



Author: Jaime Santana Vera
Advisor: Dr. Héctor J. Cruzado
Master in Engineering Management
Graduate Project EXPO, May 2026

Abstract

Engineering organizations frequently experience challenges related to communication inefficiencies, limited task visibility, and inconsistent reporting methods. This study evaluated current project management practices within an engineering environment and identified operational issues associated with unstructured communication and individual reporting systems. Supervisor interviews revealed that the use of disconnected tracking methods increased administrative workload, reduced reporting consistency, and contributed to missed deadlines and uneven workload distribution. To address these issues, this study proposes a structured management system supported by Microsoft Project and Microsoft Planner. The proposed approach establishes a communication hierarchy in which team leaders provide consolidated updates to supervisors, improving project visibility and task coordination. Results indicate that the system enhances reporting efficiency, improves workload management, reduces meeting time, and increases overall project oversight. The study demonstrates that structured communication and project tracking systems can improve engineering project performance.

Introduction

Engineering organizations managing multidisciplinary utility projects often face communication inefficiencies, inconsistent reporting, and limited task visibility. As project complexity increases, supervisors must coordinate multiple teams, schedules, and deliverables simultaneously. Without a structured communication system, project oversight becomes difficult, increasing the risk of delays and uneven workload distribution.



Literature Review

Key Findings:

- Effective communication improves project performance.
- Structured reporting reduces coordination issues.
- Project management tools improve visibility.
- PDCA supports continuous improvement.
- Workload visibility improves accountability.

Supporting Tools

- Microsoft Project
- Microsoft Planner

Methodology

The methodology evaluated current management practices, identified communication weaknesses, compared project management tools, and developed an improved reporting hierarchy for engineering teams.

