Design of Communication Planning Infrastructure in IT Projects Communication Management

G T Mardiani

1Department of Informatics Engineering, Universitas Komputer Indonesia, Indonesia

Email: gentisya.tri.mardiani@email.unikom.ac.id

Abstract. The purpose of this research is to assist project managers in planning project communication and assist the project team in knowing the meeting schedule and schedule for sending progress reports. The study was conducted using descriptive method with the analysis of communication needs and the stages of project communication planning, then designing the appropriate infrastructure for communication while the project was in progress. Based on the explanation above, it can be concluded that the recommendations of the communication infrastructure are web-based applications that can be used by project managers in communication planning, such as making project schedules, meeting stakeholders, and sending project progress report schedules. The project communication management process will cause problems such as delays in sending messages, or lack of communication with some of the stakeholders needed, so the project is delayed. Then the infrastructure design in communication planning can help project managers in project planning and controlling project implementation.

1. Introduction

The implementation of a project needs to communicate between the project team, the project manager to the project team, and communication between the project manager and the client or owner of the project. The communication management plan is contained in the project management plan that can be formal or informal, highly detailed or broadly framed, and based on the needs of the project. Identifying the information needs of the stakeholders and determining a suitable means of the meeting are an important factor for project success [1].

Project communication is an important stage in project management, and this process takes place at the time of project execution. States that the communication planning process and the resulting communication plan need to be appropriate to the scale and complexity of the work and stakeholder community[2]. Additionally, Zulch states that project manager that is trusted by the team and gets the team to work together will communicate, and then Mnkanlka states that project communication is expected to provide the real-time decisions in a project and to share the collected information among the stakeholders[3-4]. One of the infrastructures in the project communication process is message sender media, such as e-mail or instant messaging, or various applications of collaborative tools. Additionally, Baruah states that the use of social media can help individuals or organizations to establish themselves as experts in their fields, and then they can begin to influence this field [5]. However, that technology and systems, communication skills of the project stakeholders, teamwork and collaboration, organizational structure have a good influence on project success such are cost, time, and quality of projects[6]. Based on the problems that have been described. The research is purposed to help the project manager in planning communication on the project and helping the project team in knowing the meeting schedule and progress report submission schedule. Project managers and project team need to use the
right infrastructure system in order to get the users friendly platform rather than conventional clumsy paperwork documentation in communication planning processes [7]. Then the communication planning infrastructure design is expected to help the project manager in project planning and control the project execution using communication media or web-based system.

2. Methods
The methodology used in this research was descriptive method. The methodology carried out in this research can be seen in the Figure 1.

3. Results and Discussion
Plan communications is the process of determining the project stakeholder information needs and defining a communication approach [1]. Then project manager should identifying stakeholders first in order to know how many stakeholders will be involved in the project. The following are the stages in planning communication:

3.1 Communication requirement analysis
The project manager should determine and limit who will communicate with whom and who will receive what information in project execution. These requirements are defined by identifying project organization and stakeholder responsibility and combining the type and format of information needed with an analysis of communication infrastructure design. Table 1 describes the stakeholders involved in the project communication process.

Table 1. Project stakeholders

| Number | Stakeholders       | Acronym |
|--------|--------------------|---------|
| 1      | Project Manager    | PM      |
| 2      | Project Administrator | PA    |
| 3      | System Analyst     | SA      |
| 4      | Programmer         | PROG    |
| 5      | Database Designer  | DD      |
After knowing the personnel involved in the project, project manager creates a work schedule. Figure 2 describes the work schedule using Gantt chart.

| Activity                        | Aug | Sept | Oct | Nov | Dec |
|---------------------------------|-----|------|-----|-----|-----|
| User requirements               |     |      |     |     |     |
| Design and Analysis Backend     |     |      |     |     |     |
| Design and Analysis Frontend    |     |      |     |     |     |
| Construction                    |     |      |     |     |     |
| Performance                     |     |      |     |     |     |
| Finishing                       |     |      |     |     |     |
| Testing                         |     |      |     |     |     |
| Documentation                   |     |      |     |     |     |

**Figure 2. Gant chart of work schedule**

Based on the work schedule that has been made, this schedule will be used as a guide for communication during project execution.

**a. Project communication planning stages analysis**

The stages in communication planning are carried out before the project execution so that the project manager can determine the target deadline for the project, and all work is expected to be successful. The communication management plan begins with creating a Work Breakdown Structure (WBS) and a project charter which describes stakeholders who will be involved in the project [8].

Following are the steps that the project manager can do in project communication planning:

1. **Planning Meeting Schedule**

   In Table 2 describes the planning of the meeting schedule that will be used as a guide for project manager and project team to know meeting schedule in project execution.

   | Types of meeting | Person in charge | Agenda                          | Participant | Inputs                          | Outputs                          | Date       |
   |------------------|------------------|---------------------------------|-------------|---------------------------------|----------------------------------|------------|
   | Planning         | PM               | Schedule planning               | SA, PROG, PA| WBS, Budget plan                | Work schedule                    | 08/03/2012 |
   | Planning         | PM               | Preparation of application      | SA, DD, PROG, PA | WBS                          | Project charter                  | 08/05/2012 |
   | Client meeting   | PM, SA           | Analysis of user requirements   | SA, PROG    | Update user requirements        | User requirements updated        | 08/07/2012 |
   | Project team     | PM               | Developing progress             | SA, DD, PROG, PA | Weekly work progress report    | Progress report documents updated | 11/01/2012 |
   | Closing          | PM               | Project closing                 | SA, DD, PROG, PA | Final report documents         | Final project documents          | 12/18/2012 |
2. Planning a Reporting Schedule

