the 2-tier security project is a top priority project and is time bounded due to FDIC timeline. With the resource utilization report, PPM would know that the UI specialist is not available during the duration of the project. In this case, they decide to loan UI specialist from the low priority project such as HushHush or hire the resource from outside. Most likely, due to time constraint and effort required to hire a new resource, PPM would loan the resource from Hush hush project.

VIII. COST OVERRUN

Cost Overrun report visualizes the estimated project cost overrun based on the schedule and allocated a budget of the project. This report will help identify the cost overrun projects and based on the priority ranking of the project; PPM would take actions to determine the value and plan to reduce the cost without impacting the schedule

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Metrics Used:

- G1.Q1.M2 - Cost Variance - Deviation of cost from the planned budget

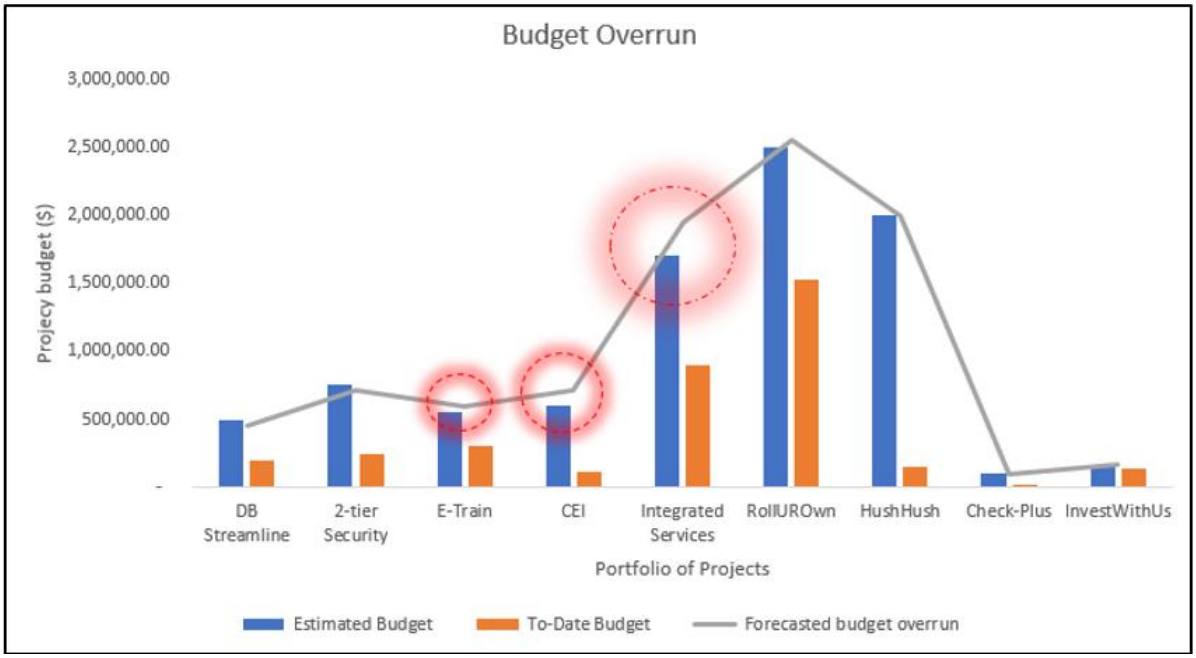

Figure 6 - Cost Overrun

Use	Decision-Aid
It helps PPM plan and take actions on the cost overrun projects based on their priority	PPM would make the decision based on the reasons of the cost overrun in the project. The reason for the overrun could be because of incorrect estimation of the project, additional requirements added in the project, and likewise
It helps PPM make informed decision to fund the project or reduce the scope of the project	Based on the reason, PPM would decide to: • Revise the budget estimation and present the case to sponsors for funding • For additional requirement, PPM would ask Project manager to provide scope change estimation and present to sponsors for more funding • Reduce the scope of the project by removing the delighters of the project and bring the cost to neutral Most likely, due to time constraint and effort required to hire a new resource, PPM would borrow the resource from Hush Hush project.

