

UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL  
(UCI)

PROJECT MANAGEMENT PLAN FOR A NETWORK INFRASTRUCTURE  
UPGRADE IN A MANUFACTURING PLANT

ALEJANDRA RIOS OROZCO

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Carlos Castro  
TUTOR

---

Juan Camilo Delgado Acevedo  
REVIEWER No.1

---

Oswaldo Martinez  
REVIEWER No.2

---

Alejandra Rios Orozco  
STUDENT

## **DEDICATION**

For my husband, who somehow managed to be nothing but supportive, helping take care of our little one and for your patience and love to complete this final graduation project.

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Alejandra Rios Orozco

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## **ABBREVIATIONS AND ACRONYMS**

- BRM** - Business Relationship Manager
- CAR** – Capital Appropriation Request
- FMEA** – Failure Mode and Effect Analysis
- GAN** - Global Area Network
- IDF** – Intermediate distribution frame
- MDF** – Main distribution frame
- MX** - Mexico
- PMO** - Project Management Office
- PMI** – Project Management Institute
- SIS** - Site Infrastructure Support
- UAT** – User Acceptance Test
- VOIP** - Voice over IP
- WAN** - Wide Area Network
- WAPs** -Wireless Access Points

## **EXECUTIVE SUMMARY (ABSTRACT)**

Network technologies are essential nowadays in digital economy. Multiple interconnected networks create the base that delivers the information and services we use daily. Projects including any networking infrastructure changes must stick to solid project management discipline. No matter if It embraces only installation, configuration, or upgrade of a network, it needs to be delivered on time, within budget, and met the defined goals. The evolving digital era that we live in require new technologies every day, our networks must be in the most optimal conditions to support these new technologies.

Manufacturing plants are always trying to improve processes and within these processes the IT systems plays a particularly important role. Therefore, to support the constant changes they need to increase efficiencies and capabilities in the network environment.

Eaton corporation is a worldwide organization that focus to delivery power management solutions. They have several manufacturing plants all over the world. They have a very structured organization and multiple IT PMO offices to handle the delivery of the projects globally.

The IT Infrastructure PMO office handles various programs, one of them is the delivery of network projects, this program received a request for deliver a network upgrade project in one of the manufacturing plants in Monterrey MX. The PMO office have some process in place but there are some needs of improvement to be made by following PMI standards recommendations. Hence, a project management plan was created, including tools and techniques and document templates to complement these processes. This plan will be used as a baseline for future projects alike.

The general objective was: To develop a Project Management Plan for a network Infrastructure upgrade in a Manufacturing plant in order to have a baseline for all the activities that involve this type of projects and assure the Project success following the Project Management Institute best practices. The specific objectives were: To create a Project charter to define the key input elements to produce the project management plan, to develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction, to develop a scope management plan in order to assure includes all required work to the project success, to develop a requirements management plan in order to setup and understand how requirements will be identified, documented, analyzed and managed for the project, to develop a schedule management plan in order to ensure the timely completion of the project, to develop a cost management plan in order to predict coming expenses to reduce the chances of going over budget, to develop a quality management plan to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance, develop a resource management

plan to identify, obtain, and manage the resources needed for the successfully completion of the project, develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy, develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks, develop a procurement management plan to purchase products, services by the develop of agreements, develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.

The methodology used for research was qualitative instruments like content/Text analysis by analyzing different texts such as current project management processes within the company, PMBOK Guide, Websites, Interviews with other project managers and network supervisors on how do they think it'll be the best approach to follow for create this plan and case studies research on how other companies handle these type of projects.

The project management plan was built by an extensive analysis of the current company processes and by comparing current practices with the PMBOK Guide, in addition the necessary templates were established to document all project information and the most significant thing ensure quality and objectives are met on time and within budget. The company didn't consider a structured project plan for the specific knowledge areas, therefore, it was recommended to include all of them on the main project management plan. The finished plan has provided an improved approach for applying Network Infrastructure projects in the future and to have a template archive for the PMO office.

