

**INTEGRATING COMMUNICATION AND PROJECT
MANAGEMENT SYSTEM USING OPEN-SOURCE TOOLS
FOR TEAM PRODUCTIVITY**

By

Stanislaus Steven Kurniawan
12202020



SWISS GERMAN UNIVERSITY
The Prominence Tower
Jalan Jalur Sutera Barat No. 15, Alam Sutera
Tangerang, Banten 15143 - Indonesia

June 2026

STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

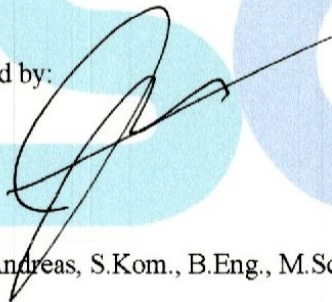


Stanislaus Steven Kurniawan

Student

22 June 26
Date

Approved by:



Joseph Andreas, S.Kom., B.Eng., M.Sc.

Thesis Advisor

24 JUNE 2026
Date



Leonardo Theoson, S.Kom., B.Eng.

Thesis Co-Advisor

22 June 26
Date

Dr. Maulahikmah Galinium, S.Kom., M.Sc.

Dean

Date

Stanislaus Steven Kurniawan

ABSTRACT

INTEGRATING COMMUNICATION AND PROJECT MANAGEMENT SYSTEM USING OPEN-SOURCE TOOLS FOR TEAM PRODUCTIVITY

By

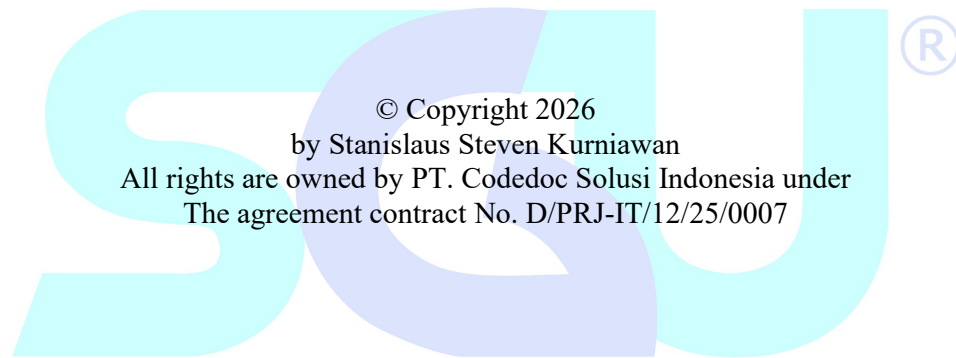
Stanislaus Steven Kurniawan
Joseph Andreas, S.Kom., B.Eng., M.Sc.*
Leonardo Theoson, S.Kom., B.Eng.**

SWISS GERMAN UNIVERSITY*
CODEDOC INDONESIA**



Organizations have been increasingly reliant on multiple digital tools to support their productivity which includes communication, task management, and collaboration. However, operating these systems independently often leads to fragmented workflows, duplicated administrative tasks, and inconsistent user experiences. This research aims to design and implement an integrated collaboration platform that combines communication and project management functionalities using self-hosted open-source modules. The objective of the study is to demonstrate how independent systems can be coordinated to support synchronized project lifecycle activities. The expected findings of this research demonstrate that integrating open-source collaboration modules within a unified interface can improve workflow coordination and reduce the need for multiple separate tools.

Keywords: Open-Source Integration, Collaboration Platform, Project Management System, Communication System.



© Copyright 2026
by Stanislaus Steven Kurniawan
All rights are owned by PT. Codedoc Solusi Indonesia under
The agreement contract No. D/PRJ-IT/12/25/0007

DEDICATION

I dedicate this work to everyone who has been with me on this journey since the beginning. The completion of this thesis would not have been possible without the support and encouragement of all the people closest to me. Throughout this journey, they became my source of strength and inspiration to keep striving forward. This work is a reflection of all the support I received from those who always stayed beside me, especially:

My partner, Salma Azzahrah Yuswanputri, who has supported me all the way through, has always been there for me through every single step of this journey. Thank you for constantly encouraging me whenever I struggle to find motivation, comforting me during the toughest parts of this journey, and reminding me to keep moving forward. Your patience, understanding, and seemingly endless tolerance for me became one of the greatest sources of strength throughout this journey.

My family, especially my parents and grandparents, who have supported me unconditionally throughout every stage of my life and academic journey. Thank you for the endless sacrifices you have made and for continuously providing me with every opportunity to pursue my education regardless of how demanding the journey became. Your hard work, patience, and unwavering belief in me allowed me to reach this point, and I will always be deeply grateful for what you have done for me.

My friends, mentors, co-workers, and classmates, who have accompanied me throughout this journey and contributed to both my academic and personal growth in countless ways. Thank you for the support, encouragement, guidance, laughter, and memories shared throughout this process, making exhausting days feel lighter, each of you played a meaningful role in helping me complete this thesis.

I would also like to give a special mention to Soya, Tofu, and Pepe.

ACKNOWLEDGEMENTS

First and foremost, I would like to thank both my Advisor Mr. Joseph Andreas, S.Kom., B.Eng., M.Sc. and my Co-Advisor Mr. Leonardo Bahar, S.Kom., B.Eng. for the giving me the opportunity to work on this thesis and for all the guidance, support, patience, and knowledge they have shared throughout the development of this research. Their insights, encouragement, and continuous assistance throughout both the research and writing process played a significant role in helping me complete this thesis.