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IX. SOFTWARE METRICS

The existing metrics being tracked no longer support the PPM's goals and objectives.
Some of the existing metrics being tracked are not effective in meeting the overall goals of the following areas:

Cost	• It merely specifies a fixed budget allocated for projects that are not effective in measuring deviations from the projected cost of a project. • Does not consider cost variations based on resource needs, scope creep, and schedule slippage
Project Schedule / Status	• Does not provide slippage based on the priority of the projects • Not effective in tracking deviation from the projected timeline
Resources	• Does not specify ways to track availability, allocations of resources based on skills, and requirements in projects • Needs to consider additional budget allocation based on project needs for better estimates of project cost and time wise
Project Risk	• Does not prioritize the risks and categorize projects based on risks

Based on the business goals and objectives identified, the following metrics are proposed

Goal G1 - Control project prioritization and enable visibility and access to crucial information that helps drives decisions that support the financial, resource and project scheduling across the portfolio.

G1.Q1 - Is the team able to prioritize projects by market demands, revenue and user reward

Hypothesis: If the team can accurately rank projects by market demand, revenue and user reward, then the PPM is managing the risk of the project, they will know the importance and rank of that project across the portfolio.

G1.Q1.M1 - Number of users: This would help identify target markets and scope for each project and help define priority

G1.Q1.M2 - Cost Variance/Profitability: This would help prioritize the projects based on projected revenue generation

G1.Q2 - Is the team able to identify and prioritize risks in addition to categorizing projects risk wise and take timely actions to control them?

Hypothesis: If the PPM is able to view projects categorized based on prioritized risks, he would be able to identify the high risk and high impact projects that need immediate attention and can

take timely measures to mitigate risks or lower their impact.

Identifying Key Risks: There could be many risks associated with different projects. On applying Pareto Chart, which works by 80/20 rule, the project manager can identify top risks that impact most of the projects. Please refer to Pareto Chart in Appendix 3.

The key risks identified are defined below:
G1.Q2.M3 - Scope Creep

G1.Q2. M4 - Programmatic Risks (may include, IP, Security, Govt rules, market changes, customer priority)

G1.Q2. M5 - Process Failures (regulations, compliance, Operational Risks, no communication and responsibility within the team)

G1. Q3 - Can the PPM optimize the resource and staffing availability based on required skill set and budget?

Hypothesis: If the PPM knows which skill set resources are required to meet a project demand and how many of them are currently available or will be available in some future time, then PPM's will be able to plan and control staffing more accurately to provide resources timely and meet project demands.

G1.Q3.M6 - Resources required based on skill set

G1.Q3.M7 - Resources available - Number of resources available during a timeframe

G1.Q4 - Can the PPM track the financial status of the projects?

Hypothesis: If PPM could see the financial status of the project showing Actual Cost vs. Projected Cost, Profitability, budget increase/decrease based on different aspects such as scope creep, resources, technology challenges, then PPM is aware of cost variance and will be able to take related decisions accordingly.

G1.Q4.M8 - Cost Variance / Profitability tracked via Projected Cost vs. Actual Cost.

G1.Q5 - Can the PPM see schedule slippage aka project delays and take timely actions to control it?

Hypothesis: If PPM could see the project timelines and status of project with respect to timelines that show Actual Timeline vs. Projected Timeline, schedule slippage based on different aspects such as scope creep, complexity, resource unavailability, then the PPM is aware of schedule variance and will be able to take decisions to control the slippage accordingly.

G1. Q5.M9- Schedule Variance: This depicts the Projected timeline - Actual Timeline. The difference explains the slippage.

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Goal G2 - Change management process to enable the PMM control of the project portfolio and the ability to make quick informed decisions

G2.Q1 - Is the team able to make quick decisions based on the metrics program?

Hypothesis: If the PPM is able to view the projects in a prioritized view, and quickly identify the issues or potential risk to the project, then the PPM will be able to apply the appropriate escalation process and get-well plan for the project

X. MANAGING A METRICS INITIATIVE

Current management Status

PPM has a weekly meeting with the project team and update the project utilization sheet. However, the data is ambiguous. It is difficult for the PPM to have a clear cross-teams-functional view to teams and create a balanced portfolio.