## **1 INTRODUCTION**

### **1.1. Background**

Cooper Industries maquiladoras in Mexico were acquired by Eaton Corporation by the end of 2013. After the acquisition, the IT structure was redesigned, and an Infrastructure PMO office was developed to have a better management for all the IT infrastructure projects within the company globally. One of the programs that this office ran is IT Network infrastructure projects in manufacturing plants and in sales offices globally. The use of project management guidelines in the organization is good but there are a few improvements that can be made in the process.

The organization has currently a request from a manufacturing plant Monterrey, MX to upgrade the current IT network infrastructure. This manufacturing plant require the network infrastructure upgrade in order to support wireless coverage in all the facility and provide wired network connectivity in some areas for future growth. The budget has been approved already from the previous year. The initial requirements from the project have been collected, the Infrastructure PMO office must create the Project Management Plan what will be used to guide the execution, monitoring, controlling, and closing of the project.

Following the Project Management plan created as a result of this research project will help on the success and delivery of the IT network Infrastructure program within the PMO office.

### **1.2. Statement of the problem**

At Eaton, the IT projects are managed in a globally matter, the Infrastructure PMO Office is in charge of managing international IT infrastructure projects and they manage projects by programs, such as platform, new site builds, security and network, the network program require a more robust project management plan to successfully deliver IT network infrastructure project upgrades in manufacturing plants and have a better documentation repository for similar projects. The current

process will be analyzed and by applying the PMBOK guide as our base, a project management plan will be developed, including tools and techniques and document templates.

### **1.3. Purpose**

Research shows that project management performance is low in most organizations, including IT. (Armshaw, D, 2005). Network technologies are essential in today's digital economy. Multiple interconnected networks create the pillar that delivers the information and services we use every day. Projects involving any networking infrastructure changes must stick to a solid project management discipline. No matter if it embraces only installation, configuration, or upgrade of a network, it needs to be delivered on time, within budget, and meet the defined goals. Therefore, the project manager will pursue the creation of the project management plan for an IT network infrastructure upgrade by defining the management of all the important elements of the project. This will include the development of the secondary documents which will be adopted as the guide through the project execution. The Project Management Institute (PMI) PMBOOK will be the base for this research proposal. The intent will be to create a project management plan, including the project integration, scope, time, cost, quality, human resources, communication, risk, procurement, and stakeholder management plans.

### **1.4. General objective**

To develop a Project Management Plan for a network Infrastructure upgrade in a Manufacturing plant to improve the quality of delivery of the project management process in the network program by following the Project Management Institute standard and to have a baseline for all the activities that involve this type of projects.

### **1.5. Specific objectives**

1. To create a Project charter to define the key input elements to produce the project management plan
2. To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction

3. To develop a scope management plan in order to assure includes all required work to the project success.
4. To develop a requirements management plan in order to setup and understand how requirements will be identified, documented, analyzed and managed for the project.
5. To develop a schedule management plan in order to ensure the timely completion of the project.
6. To develop a cost management plan in order to predict coming expenses to reduce the chances of going over budget.
7. To develop a quality management plan in order to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance.
8. To develop a resource management plan to identify, obtain, and manage the resources needed for the successful completion of the project.
9. To develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy.
10. To develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks.
11. To develop a procurement management plan to purchase products, services by the develop of agreements.
12. To develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.

## **2 THEORETICAL FRAMEWORK**

### **2.1 Company/Enterprise framework**

#### **2.1.1 Company/Enterprise background**

Eaton corporation is a power management company made up of over 97,000 employees, doing business in more than 175 countries. Their energy-efficient products and services help their customers effectively manage electrical, hydraulic and mechanical power more reliably, efficiently, safely and sustainably. By giving people tools to use power more efficiently. Helping companies do business more sustainably. (Eaton, 2020)

As mentioned on the background, the company has multiple IT PMO offices that the role for them is to delivery all types of projects within IT, these PMO where separated due to the Large Company and different IT Structure. The IT infrastructure PMO office has already some processes in place to manage projects but the strategy and plan to deliver IT network infrastructure project within Manufacturing plants require a more robust process. They currently have a budget yearly process that is ran on July with all the IT business relationship managers to pre-approve next year projects budget and that list is finalized around August. So, starting the year, the PMO office has already identified all the projects that will be worked on during the year and the priority for each.