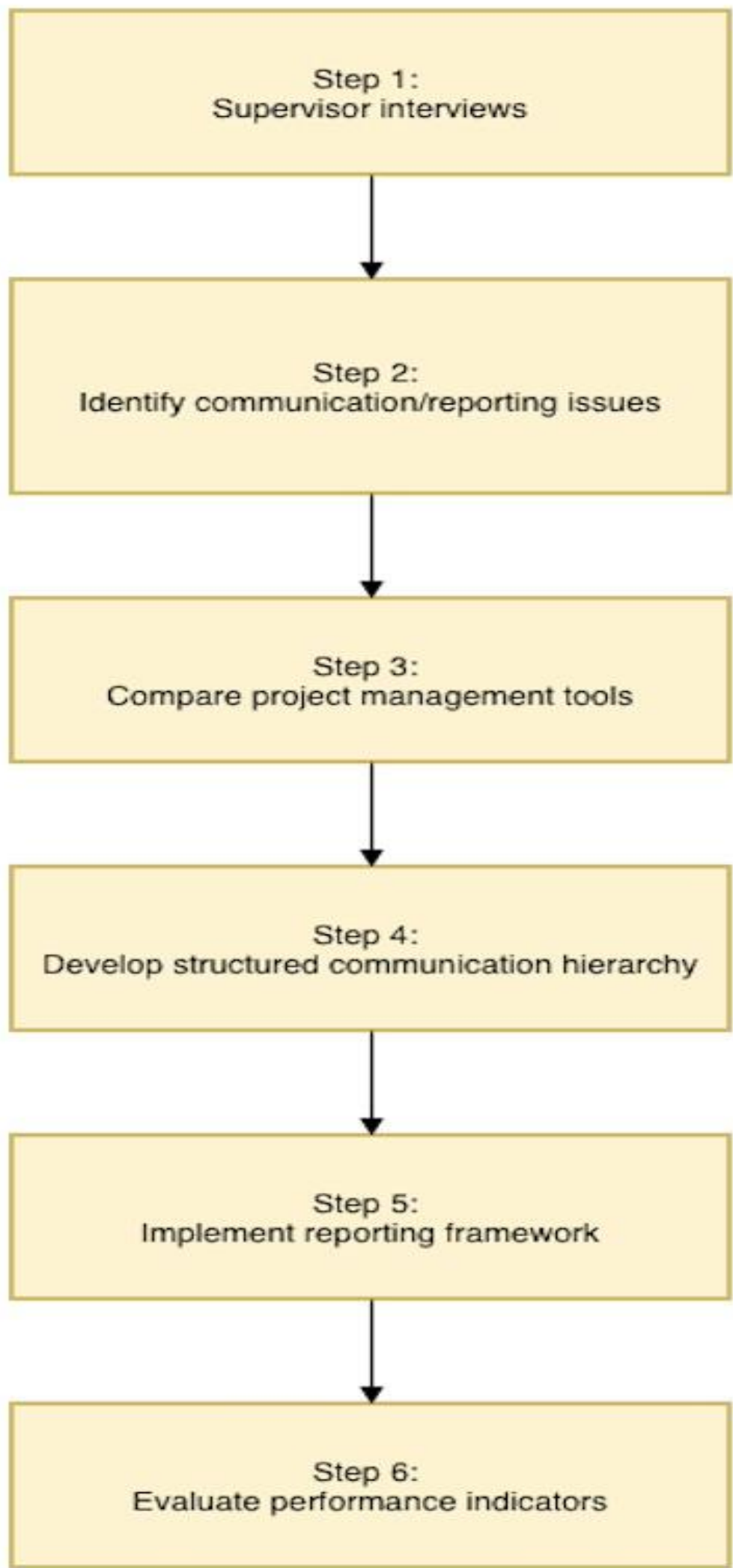


Figure 1
Project Methodology Flowchart

Figure 2 provides a brief representation of the existing communication structure and as can be seen this approach may be effective for smaller groups, managing teams of five (5) to ten (10) engineers can become inefficient and difficult to maintain.

Figure 3 presents a structured system in which junior engineers report progress and technical issues to their respective lead engineers.