Future Management Status [3]

Culture	• PPM should keep facilitating an open and transparent meeting with the project team on a weekly basis. Moreover, update the change management sheet • PPM drives the vision of the project with teammates after documenting feedback from customers • PPM should keep attending conferences, training sessions and other events to coach themselves in their current fields to be competitive
People	• Based on Resource Utilization report, PPM can have a clear analysis of human resources to ensure the correct team and culture are in place to support the project deliverable.
Process	• Based on Gantt chart and RAG status, PPM will use the information and identify the root cause of the delay and risks. • PPMs will make each process change on each project smoothly and efficiently to meet the company's goals.
Technology	• Based on Project progress report, quality indicator table, PPM can control the technology risks and helps the new system to eliminate redundancy and consolidate the number of technical platforms.

Change management metric

To help PPMs to make right the decision, our team M&M propose a tree metric to justify the changes needed to take.

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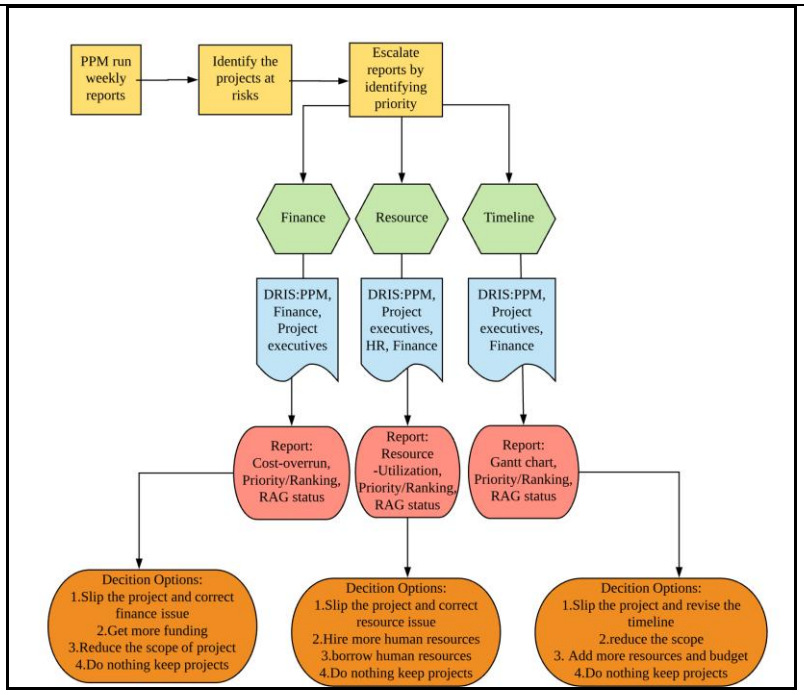
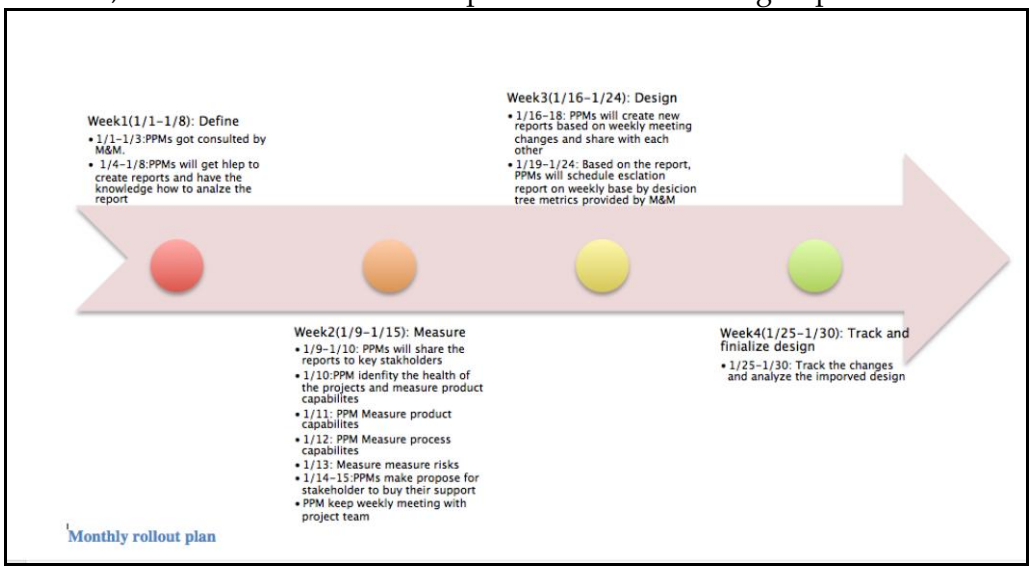