#### **2.1.2 Mission and vision statements**

Eaton's mission is to improve the quality of life and the environment through the use of power management technologies and services. They provide sustainable solutions that help their customers effectively manage electrical, hydraulic and mechanical power – more safely, more efficiently and more reliably. Eaton's 2019 revenues were \$21.4 billion, and they sell products to customers in more than 175 countries. They have approximately 97,000 employees.

The Eaton vision is to improve the quality of life and the environment through the use of power management technologies and services.

### 2.1.3 Organizational structure

The company is a worldwide organization. The IT Infrastructure PMO Department manage projects internationally from the different manufacturing plants or offices dispersed all over the world. As mentioned before, the PMO manage programs to better structure their processes, they have a manager assigned to each programs a project manager supervisor to who all the project managers report, they are trained in the different programs and can have projects assigned from each of them. Below the structure is displayed in **figure 1**.

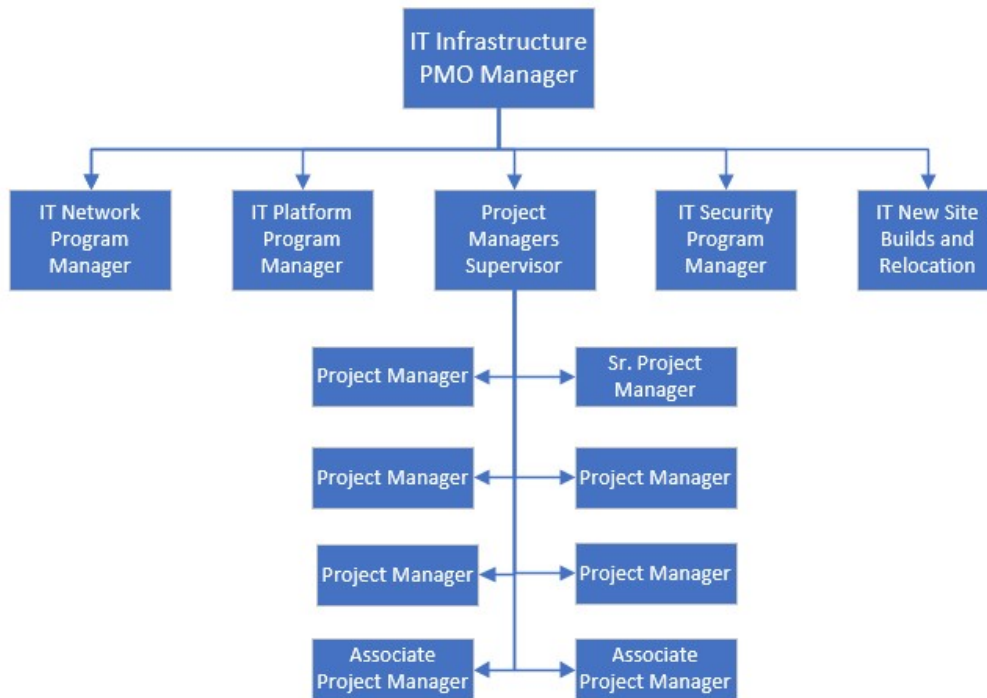


Figure 1: Organizational structure (Source: Internal Organizational Structure)

### 2.1.4 Products offered

The enterprise offers a large type of products:

- Aerospace actuators and motion control
- Backup power, UPS, surge & IT power distribution