I would also like to express my deepest gratitude to everyone at Codedoc for all the guidance, support, experiences, and opportunities provided throughout my internship journey and the development of this thesis. The collaborative and supportive environment allowed me to grow both professionally and personally. Special thanks to Wilbert Dietrich Sutardja and Lidya Aurelcia, who worked alongside me throughout the development of the shared project related to this thesis. Thank you for all the teamwork, discussions, and support we shared throughout this journey. I would also like to thank all my co-workers and mentors for their encouragement and assistance throughout the completion of this thesis.

I would also like to express my gratitude to all lecturers from the Information Technology department at Swiss German University for all the knowledge, guidance, experiences, and opportunities provided throughout my years of study. Their teachings and support have greatly contributed to both my academic and personal development throughout this journey. I would also like to thank my classmates from the Information Technology 2022 batch for all the memories, experiences, laughter, and support shared throughout our university life. The journey would not have been as meaningful and memorable without all the moments we experienced together.

Lastly, I would like to express my deepest gratitude to my partner, family, relatives, and everyone closest to me including but not limited to Soya, Tofu, and Pepe. Without all of your support, this thesis would not have been possible.

TABLE OF CONTENTS

	Page
STATEMENT BY THE AUTHOR.....	Error! Bookmark not defined.
ABSTRACT.....	3
DEDICATION.....	5
ACKNOWLEDGEMENTS.....	6
TABLE OF CONTENTS.....	7
LIST OF FIGURES.....	9
LIST OF TABLES.....	10
CHAPTER 1 - INTRODUCTION.....	11
1.1. Background.....	11
1.2. Problem Statement.....	12
1.3. Research Objectives.....	12
1.4. Research Questions.....	13
1.5 Hypothesis.....	13
1.6. Scope and Limitations.....	14
1.7. Significance of the Study.....	15
CHAPTER 2 - LITERATURE REVIEW.....	16
2.1. Theoretical Framework.....	16
2.2. Comparison of SDLC Models.....	18
2.3. Overview of Evaluated Tools.....	19
2.4. COBIT Framework and Its Application to the Evaluation.....	23
2.5. Review of Previous Studies.....	25
2.6. Research Novelty.....	30
CHAPTER 3 – RESEARCH METHODS.....	31
3.1. Research Design.....	31
3.2. Research Process.....	32
3.3. Deliverables and Acceptance Criteria.....	34
3.4. Implementation Tools and Environment.....	34

3.5. Testing and Evaluation.....	35
3.6. Use Case Diagram.....	37
3.7. System Architecture Diagram	38
3.8. Workflow Diagram.....	40
3.9. Dashboard Design and Data Specification.....	41
3.10. Time Frame of Study	42
3.11. User Acceptance Testing	42
3.12. Research Questions and Evaluation Mapping	49
3.13. Requirements	50
CHAPTER 4 – RESULTS AND DISCUSSIONS.....	53
4.1. Module Selection and Justification.....	53
4.2. API Discovery and Integration Layer Development.....	56
4.3. Integration Implementation and Results	58
4.4. Frontend Implementation and UI Integration	62
4.5. User Acceptance Test and Questionnaire Results	65
4.6. COBIT-Based Evaluation.....	68
4.7. Result Conclusion	73
CHAPTER 5 – CONCLUSIONS AND RECOMMENDATIONS	74
5.1. Conclusions.....	74
5.2. Future Recommendations	75
GLOSSARY	77
REFERENCES	79
CURRICULUM VITAE.....	81

LIST OF FIGURES

Figures	Page
Figure 3.1 Research Process Framework Diagram.....	32
Figure 3.2 Research Process Diagram	33
Figure 3.3 Use Case Diagram	37
Figure 3.4 Entire System Architecture Diagram.....	38
Figure 3.5 System Architecture Diagram	39
Figure 3.6 Workflow Diagram.....	40
Figure 4.1 Creating a new project within the integrated platform.....	59
Figure 4.2 The project created in OpenProject shown in the integrated platform.....	59
Figure 4.3 The chat automatically created in Nextcloud	60
Figure 4.4 Adding a member into a specific project.....	60
Figure 4.5 Member added to the project.....	61
Figure 4.6 Member automatically added to the chat related to the project.....	61
Figure 4.7 Dashboard page showing the user's activities.....	62
Figure 4.8 Project task board showing task cards across the boards	63
Figure 4.9 Chat page with a conversation through real-time messaging	63
Figure 4.10 Files page showing uploaded files within the integrated platform.....	64

LIST OF TABLES

Table	Page
Table 2.1 SDLC Model Table Comparison	18
Table 2.2 Table Comparison Between Previous Studies	28
Table 3.1 Time Frame of Study	42
Table 3.2 User Acceptance Testing Scenarios.....	47
Table 3.3 Research Questions and Evaluation mapping.....	49
Table 3.4 List of Functional Requirements.....	50
Table 3.5 List of Non-Functional Requirements	51
Table 3.6 List of System Requirements.....	52
Table 4.1 Comparison of Project Management Tools	54
Table 4.2 Comparison of Communication Platforms	55
Table 4.3 Key API Endpoints Utilized from OpenProject and Nextcloud.....	56
Table 4.4 User Acceptance Testing Results.....	65
Table 4.5 Post-UAT Questionnaire Results.....	66
Table 4.6 COBIT 2019 Evaluation Summary.....	72