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Abstract

On-time delivery (OTD) performance plays a critical role in aerospace manufacturing due to its impact on production schedules, customer commitments, and cost control. This project examined the absence of a standardized OTD reporting flow within a regulated aerospace manufacturing environment and evaluated alternatives for improving delivery visibility and reporting efficiency. Using the Define–Measure–Analyze–Improve–Control (DMAIC) methodology, existing reporting processes were assessed, stakeholder requirements were identified, and reporting solutions were evaluated. The analysis revealed that fragmented data sources and manual reporting practices increased managerial workload and limited proactive risk management. An internal SQL-based workflow reporting solution was selected based on integration capability, data security, and sustainability. The project demonstrated that standardized, system-integrated reporting improves data accuracy, reduces direct labor costs, and supports more effective managerial decision-making.

Introduction

On-time delivery (OTD) performance is a critical operational metric within the aerospace industry, where production schedules, project coordination, and contractual commitments are tightly integrated. Collins Aerospace, a manufacturer and supplier of aerospace systems and components, operates within a highly regulated sector and complex environment that requires accurate, timely, and reliable delivery information to support decision-making at multiple organizational levels. Effective OTD reporting enables managers to identify risks, allocate resources efficiently, schedule accordingly, and respond proactively to emerging issues.

Despite the importance of delivery performance data, the existing OTD reporting process lacks standardization and integration across business units. Delivery information is gathered through multiple systems and informal reporting methods, resulting in inconsistent data formats, delayed visibility, and increased reliance on manual reconciliation by management. These inefficiencies reduce transparency and contribute to schedule uncertainty and increased indirect labor costs.

The objective of this project is to create a standardized on-time delivery reporting flow that improves data accuracy, visibility, and usability. By integrating reporting flow into existing internal systems, the project aimed to reduce manual effort and provide management with actionable performance insights. This paper presents a review of relevant literature, outlining the methodology used to evaluate reporting alternatives, analyzing current-state inefficiencies, and discusses the expected benefits of an integrated reporting solution in the organization.

Literature Review

Effective management of delivery performance requires reliable, structured information that is gathered and visualized in a standardized system. Data integration emphasizes that fragmented or incompatible systems significantly hinder the accuracy and timeliness of operational reporting. The absence of standardized protocols and frameworks across different manufacturers leads to a fragmented ecosystem and compatibility issues [1]. Standardized protocols need to be developed for the basic data gathering and operation of a company. Thus, avoiding any challenges or disarray when processes are not synchronized with the rest of the organization.

Project management principles reinforce the value of establishing defined performance metrics, effective control mechanisms, and integrated communication channels. Having timely and accurate information about project work and performance allows the project team to learn and determine the appropriate action to take to address current or expected variances from the desired performance [2]. Applying this philosophy opens the door for a company to develop a reporting flow that ensures timely, accurate, and actionable metrics are gathered, which then enables improved decision-making across business units and production functions.

Information systems literature further highlights the strategic importance of integrated data environments and automated reporting tools. Many business managers operate in an information fog bank, never really having the right information at the right time to make an informed decision [3]. Enterprise systems and data integration frameworks support an organization's need for a centralized data repository used to make key business decisions.

Methodology

This project was conducted using the DMAIC (Define, Measure, Analyze, Improve, Control) methodology to structure the evaluation and improvement of the on-time delivery (OTD) reporting process. DMAIC was selected because it provided a systematic approach for identifying deficiencies in the existing reporting flow, analyzing root causes, and developing a sustainable reporting solution aligned with organizational constraints.

- ❑ **Define**
 - The scope of the project
 - Key stakeholders
 - Project objectives
 - Constraints
- ❑ **Measure**
 - Current Process efficiency
 - Current Process Complexity
 - Current Process KPIs
- ❑ **Analyze.**
 - Inefficiencies
 - Gaps
 - Reporting alternatives
- ❑ **Improve**
 - Selecting and defining a new reporting solution
 - New process
 - Internal SQL-based workflow page
 - Reporting requirements
 - Data inputs and outputs
- ❑ **Control**
 - Established mechanisms
 - Sustain the improved reporting process
 - Standard operating procedures
 - Long-term adoption

Table 1
Group A Manager OTD reporting utilization rate over time

Month	Manager Utilization Rate	Cost (\$)
Jan (2025)	0%	0.00
Feb (2025)	5%	860
Mar (2025)	5%	860
Apr (2025)	5%	860
May (2025)	10%	1,720.00
Jun (2025)	10%	1,720.00
Jul (2025)	0%	0.00
Aug (2025)	0%	0.00
Sep (2025)	0%	0.00
Oct (2025)	0%	0.00
Nov (2025)	0%	0.00
Dec (2025)	0%	0.00
Jan (2026)	0.5%	86.00

Results

The implementation analysis of the proposed OTD reporting solution indicated measurable improvements in reporting efficiency and managerial utilization. Baseline data showed that managers spent a significant portion of their time spent on reporting. Table 1 demonstrates the spike in managerial utilization rate observed in January 2025 in the name of continuous improvement optimization. The monthly on-time delivery utilization rate shows how much percentage of time the manager is spending on reporting this metric. From February to June, approximately ten hours a month (work week is 40 hours) are spent gathering and reporting this data. Collins' flat rate for its engineering services is \$86 per hour. May and June saw the utilization rate double due to increased project deliverable mishaps. This costs Collins around \$1,720 in lost revenue for this group alone. From July to December 2025 no deliverables were tracked down due to management change and lack of priority.