- Clutches and brakes
- Conduit, cable, and wire management
- Cylinders
- Differentials and traction control
- Ducting solutions
- Electrical circuit protection
- Electronic components
- eMobility and vehicle electrical components
- Enclosures
- Engine solutions
- Filtration solutions
- Fuel systems, emissions and components
- Furniture
- Golf grips
- Hose, tubing, fittings and connectors
- Hydraulic power units and heat exchangers
- Industrial controls, drives, automation and sensors
- Lighting and controls
- Low-voltage power distribution & control systems
- Medium-voltage power distribution & control systems
- Motors and generators
- Plastics
- Process safety, automation, test and measurement
- Pumps
- Residential
- Safety, security & emergency communications
- Server racks, enclosures & airflow management
- Steering systems
- Support systems
- Transmissions

- Utility & grid solutions
- Valves
- Wiring devices & connectivity

The IT infrastructure PMO offers the following services:

- Provide a structured governing project management body
- Provide a central repository for all projects and project information.
- Provide a centralized management structure for all project management functions within IT Infrastructure
- Provide project portfolio reporting capabilities.
- Outline a well-defined project management process or methodology
- Mentor and train an experienced and competent staff of project managers.

## **2.2 Project Management concepts**

### **2.2.1 Project**

The IT infrastructure involve all elements that support the management and usability of data and information. These cover the physical hardware and facilities (including data centers), data storage and retrieval, network systems, legacy interfaces, and software to support the business objectives of an enterprise. An IT infrastructure project involves upgrades, integrations and repairs for such elements mentioned. (Smartsheet, 2020)

A project is defined as “a temporary endeavor undertaken to create a unique product, service, or result”. (Project Management Institute, 2017). Every IT Infrastructure project will be unique, even though it has similarities, it involves different elements within.

### **2.2.2 Project management**

IT Infrastructure project management involves many of the general project management elements like planning, execution, monitoring, testing, and project closure. Although, it is also highly technical: all projects are associated with maintaining the continual operation of the IT infrastructure. (Smartsheet, 2020).

Project management is, the application of knowledge, skills, tools and techniques to project activities to meet the project requirements. It has always been practiced informally, but with the implementation of the PMI's "A Guide to the Project Management Body of Knowledge (PMBOK® Guide)" The practice has been standardized to follow these elements:

Project Management Processes:

1. Initiation
2. Planning
3. Execution
4. Monitor and Control
5. Closure

Project Management knowledge areas:

1. Integration
2. Scope
3. Time
4. Cost
5. Quality
6. Procurement
7. Human Resources
8. Communication
9. Risk Management
10. Stakeholder management

Effective project management could bring the following benefits to an organization:

- Meet Business goals
- Stakeholder satisfaction
- Deliver the right products at the right time
- Resolve problems and issues
- Optimize the use of resources
- Manage change in a better manner.
- Increase success

Following the PMBOK standards as reference, a Project Management plan will be developed for IT Infrastructure network upgrades in a manufacturing plant.

### **2.2.3 Project life cycle**

A project life cycle is a series of phases that a project moves through from its start to finish. It provides the basic guideline for managing the project, we can find 2 types of project life cycle, predictive or adaptive. We will be determining the type of project life cycle by analyzing the project.

- In a predictive life cycle, the project scope, time, and cost are determined in the early phases of the lifecycle. Any changes to the scope are meticulously managed. We can find these defined as waterfall life cycles.
- In an iterative life cycle, the project scope is determined early in the project life cycle, but time and cost estimates are routinely modified as the project team understands the product. Iterations develop the product by a series of repeated cycles.
- The hybrid cycle is a combination of predictive and adaptive.

(Project Management Institute, 2017)

At the end the project management team will be choosing what is the best life cycle for each project. The names, number, and duration of the project phases are defined by the organization.

