

# DESIGNING PROJECT GUIDELINES BASED ON RESPONSIBILITY ASSIGNMENT MATRIX IN THE ORGANIZATION OF NODE-B FIBER OPTIC RETRACTION PROJECT AT PT. XYZ

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## Abstract

PT.XYZ has a Node-B fiber optic retraction project at Sentral Telepon Otomatis (STO) Rancaekek. The process of implementing and working on the project submitted by the vendor. In the project, an error occurred during the installation carried out by the vendor. After the analysis, the field supervisor found a delay in understanding the management core process. It can be completed in 1 day but in reality it was delayed 4 days. It is because the workers from vendor neglect to read one of the important documents, which is management core. Optical Network Terminal (ONT) can be physically connected to Optical Termination Box (OTB) using a patchcord, but when configured by the system, Optical Network Terminal (ONT) is not detected. This is due to a mismatch between the brand & type of Optical Network Terminal (ONT) with the brand & type of Optical Line Termination (OLT) in Sentral Telepon Otomatis (STO) Telkom. Vendor workers do trial and error 3 times before it can be resolved.

In this research, the assignment matrix was designed using the RACI Matrix method. RACI Matrix is one of the technical methods and tools to support the design of the assignment matrix on the project. The RACI Matrix which consists of Responsibility, Accountable, Consulted, and Informed aims to determine the clarity of roles and responsibilities for each individual in each activity. In this Node-B project there is no clarity regarding roles and responsibilities, thus causing miscommunication between individuals.

The final output of this research is in the form of project guidelines. The project guidelines are recommended for project workers from vendor such as site manager, site coordinator, vendor admin, and team workers for similar projects in the future. From this project guidelines, it can be seen who the Person In Charge (PIC) for each activity and how many resources are needed for each activity.

**Keywords :** Project, Project Management, RACI Matrix, Project Guidelines

## I. Introduction

The project is an activity that is temporary because there is an initial and final deadline for project implementation. Projects are carried out to fulfill a purpose, especially, to produce unique services or products, to produce unique services or the ability to perform services, to produce unique results and to produce a unique combination of one or more products, services or results [1].

Project Management is the application of knowledge, expertise and skills, the best technical way with limited resources, to achieve predetermined goals and objectives in order to obtain optimal results in terms of cost, quality and time performance and work safety [2]. According to [3] project management is a process for planning, coordinating, and controlling complex and diverse modern industrial activities in commercial project activities. There are three processes that must be carried out by a project manager including creating a project quality management plan, managing quality and quality control [1]. Therefore, the quality management plan is to develop standards, procedures, people responsible for managing and controlling quality, which methodology to use for the quality process and etc [1].

The globalisation and the rapid growth of industry have increased the number of complex projects across many sectors, including defence, infrastructure, and aerospace. These projects tend to require large budgets and complex systems causing irregularity, uncertainty and have project performance that is late in the completion process and fails to deliver the objectives of the project being worked on [4]. PT.XYZ is a company engaged in the information and communication sector as well as the largest telecommunications network and service provider in Indonesia. PT.XYZ serves millions of customers throughout Indonesia with telecommunications services that include cellular communications, network and interconnection services, fixed wireline and fixed wireless telephone, as well as internet and data communication services. PT.XYZ also provides various services in the fields of information, media and edutainment, including e-Payment services, IT enabler, e-Commerce, cloud-based and serve-based managed services, and other portal services.

One of the service products from PT. XYZ is Fiber To The Tower (FTTT). Fiber To The Tower network plays a role in equitable distribution of network development and assists in meeting customer needs in terms of communication. The design of Fiber To The Tower (FTTT) is based on Gigabit Passive Optical Network (GPON) technology. PT.XYZ designed the Fiber To The Tower (FTTT) network to support the 4G LTE (Long Term Evolution) network. One of the projects undertaken by PT. XYZ related to the Fiber To The Tower (FTTT) network system is called the Node-B project.

According to the results of interviews that have been conducted with the field supervisor, the S-Curve was obtained. The S-Curve show that the Node-B project is already finish in one of the locations on the project. In this project there was a miscommunication in one of the activities that caused the project did not goes as planned.