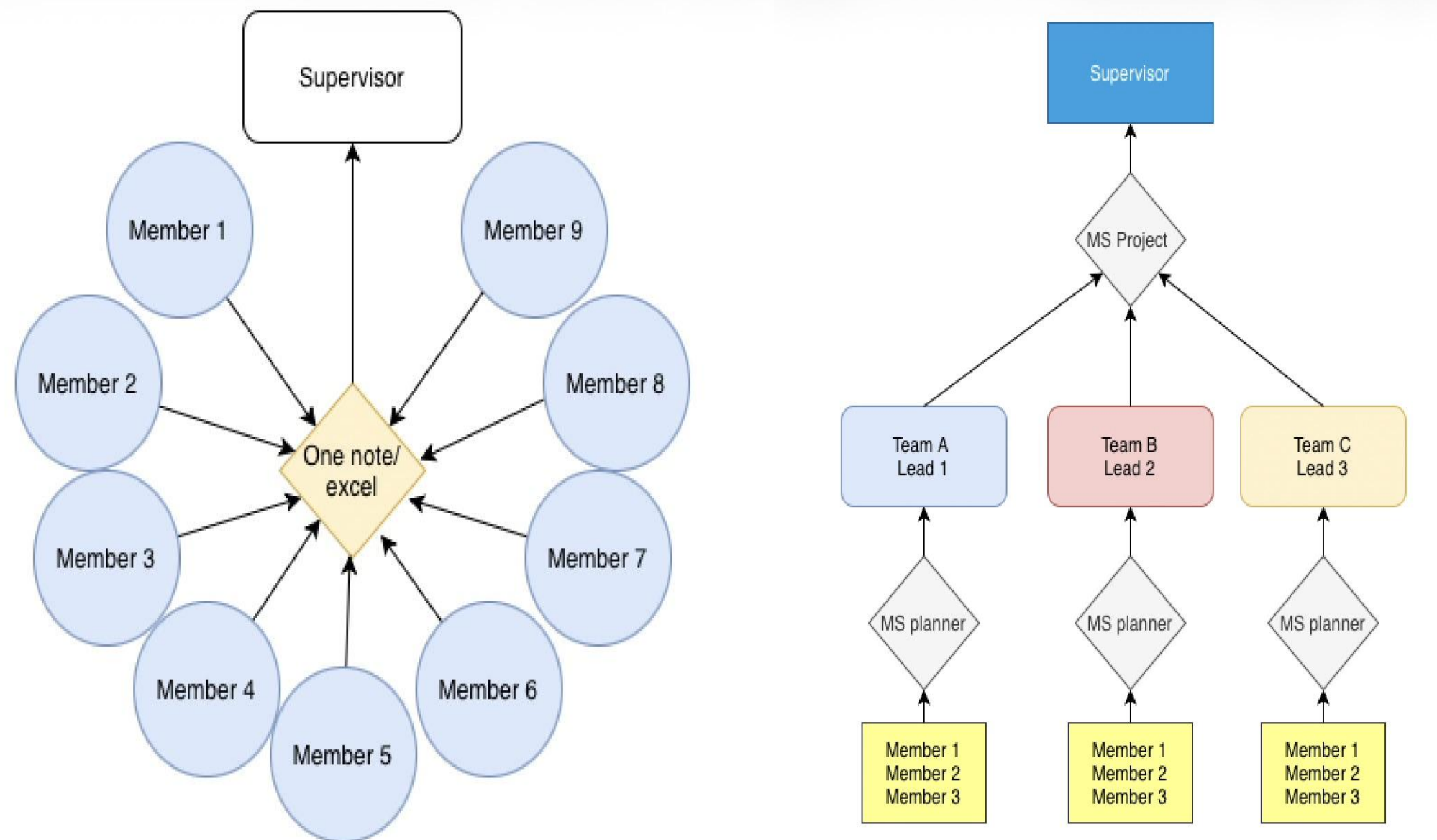


Figure 2
Existing communication
Structure

Figure 3
Proposed Communication
Structure

The following tables were developed to compare different tools. Table 1 presents a comparison of Microsoft Planner and Microsoft To Do as task management tools for team leaders. Based on this comparison, Microsoft Planner was identified as the most appropriate tool for lead engineers and team leaders because it allows assignment of tasks, monitoring of progress, workload balancing, deadline tracking, and team collaboration through a visual dashboard system.

Table 1
MS Planner vs MS To Do

Feature	MS Planner	MS To Do
Primary Purpose	Team task management	Personal/small team task tracking
Best use case	Managing team projects	Tracking Individual or simple task
Task assignment	Assign tasks to multiple users	Limited
Deadline tracking	Built in due dates and progress tracking	Simple due date tracking
Team Collaboration	Can be integrated with teams	Limited collaboration
Team member work	Clear visibility	Basic visibility only
Progress monitoring	Contains visual dashboard	Very basic
Data gathering	Easy via task updates and comments	Requires manual input

Table 2 compares Microsoft Project and Power BI at the supervisory level, focusing on project tracking, team management, reporting visibility, and decision-making support. Microsoft Project was selected for supervisors due to its advanced scheduling functions, milestone tracking, dependency management, and portfolio-level oversight of multiple projects.

Table 2
MS Planner vs Power BI

Feature	MS Project	Power BI
Primary Purpose	Project scheduling & management	Data visualization & Analytics
Best use case	Structured management	High level visibility
Task assignment	Excellent, real-time tracking	Excellent, visual dashboard
Deadline tracking	Built in Gantt, % complete	Strong KPI charts
Resource management	Strong	None
Data gathering from teams	Integrated tracking	Pulls from multiple sources
Progress monitoring	Limited	Advanced dashboard

Results

Implementation of the proposed structured management system demonstrates the following key improvements:

- Reduced meeting time
- Improved reporting consistency
- Better workload distribution
- Increased project visibility
- Faster status tracking
- Improved schedule monitoring