Rollout Plan

Similar to DMAIC, we will define our rollout plan with the following steps:



XI. CONCLUSION

In conclusion, the financial institution requires a robust portfolio management solution to effectively oversee and manage budget, resource, and scheduling challenges across its projects, ensuring comprehensive project control. Analysis of the current portfolio revealed a lack of prioritization and three key issue areas impacting project health: time, resources, and budget. To address these, we recommend three targeted actions:

1. Prioritize the Project Portfolio with a Project Priority Report

2. Rapidly identify high-risk, high-priority projects
3. Establish a consistent process for project remediation

By implementing these reports and processes, the institution can, within a month, achieve stronger project control, mitigate risks, and support essential business goals through timely, strategic decision-making.

XII. APPENDIX

1. Appendix Reference 1: Portfolio Projects Ranking Tips

Strategic Fit

- Alignment towards the company goal – how aligned is the project towards corporate goals Economic Fit
- Customer impact – How many existing and potential customers the project will impact
- Revenue Generation – How much estimated revenue the feature can generate after the launch
- User experience – How much the project can help increase the user experience
    - Assigned weights, each Project is scored from (1 to 10) basis on each criterion
        - Alignment to company goal – 30%
        - Customer Impact – 25%
        - Revenue Generation – 25%
        - User experience – 20%

	Strategic Impact	Economic Impact			
	Alignment towards company Goal	Customer Impact	Revenue generation	User Experiencee	
Projects / Assets	30%	25%	25%	20%	Overall Score
DB Streamline	2	4	1	6	3.05
2-tier Security	8	8	6	7	7.3
E-Train	4	0	0	0	1.2
CEI	5	6	3	5	4.75
Integrated Services	3	4	5	3	3.75
RollUROwn	4	1	3	6	3.4
HushHush	5	3	6	8	5.35
Check-Plus	6	5	3	7	5.2
InvestWithUs	5	6	7	8	6.35

Appendix Figure 1 - Project Rank Criteria

2. Appendix Reference 2: Resource Occupancy Schedule

Visualized what resources are used, for what project and at what time within the fiscal year

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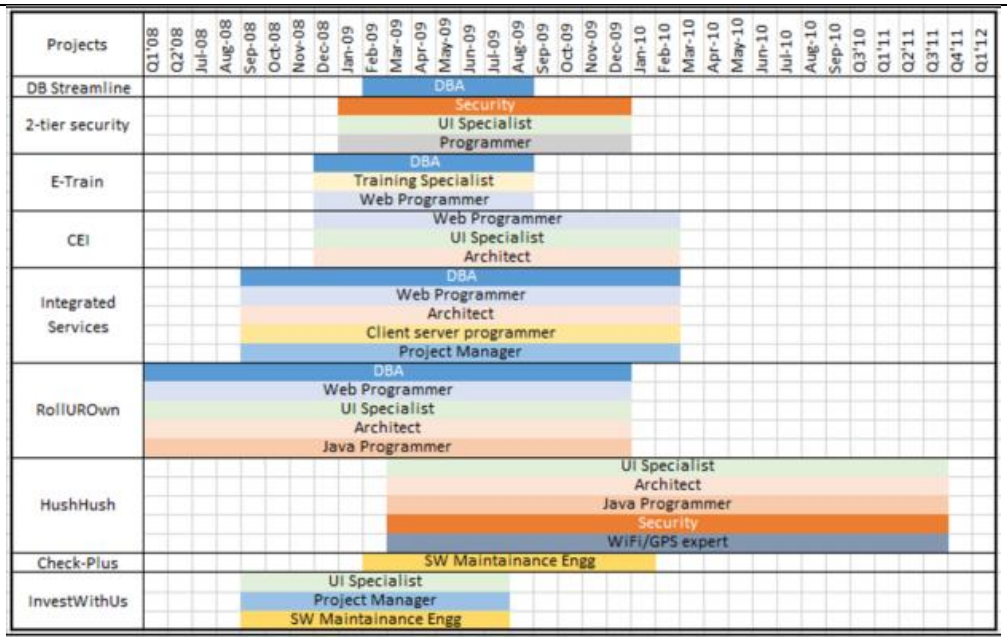