Figure 1. 1 S-Curve

In the S-Curve above, it can be seen that there is a delay in the implementation of the project which is targeted to be completed within 25 calendar days, but in practice the project takes 28 calendar days. One of the projects that located at STO Rancaekek with the site code BDS535 was delayed, therefore the author took this object for the research. There are three aspects and several factors that caused delays in completing the project. The cause factors have been presented in Figure I.2

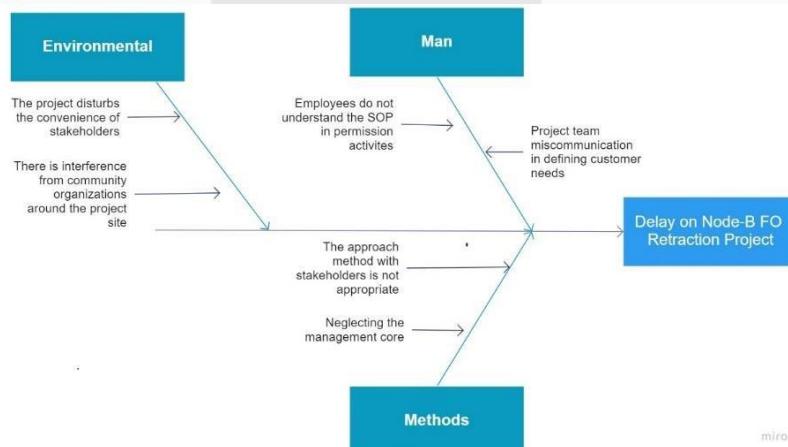


Figure 1. 2 Root Cause Diagram

It can be seen from Figure I.2, there are several cause factors during Node-B fiber optic retraction project and can be mapped into 3 aspects. The first aspect is Man, the second aspect is Methods, and the third aspect is Environmental. From man aspect, there are two cause factors, the first is employees do not understand the SOP in approval activities, and project team miscommunication in defining customer needs. From environmental aspect, there are two cause factors, the first is the project disturbs the convenience of stakeholders and there is interference from community organizations around the project site, and the last is the methods aspect, there are two cause factors, first is the approach method with stakeholders is not appropriate and neglecting the management core. One of the cause factors that can be controlled by the internal project team is neglecting the management core. Management core is a document that contains the mapping for each core on the fiber optic, which is documented starting from the fiber optic core entry to the Optical Line Termination (OLT) port, Optical Distribution Cabinet (ODC) port, Optical Distribution Panel (ODP) port and contains a list of codes for parts used, such as the codes for Optical Network Terminal (ONT) & Optical Termination Box (OTB).

Table I. 1 Gantt Chart

No	Work Package	Plan Duration (Days)	Actual Duration (Days)	OCTOBER			NOVEMBER																							
				26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Preparation	10	10																											
3.5	Understanding The Management Core	1	4																											
3.6	ONT Installation	1	1																											

As we can see in table I.1 the Node-B fiber optic retraction project with the site code BDS535 in the West Bandung Area by PT.XYZ, the field supervisor found a delay in understanding the management core process, based on the time that has been planned before, it can be completed in 1 day but in reality, it was done more than 1 day, which was 4 days delayed. It is because workers from vendor neglect to read one of the important documents, especially the management core document, before carrying out the ONT installation process. ONT can be physically connected to OTB using a patchcord, but when configured by the system, ONT is not detected. The vendor workers do trial and error 3 times before it can be solved. This is due to a mismatch between the brand & type of ONT with the brand & type of OLT in STO Telkom.

neglecting the management core before carrying ONT installation is caused by the lack of awareness to take a consideration to the management core, the workers confused about who responsible to carried out understanding the management core or the workers just responsible on installation process. Therefore, the method is needed for similar in mapping the roles and responsibilities for workers so that similar problems do not occur in future projects and the guidelines is needed to know the limits of their work, the resource allocation for each activity, and the checklist box to know each activity is already done by the Person In Charge (PIC) in similar future projects.

According to [5] there are several tools and techniques to support the design of the assignment matrix on the project, which is the RACI Matrix, commonly known as the Responsibility Chart or Responsibility Assignment Matrix (RAM). RACI which consists of Responsibility, Accountable, Consulted, and Informed has the benefit that it can be fully achieved if the project management team understands and uses it according to the organizational context. For example, if the work environment is volatile and the people involved in the project are constantly moving in and out, the RACI Matrix is a better assignment matrix. On the other hand, if the resource is stable, then the RACI Matrix is great to use.