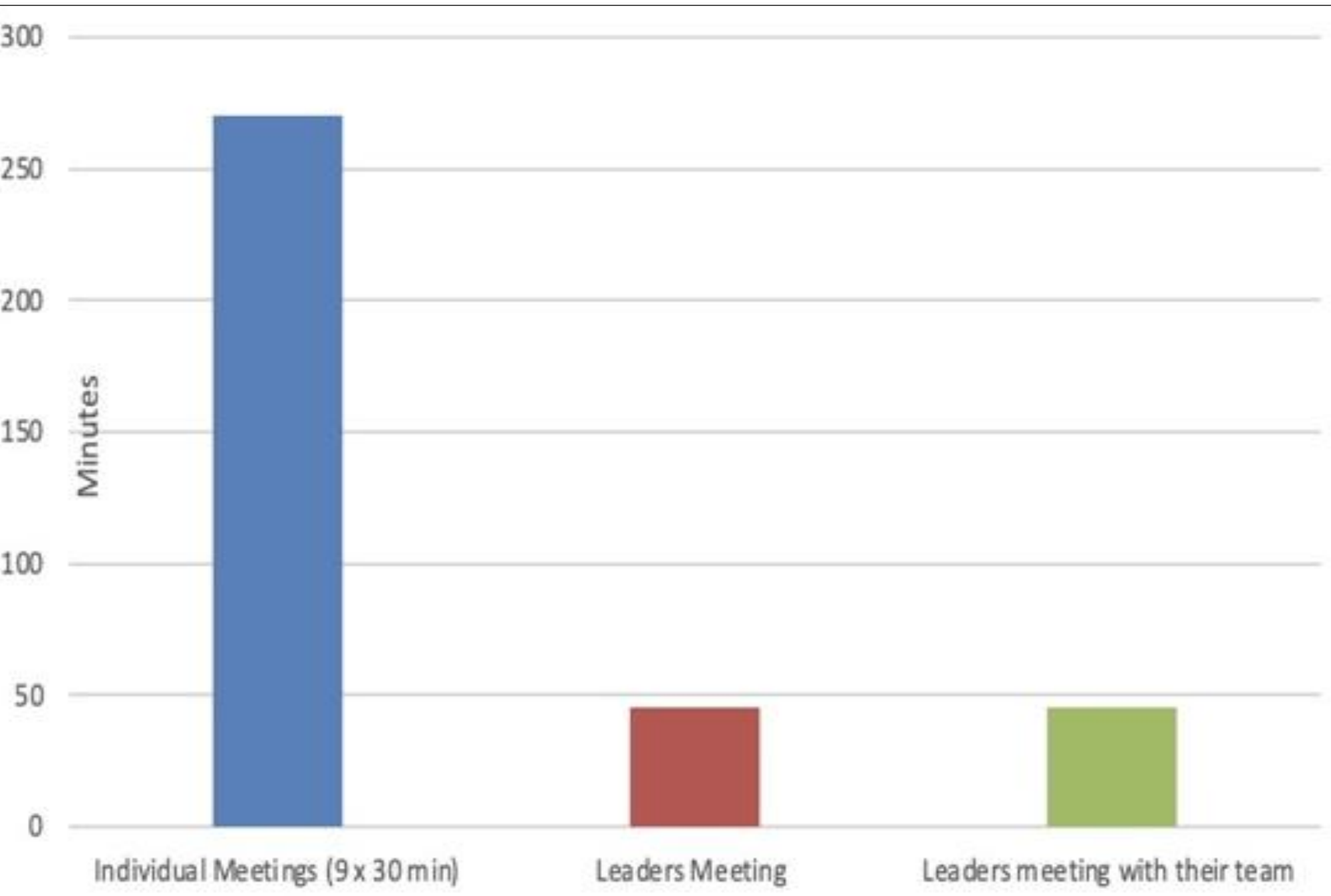


Figure 3
Meeting time comparison

Conclusion

The proposed management system demonstrates that structured communication channels and integrated project management tools can improve coordination, reporting efficiency, and project visibility within engineering organizations. The methodology provides a scalable framework for improving workload management and reducing communication inefficiencies in multidisciplinary engineering projects.

References

[1] W. E. Deming, Out of the Crisis. Cambridge, MA: MIT Press, 1986.

[2] E. Shakeri, M. Khalilzadeh, and E. K. Zavadskas, "Investigating the role of communication in construction project performance," Sustainability, vol. 12, no. 15, 2020.

[3] E. G. Ochieng and A. D. Price, "Managing cross-cultural communication in multicultural construction project teams," Int. J. Project Management, vol. 28, no. 5, pp. 449–460, 2010.

[4] H. Kerzner, Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 12th ed. Hoboken, NJ: Wiley, 2017.

[5] R. Atkinson, "Project management: Cost, time and quality," Int. J. Project Management, vol. 17, no. 6, pp. 337–342, 1999.

[6] Microsoft. (2026). Microsoft Planner: Task and project management software. Microsoft 365.<https://www.microsoft.com/en-us/microsoft-365/planner/microsoft-planner>