The IT Infrastructure PMO Office manage the following Project Phases:

1. Request Phase 0
2. Initiation Phase 1
3. Definition Phase 2
4. Development Phase 3
5. Validation Phase 4
6. Production Phase 5
7. Audit Phase 6

The mentioned phases will be used to define the project management plan for the IT infrastructure upgrade for a manufacturing plant. See **figure 2**



Figure 2 : Project management phases (Internal Documentation)

#### 2.2.4 Project management processes

Best practices dictate a specific series of process group that should be performed through the project life cycle. These are referred to as Initiating, planning, executing, monitoring, and controlling, and closing. We will be only including the initiation and planning process groups within the project management plan for an IT Network Infrastructure upgrade in a manufacturing plant.

#### 2.2.5 Initiating

It is where we define what is to be accomplished. This is where the project is formally authorized by the sponsor, initial scope, and stakeholders defined. This process group is performed so that projects and programs are aligned with the strategic company objectives. This is where the project manager is assigned. (Watt, 2012)

#### 2.2.6 Planning

An important element for this process is to set the total scope of the project. This will be a process where all the project documents are developed at a higher detail level. It is where we need to think the complete project in advance, by defining what may go wrong and how to respond to these outcomes. In this process group we can set baselines for scope, schedule, and cost to track project progress. Then we plan to engage the stakeholders all over the project life cycle. At the end of this process group, the team should have a very good idea of not only what they are tasked to do but also what it will take to execute the project on time and on budget. (Project Management Institute, 2017)

### **2.2.7 Executing**

After we define all the planning activities, the next to do is to execute. Here is where we will have a project management plan to execute and the project team will work on their assigned tasks to create the project deliverables. The project manager will ensure and follow up the completion of these task on time and create team-building exercises. During these processes is where most of the budget will be spent. (Project Management Institute, 2017)

### **2.2.8 Monitoring and Controlling**

According to the PMBOK Guide, these processes are required to track, review and regulate the progress and performance of the project; identify any areas in which changes to the plan are required; and initiate the corresponding changes. These processes are done over the whole project life cycle. (Project Management Institute, 2017)

### **2.2.9 Closing**

This is where we formally close the project and request the final customer acceptance. There must be a process for close any project, as some time the project team just assume all the activities has been finalized and the just stop going the project team meetings. The project manager should formally close the project by holding the lesson learned session and meeting with the main project stakeholder and the team to celebrate the achievement and release the resources.

(Project Management Institute, 2017)

We will find that some project managers define a process group as a project phase, and this is not correct. We can find all the process groups within a project phase as the **Figure 3** below.

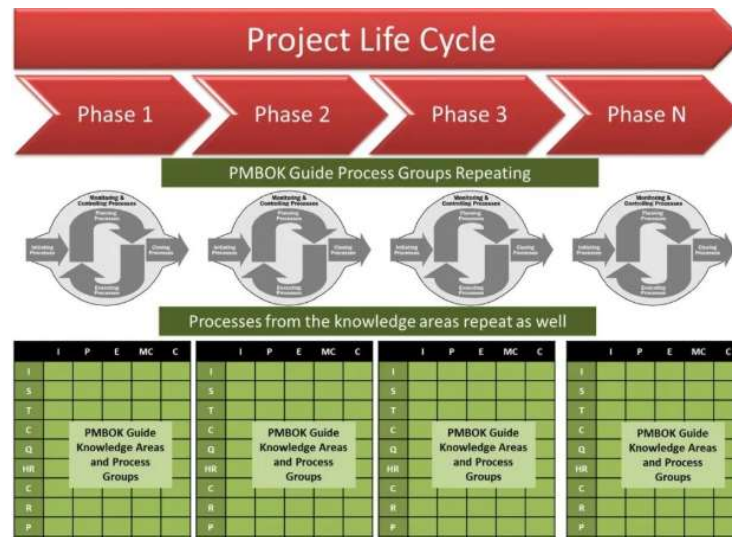


Figure 3 : Project Life Cycle – Phases – Process Groups

### 2.2.10 Project management knowledge areas

We can find 47 project management process identified in the PMBOK Guide classified into ten knowledge areas. All of these will be used during the creation of the project management plan for an IT network infrastructure upgrade in a manufacturing plant project. (Project Management Institute, 2017)

### 2.2.11 Project Integration Management

Project have all types of activities going on and there is a need to keep them moving all together, integrating all the dynamics that take place. Managing integration is about creating a project charter, scope statement, and plan to direct, manage, monitor, and control project change.