## II. Literature Review

### II.1 Data Representation

This techniques can be used for this process but are not limited to charts. To documenting and communicating the team and responsibilities, there are a various formats exist. Regardless of the method used to document the member team roles, the objective from data representation is to ensure that each activities and the roles has clearly understand by all the team members [7].

### II.2 RACI Matrix

According to [9], RACI Matrix is one of the technique for identifying activities and roles for each individual in a project. The RACI Matrix was previously known by Decision Rights

Matrix and also known as Responsibility Charting. The RACI Matrix allows managers to participate in making decisions about the assignment of roles and responsibilities between teams. The RACI Matrix is a way to examine process steps, tasks, activities, efforts, decisions, or audits to determine who is accountable, responsible, informed or consulted.

The tools used to perform RACI are:

1. Responsible, the one performing the work and responsible for fulfilling the activity until the work is finished and approved by the accountable person.
2. Accountable, The person who has authority to decide on a problem or approve the answer to a decision taken and all decisions must be accounted for
3. Consulted, which is a person who provides advice, opinion or contribution in the decisions taken.
4. Informed, The people who are notified after a decision has been made, and carried out by one-way communication.

When RACI is shared with all the stakeholders, it also adds value by discovery any missing work-packages, missing roles, missing stakeholders, thus providing an opportunity for early correction. Not only that, but also RACI can be helpful as a checklist or reference when assigning resources, duration and cost estimates, to ensure that everyone who has a role in tasks has been properly accounted for, and that help project manager for controlling and monitoring project team [8].

### III. Conceptual Model

The conceptual model of a research is a conceptual model that shows a logical relationship between factors or variables that have been identified as important for analyzing research problems. The conceptual model is built on existing theories and previous research documents so that it is integrated as a unit.

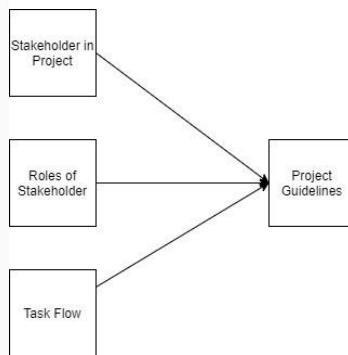


Figure III. 1 Conceptual Model

This conceptual model explains how the variables needed in the research to design a project guidelines. The steps to design project guidelines are to collect who are involved in the project, map out the roles and responsibilities for each worker, and design a task flow to clarify the activities and who is responsible for these activities. After that, project guidelines designed to make easier for workers to see their roles and responsibilities.

## IV. Discussion

### IV.1 Work Breakdown Structure (WBS)

Work Breakdown Structure (WBS) is a hierarchy of all the work that must be done by the project implementation team to achieve the project objectives. Each division of work is broken down into more detailed sections [7]. The following is a brief Work Breakdown Structure (WBS) of the Node B project at PT. XYZ