3. Appendix Reference 3: Risk Heat Map

Based on risk prioritization via Pareto chart (Refer Appendix), top risks are identified and are used for creating Risk report for PPM. The Risk report categorizes the projects based on Impact and probability of risk. This would help PPM identify the high-risk impact projects and based on priority, timely action can be taken to mitigate those risks and control those projects.

* Current Definitions from PPM Spreadsheet

- Defects due to query optimization
- IP, verifiability
- IP, cost, resource avail.
- Changing requirements
- Security, regulations compliance
- Security, user acceptance
- Resource avail.

Metrics Used:

- G1.Q2.M3
- G1.Q2.M4
- G1.Q2.M5

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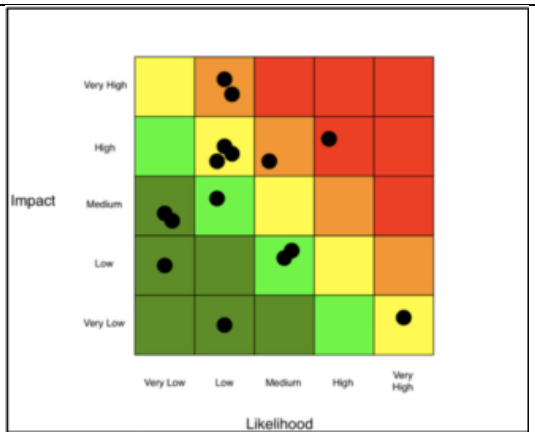
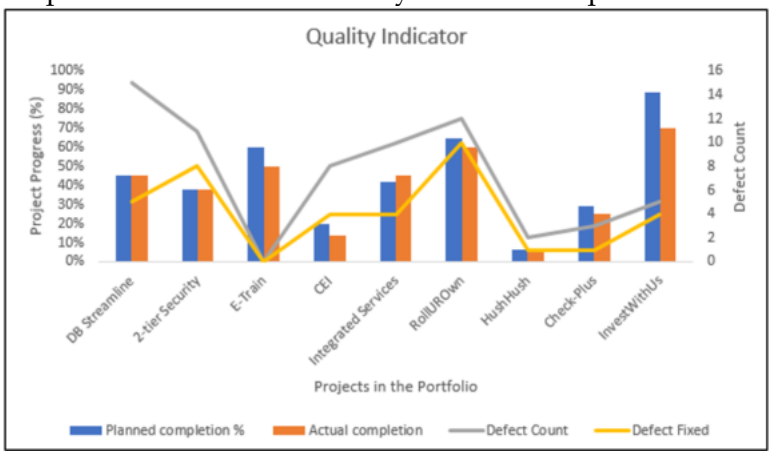


Appendix Figure 3 - Risk Heat Map [4]

Use	Decision Aid
This report will help PPM to get timely notification and details about projects in the high-risk zone.	Appropriate risk mitigation measures to control and lower the risk impact on the projects.

4. Appendix Reference 4: Quality Indicator

Visualizes the time, scope increase and defect analysis across the portfolio



Appendix Figure 4 - Quality Indicator

REFERENCES

1. V. Evans, Key Strategy Tools: The 80+ Tools for Every Manager to Build a Winning Strategy, Financial Times, 2013, p. 41.
2. "Project Prioritization Tool," Demand Metric, [Online]. Available: https://www.demandmetric.com/content/project-prioritization-tool. [Accessed 1 December 2018].
3. E. Pailen, "The Change Mindset," Project Management.com, 21 May 2007. [Online]. Available: http://www.projectmanagement.com/articles/236576/The-Change-Mindse. [Accessed 1

December 2018].
4. "Eight steps to creating a risk heat map," Inloggen, 18 June 2018. [Online]. Available: https://www.iia.nl/actualiteit/nieuws/eight-steps-to-ceating-a-risk-heat-map. [Accessed 1 December 2018].