### 2.2.12 Project Scope Management

Projects needs to have a defines baseline or scope, and this must be separated and managed by a work breakdown structure. Managing scope is about planning, definition, WBS creation, verification and control.

### 2.2.13 Project Time Management

Project have a start and an end date, therefore, there is a need to manage the budgeted time according to a project schedule. Time/schedule management is about

definition, sequencing, resource and duration estimating, schedule development and schedule control.

#### **2.2.14 Project Cost Management**

Projects consume resources, consequently there is a need to manage the investment with the realization of creating value. Cost management is about resource planning, cost estimating, budgeting, and control.

#### **2.2.15 Project Quality Management**

Projects involve specific deliverables and work products; these needs to meet project objectives and performance standards. Therefore, with quality management we need to plan, assure and control quality within the project.

#### **2.2.16 Project Resource Management**

Project consist on teams and we need to manage project team during the project life cycle, finding the right people, managing their outputs, and keeping them on schedule. Resource management is about human resources planning, hiring, developing and managing a project team.

#### **2.2.17 Project Communication Management**

Managing communications is about communications planning, information distribution, performance reporting, and stakeholder management. As project involves a lot of people, not just the main customers, includes managers who need to be informed of the project and external stakeholders who have interest in the project.

#### **2.2.18 Project Risk Management**

Projects are discovery proves, frequently discovering new customer needs and identifying critical issues not found in the initiation process. We will be facing unexpected events, such as project resources resigning, changing, organizational changes, new technologies, etc. We need to be prepared for these events y identifying risk and manage them properly. This entails on planning and



identification, risk analysis (qualitative and quantitative), define actions planning, and risk monitoring and control.

### **2.2.19 Project Procurement Management**

Most of the projects involves acquiring an internal or service or purchase equipment. Therefore, we have a need to manage how vendors are selected and managed within the project. Procure management is about acquiring and contracting plans, sellers' responses and selections, contract administration and contract closure.

### **2.2.20 Project Stakeholder Management**

All projects impact people and organizations. By identifying stakeholders early and as they appear in the project, is key to success. We need to identify stakeholders, know their interest and influence level to the project, manage and controlling the relationship and communication with all of them. (Watt, 2012)

### **3 METHODOLOGICAL FRAMEWORK**

#### **3.1 Information sources**

This name is given to all type of information available – media, blogs, personal experiences, books, journal and magazine articles, expert opinions, encyclopedias, and web pages – the type will change depending on what we have under investigation.

##### **3.1.1 Primary sources**

Primary sources are original materials. They are from the time period involved and have not had any modification. They are commonly the first formal appearance of results in physical, print or electronic format. They represent original thinking, report a discovery, or share new information. Some primary resources are:

- Artifacts
- Audio recordings
- Diaries
- Internet Communications on email, list serves
- Interviews
- Journal articles published in peer-reviewed publications.
- Letters
- Newspaper articles written at the time
- Original documents
- Patents
- Photographs
- Record of Organization, government agencies
- Survey research
- Video recording
- Web site

(Md.Ashikuzzaman, 2016)

### 3.1.2 Secondary sources

Secondary resources are less easily defined than primary sources. Normally, they are interpretations and evaluations of primary resources. Secondary sources are not evidence, but rather commentary on and discussion of evidence. Some examples of secondary resources are:

- Bibliographies
- Commentaries, criticisms
- Histories
- Journal articles
- Magazine and newspaper articles
- Textbooks
- Website

(Md.Ashikuzzaman, 2016)

The final graduation project will use different primary and secondary source, please refer to the **Chart 1** for details.