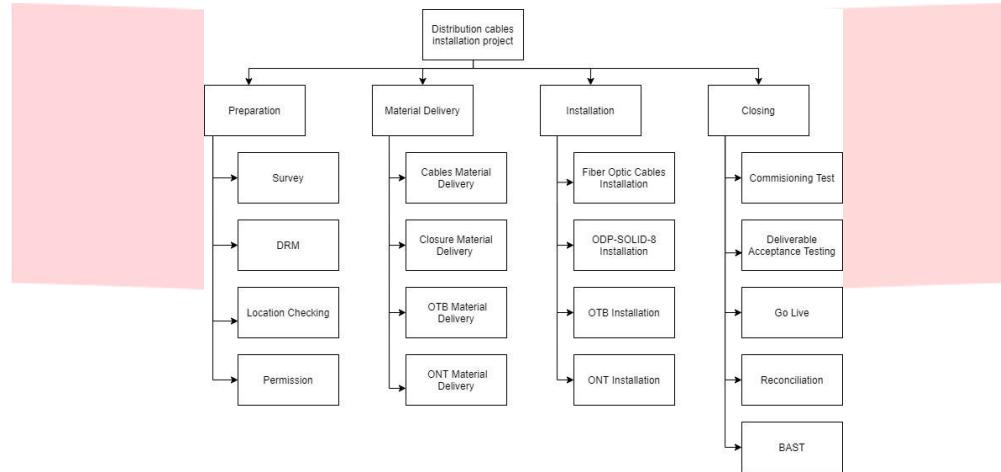
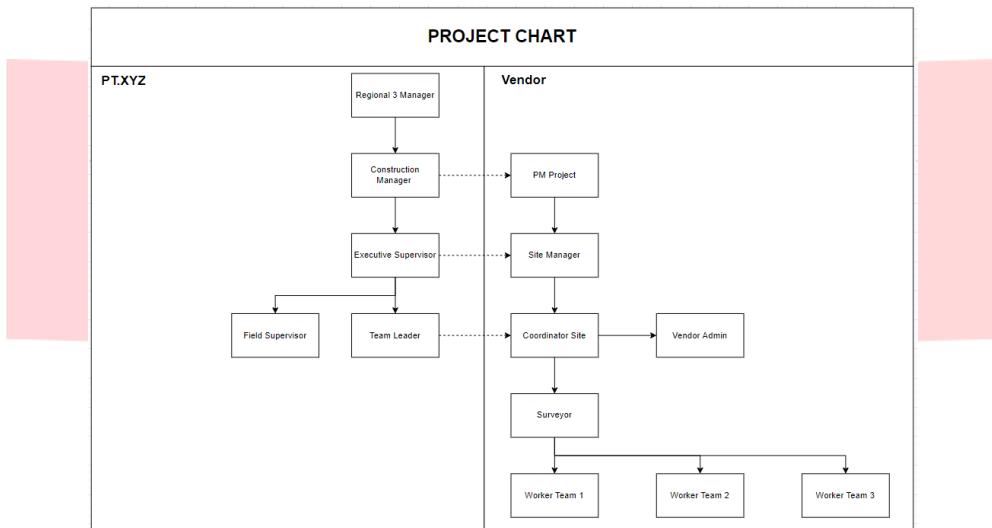


Figure IV. 1 Work Breakdown Structure(WBS)

Based on Figure IV.1 above, Work Breakdown Structure (WBS) level 2, it can be seen that the Node B project consists of several jobs, namely preparation work, material delivery, installation and closing.

## IV.2 Organizational Structure

At this stage the author will perform data processing on the data that has been collected, the author uses the organizational structure to determine the RACI Matrix on Node-B fiber optic retraction project. The following is an Organizational Structure from the Node-B project at PT.XYZ.



IV. 2 Organizational Structure

Based on Figure IV.2 above, it can be concluded that there are important positions in this project to carry out this project, especially Regional 3 Manager, Construction Manager, Site Manager, Field Supervisor, Surveyor, Team Leader, PM Project.

## IV.3 Task Flow

Task Flow is a collection of interrelated work to solve a particular problem and achieve goals. Task Flow helps the parties involved in the process to understand every flow of the process. The following is a task flow for the Node-B project at PT.XYZ.

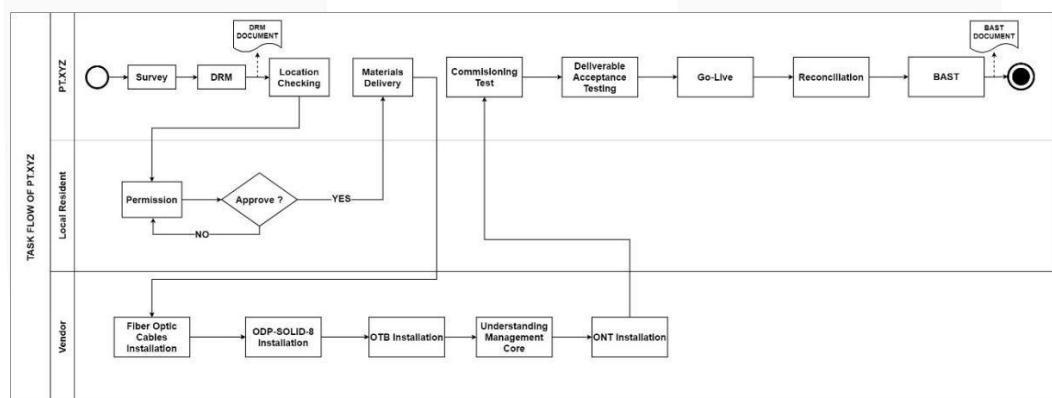


Figure IV. 3 Business Process

Figure IV.3 above is the task flow for the project by PT.XYZ, especially the Node-B project. This business process is divided into 3 parties, the first is PT. XYZ itself as the project owner, local residents, and the vendor that will be carried out the installation process.