Table 3 describes the planning of the reporting schedule that will be used as a guide for communicating the reporting of project progress, so that the project can run on time.

| Type of reporting | Person in charge | Item reported | Sent to | Inputs | Outputs | Date       |
|-------------------|-----------------|---------------|---------|--------|---------|------------|
| Progress report   | SA, PROG        | The result of the analysis completed | PM, PROG | Progress report documents | Progress report documents | 08/09/2012 |
| Progress report   | PROG            | Percentage of completion work | PM       | Progress report documents | Progress report documents | 10/27/2012 |
| Minutes of meeting/email | DD, PROG | List of delayed work | PM, PA | WBS, and work schedule | Progress report documents | 09/01/2012 |
| Closing report    | PROG, PA        | Final report document | PM       | Recapitulation of progress reports | Final report document | 12/18/2012 |

b. System Architecture Model

Based on analysis result of project communication planning then Figure 3 describe the recommended system architecture in planning communication in an IT project.

![Figure 3. System Architecture Model](image-url)
Based on the system architecture model, then Figure 4 below is an example of a system interface design to display the project schedule. In addition, users of the Arima method can be used for the communication process by sending problems or work progress reports.

![System Interface design of project schedule](image)

**Figure 4.** System Interface design of project schedule

c. Communication infrastructure design recommendation

Based on the analysis and design of the infrastructure that has been carried out, the infrastructure recommendations that can be used to carry out communication management of IT projects are using a website-based information system, so that the project manager can plan communication until the project is supervised, and can know the progress of the project takes place. Actually, the process in project communication is very simple. However, Yin *et al* state that communication with direct speech can significantly affect the attention of participants so that it can also significantly affect their understanding, as well as when communication takes place during project execution [9]. The use of the PMBOK standard focuses on project management and can factor for increasing productivity and achievement projects, and the main stages in the standard are initiation, planning, execution, control, and project closure [10]. Then the stage of project communication management is of the important factors in the project completion stage. In addition, the recommended system is expected to help the project team to communicate during the project and update the progress of the project work [11].

4. Conclusion

Based on the analysis and the results of this research, it can be concluded that the recommendation of the communication infrastructure is web-based information system that can be used in communication planning such as creating project schedules, meetings with stakeholders, and delivery of project progress reports schedule, so that project managers can minimize delays in a project.

Acknowledgements

This research was inspired by the part of the research of my student that has been graduated from Informatics Engineering UNIKOM and for previous researches that have been researched about project communication management plan. Special thanks for Universitas Komputer Indonesia who had supported this research.
References

[1] Hansman, R. J., Magee, C., De Neufville, R., Robins, R., and Roos, D. (2006). Research agenda for an integrated approach to infrastructure planning, design and management. *International Journal of Critical Infrastructures, 2*(2-3), 146-159.

[2] Holmes, B. J., Best, A., Davies, H., Hunter, D., Kelly, M. P., Marshall, M., and Rycroft-Malone, J. (2017). Mobilising knowledge in complex health systems: a call to action. *Evidence and Policy: A Journal of Research, Debate and Practice, 13*(3), 539-560.

[3] Zulch, B. (2014). Leadership communication in project management. *Procedia-Social and Behavioral Sciences, 119*, 172-181.

[4] Mnkandla, E. (2013). A review of communication tools and techniques for successful ICT projects. *The African Journal of Information Systems, 6*(1), pp.112-122.

[5] Baruah, T. D. (2012). Effectiveness of Social Media as a tool of communication and its potential for technology enabled connections: A micro-level study. *International Journal of Scientific and Research Publications, 2*(5), pp. 1-10.

[6] Mardiani, G. T. (2018, August). Construction industry project planning information system. In *IOP Conference Series: Materials Science and Engineering, 407*(1), p. 012093). IOP Publishing.

[7] Firdaus, C., Wahyudin, W., and Nugroho, E. P. (2017). Monitoring System with Two Central Facilities Protocol. *Indonesian Journal of Science and Technology, 2*(1), 8-25.

[8] Taleb, H., Ismail, S., Wahab, M. H., Mardiah, W. N., Rani, W. M., and Amat, R. C. (2017). An overview of project communication management in construction industry projects. *Journal of Management, Economics, and Industrial Organization, 1*(1), 1-8.

[9] Yin, C. F., and Kuo, F. Y. (2013). A study of how information system professionals comprehend indirect and direct speech acts in project communication. *IEEE Transactions on Professional Communication, 56*(3), 226-241.

[10] Soegoto, E. S., Azhari, R. H. G., and Istiqomah, A. O. (2018, August). Development of desktop-based information system on waste management bank. In *IOP Conference Series: Materials Science and Engineering, 407*(1), p. 012058).

[11] Tavan, F., and Hosseini, M. (2016). Comparison and analysis of PMBOK 2013 and ISO 21500. *Journal of Project Management, 1*(1), 27-34.