**Chart 1 Information sources**

Objectives	Information sources	
	Primary	Secondary
Create a Project charter to define the key input elements to produce the project management plan	Project charter template documentation from IT Infrastructure PMO within the company, Interview with other project managers, interview with a network supervisor, previous network	PMBOK Guide “Create Project charter process” and PMI project charter templates, textbooks.

	infrastructure projects charters.	
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Project communication and plan template from IT Infrastructure PMO Office within the company, PMBOK Guide “Stakeholder Management” , Interviews with other project management, Textbooks and websites on how to create a stakeholder registry.	PMI Website, other online textbooks,
To develop a scope management plan in order to assure includes all required work to the project success	Project management processes documentation from IT Infrastructure PMO Office within the company, PMBOK guide “ Scope management” chapter, Interview with other project managers,	Previous network infrastructure projects scope management plans, online scope management templates.
To develop a requirements management plan in order to setup and understand how requirements will be identified, documented, analyzed and managed for the project.	Requirements documentation and templates from IT Infrastructure PMO Office within the company, PMBOK Guide “Collect Requirements”	Online requirements documentation templates for IT infrastructure projects. PMI documentation.

	<p>process documentation, Interview with other project managers, interview with a network supervisor, previous requirements documentation from network infrastructure projects.</p>	
<p>To develop a schedule management plan in order to ensure the timely completion of the project.</p>	<p>Schedule management processes documentation from IT Infrastructure PMO Office within the company, PMBOK Guide "Schedule management" chapter Interview with other project managers, interview with a network supervisor, previous network infrastructure projects.</p>	<p>Additional Schedule management articles on the PMI Website.</p>
<p>To develop a cost management plan in order to predict coming expenses to reduce the chances of going over budget.</p>	<p>Cost management documentation from IT Infrastructure PMO Office within the company, PMBOK "Project Cost Management" documentation, Interview with other project</p>	<p>PMI Website Cost management articles.</p>

	managers, previous network infrastructure projects cost management process.	
To develop a quality management plan in order to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance	Testing documentation from IT Infrastructure PMO Office within the company, PMBOK “Project Quality management” chapter, Interview with other project managers, previous network infrastructure projects Quality management processes.	PMI website quality management articles, ASQ website quality management and metrics
To develop a resource management plan to identify, obtain, and manage the resources needed for the successfully completion of the project	Project management processes documentation from IT Infrastructure PMO Office within the company, PMBOK “Resource management” processes ,Interview with other project managers on how to create a resource management plan and best practices, , review of previous network infrastructure	PMI Website articles about Resource management.

	projects resource management plans.	
To develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy	Communication plan from IT Infrastructure PMO Office within the company, PMBOK guide "Project communications management" processes, Interview with other project managers about best practices for create a communications management plan, review previous network infrastructure projects communication plans	PMI website communication plan templates and articles.
To develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks	Risk management processes documentation from IT Infrastructure PMO Office within the company, PMBOK guide " Risk management" Processes, Interview with other project managers about best practices for risk management, review previous network infrastructure projects risk management plan.	PMI website risk management plan templates and articles. Other web articles about risk management.

<p>To develop a procurement management plan to purchase products, services by the develop of agreements</p>	<p>Procurement management processes documentation from IT Infrastructure PMO Office within the company, PMBOK guide “Procurement Management Plan” process, Interview with other project managers and company procurement department for review process, interview with a network supervisor, review previous network infrastructure projects procurement management plan.</p>	<p>PMI website procurement management plan template and articles.</p>
<p>To develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.</p>	<p>Stakeholder management processes documentation from IT Infrastructure PMO Office within the company, PMBOK Guide “Stakeholder management “ process, Interview with other project managers about best practices to create an stakeholder</p>	<p>Stakeholder management plan template from web and PMI textbooks about stakeholder management.</p>



	management plan, review previous network infrastructure projects stakeholder management plans.	
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(Source: A.Rios, The Author, March 2020)

### 3.2 Research methods

Research is a detailed study about a concern or problem using scientific methods. Inductive research methods are used to analyze an observed event. Deductive methods are used to verify the observed event. Inductive approaches are linked with qualitative research and deductive methods are more associated with quantitative research. (Bhat, 2020)

A research has the following characteristics:

1. To obtain accurate data, a systematic approach must be followed.
2. Research is based on logical reasoning
3. Research create a path for new question creation.
4. One of the most important aspects is accuracy. The information obtained should be true and accurate.