## IV.4 RACI Matrix

Proper division of tasks can affect the performance of project team workers. RACI Matrix is one way that can be used to help identify an appropriate role and responsibility for project team workers. RACI Matrix can help all team workers do their jobs better and understand more about their responsibilities.

Table IV. 4 RACI Matrix

No	Work Package	PM Project	Site Manager	Coordinator Site	Vendor Admin	Worker Team	Local Resident
1	Survey	A	I/C	R	-	-	-
2	DRM	A	I/C	R	-	-	-
3	Location Checking	A	I/C	R	-	-	I
4	Permission	A	I/C	R	-	-	I
5	Cables Material Delivery	A	C,R	I	-	R	I
6	Closure Material Delivery	A	C,R	I	-	R	I
7	OTB Material Delivery	A	C,R	I	-	R	I
8	ONT Material Delivery	A	C,R	I	-	R	I
9	Fiber Optic Cables Installation	A	I/C	I	-	R	I
10	ODP-SOLID-8 Installation	A	I/C	I	-	R	I
11	OTB Installation	A	I/C	I	-	R	I
12	Understanding Management Core	A	I/C	R	-	I	I
13	ONT Installation	A	I/C	I	-	R	I
14	Commissioning Test	A	I/C	R	I	-	I
15	Deliverable Acceptance Testing	A	I/C	R	I	-	I
16	Go-Live	A	I/C	R	I	-	I
17	Reconciliation	A	I/C	-	R	-	I
18	BAST	A	I/C	-	R	-	I

From task flow and organizational structures, the RACI Matrix can be created. The RACI Matrix is about the responsibilities of worker as R which means Responsible is the one who performing the work and responsible for fulfilling the activity until the work is finished and approved by the accountable person, A which means Accountable is the person who has authority to decide on a problem or approve the answer to a decision taken and all decisions must be accounted for, C which means Consulted, which is a person who provides advice, opinion or contribution in the decisions taken, and the last is I means Informed is the people who are notified after a decision has been made, and carried out by one-way communication. As we can see in table IV.3, this RACI Matrix, it can be seen that the site coordinator is carried out to understand the important documents needed before carrying out ONT installation activity and project team workers can focus on ONT installation activity.

#### IV.5 Project Guidelines

From the results of the RACI Matrix, the project guidelines can be designed and used by project workers from vendor for similar projects in the future, so it is hoped no more miscommunication problems for the workers.

Table IV. 4 Project Guidelines

No	Work Package	Person In Charge	Resource Allocation	CHECKLIST BOX	
				YES	NO
1	Survey	Coordinator Site	1		
2	DRM	Coordinator Site	1		
3	Location Checking	Coordinator Site	1		
4	Permission	Coordinator Site	1		
5	Cables Material Delivery	Site Manager, Worker Team	2		
6	Closure Material Delivery	Site Manager, Worker Team	2		
7	OTB Material Delivery	Site Manager, Worker Team	2		
8	ONT Material Delivery	Site Manager, Worker Team	2		
9	Fiber Optic Cables Installation	Worker Team (Retraction Cables Team & Fiber Optic Joiner)	6		
10	ODP-SOLID-8 Installation	Worker	1		
11	OTB Installation	Worker	1		
12	Understanding The Management Core	Coordinator Site	1		
13	ONT Installation	Worker	1		
14	Commissioning Test	Coordinator Site	1		
15	Deliverable Acceptance Testing	Coordinator Site	1		
16	Go-Live	Coordinator Site	1		
17	Reconciliation	Vendor Admin	1		
18	BAST	Vendor Admin	1		

#### V. Conclusion

Based on the results of this research in the form of a design of the RACI Matrix can be used as lessons learned for similar types of projects in the future and are expected to optimize the implementation of these projects. By designing the RACI Matrix for Node-B project at PT.XYZ, it is hoped that it will further clarify the project team's roles and responsibilities in the project. And it is also hoped that the RACI Matrix design can reduce miscommunication which results in delays.

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