January 2026 saw the trial implementation of the SQL-based workflow. Figure 1 shows the steps each employee takes when documenting their deliverable metrics. The workflow is based around assigned tasks for the period versus completed tasks. There is then added path for visibility in case a task may not have been completed. Figure 2 is where the data is then submitted for the manager to review and flow up.

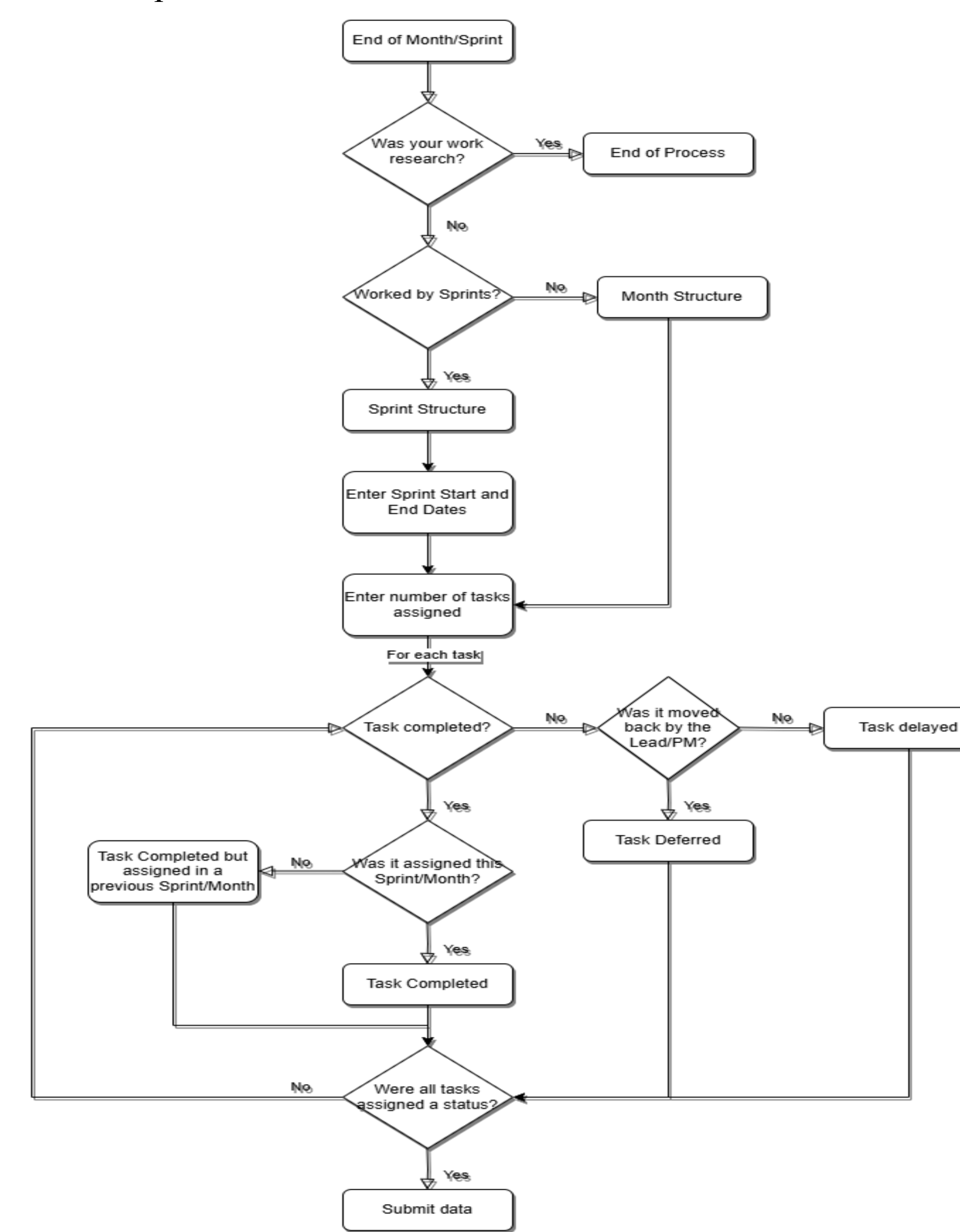


Figure 1
Workflow Diagram

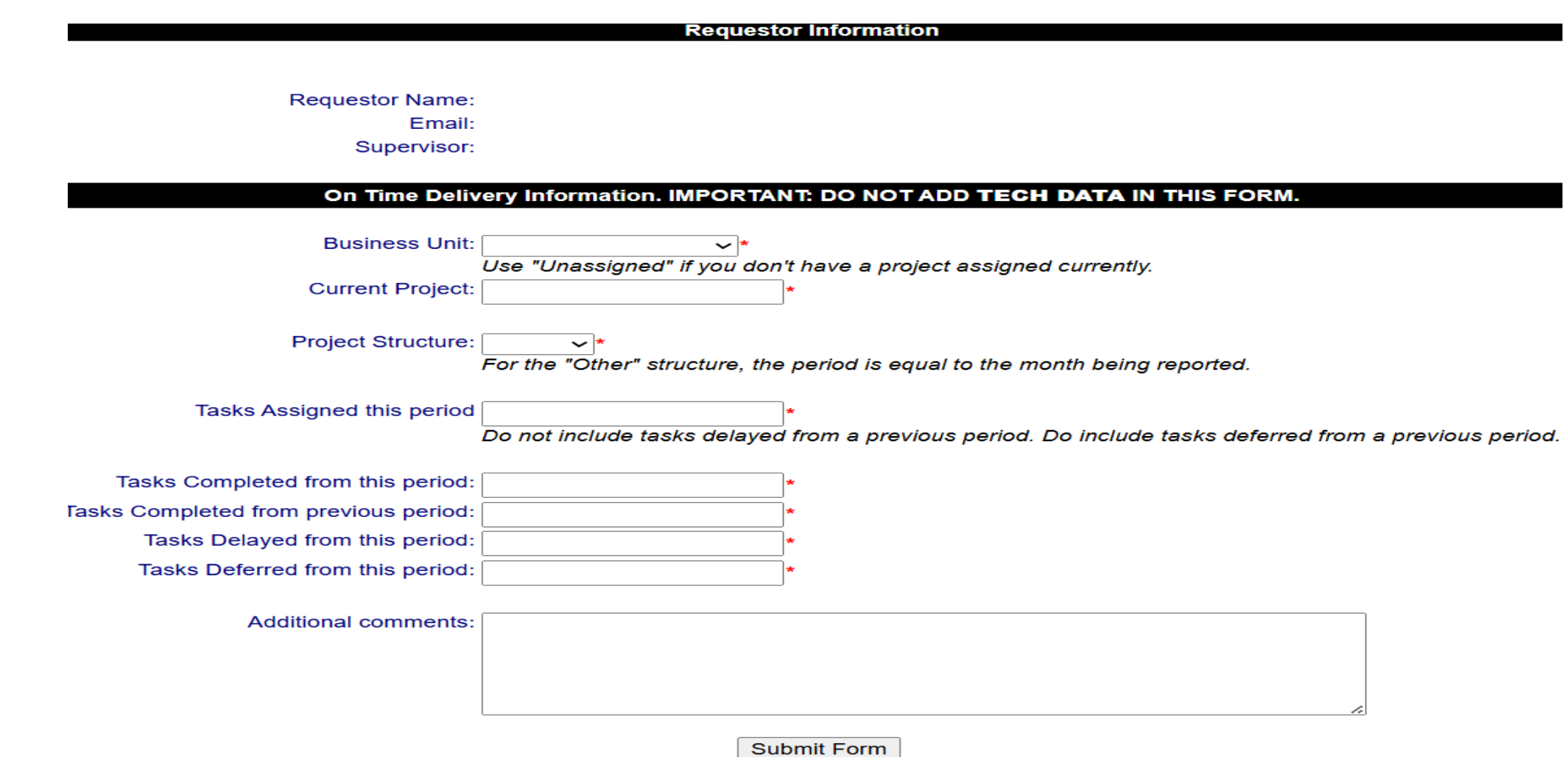


Figure 2
Workflow Site

This lowered the utilization rate of the manager to half a percent in the month of January 2026. Lowering the cost to the company significantly. Approximately an hour was spent utilizing this site. There is also the added ability to report and compile data retroactively. Freeing time for the presiding manager to focus on supporting external charge projects. Tasks that are marked deferred or delayed are flagged for the next period for ease of tracking and visibility. Making staffing decisions for projects easier to decide.

Conclusions

This project addressed a critical operational gap related to on-time delivery reporting within a complex aerospace manufacturing environment. The lack of a standardized reporting flow contributed to fragmented data, increased managerial workload, and delayed visibility into delivery performance. By applying the DMAIC methodology, the project systematically identified root causes and evaluated feasible reporting alternatives.

The selection of an internal SQL-based workflow reporting solution aligned with organizational security requirements and system integration needs. The findings demonstrated that standardized and self-reporting improves data accuracy, enhances delivery visibility, and reduces non-value-added managerial effort.

Future efforts may focus on expanding the reporting framework across additional programs and integrating predictive analytics to strengthen long-term delivery reliability.

References

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- [3] Laudon J. P. (2020). Management of Information Systems, 16th Edition Pearson Prentice Hall, Upper Saddle River, NJ. 44