There is no perfect single research method. All can be used well or poorly; each has its own strengths and weaknesses.

#### 3.2.1 Qualitative Method

Qualitative research is a process about asking. It helps to understand problems and issues in their natural settings. It is a non-statistical method.

This method depends on the experience of the research and the questions used to probe the sample. It is usually restricted to 6-10 people.

Some of the methods used for qualitative research are:

- Interviews
- Focus groups
- Ethnographic research
- Content/Text Analysis

- Case study research

(Bhat, 2020)

### 3.2.2 Quantitative Method

Quantitative research is an organized process of obtaining information by examination to obtain deductions. This method utilizes a computational and statistical process to collect and analyze data. Quantitative is all about numbers.

This involve a larger population. Some of the examples for these methods are:

- Online surveys
- Questionnaires
- Polls

(Bhat, 2020)

We will focus only on Qualitative research methods for the development of this FPG.

Please refer to the Research methods that will be used on **Chart 2**

**Chart 2 Research methods**

Objectives	Research methods
	Qualitative and Quantitative Method
To create a Project charter to define the key input elements to produce the project management plan	Content/Text analysis Case study research Interviews
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Content/Text analysis Case study research Interviews
To develop a scope management plan in order to assure includes all required work to the project success	Content/Text analysis Case study research Interviews

To develop a requirements management plan in order to setup and understand how requirements will be identified, documented, analyzed and managed for the project.	Content/Text analysis Case study research Interviews
To develop a schedule management plan to ensure the timely completion of the project.	Content/Text analysis Case study research Interviews
Develop a cost management plan to predict coming expenses to reduce the chances of going over budget.	Content/Text analysis Case study research Interviews
Develop a quality management plan to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance	Content/Text analysis Case study research Interviews
Develop a resource management plan to identify, obtain, and manage the resources needed for the successfully completion of the project	Content/Text analysis Case study research Interviews
Develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy	Content/Text analysis Case study research Interviews
Develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks	Content/Text analysis Case study research Interviews
Develop a procurement management plan to purchase products, services by the develop of agreements	Content/Text analysis Case study research Interviews

Develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.	Content/Text analysis Case study research Interviews
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(Source: A.Rios, The Author, March 2020)

### 3.3 Tools

A project management tools are aids to assist an individual or team to effectively organize work and manage project and tasks. (Wrike, 2020)

Some of the most common project management tools we have are:

1. **Expert Judgment:** Is defined as judgements provided upon experience in an area, discipline, industry, etc, as appropriate for the activity being performed. (Project Management Institute, 2017)
2. **Meetings:** Regular event that involves everyone, who shares or is interested in the project, in communicating with other participants and stakeholder by discussing issues, making proposals, approving or rejecting decisions. (Practices, 2020)
3. **Microsoft Visio Profesional 2019:** Microsfot visio is a diagramming and vector graphics application and is part of the Microsoft Office family. (Microsoft Visio, 2020)
4. **Data gathering:**Is a tecnique that includes brainstorming, used to identify a list o ideas in a short peiod of time, focus groups, brings together stakeholders and subject matter experts to learn about the project data and interviews, are used to obtan information from stakeholders by talking directly to them. (Project Management Institute, 2017)
5. **Document Analysis:** Consist on reviewing and assesing any relevant documentation. (Project Management Institute, 2017)
6. **Decomposition:** Decomposition is a technique used for dividing and subdividing the project scope and deliverable sinto smaller, more managemeble parts. The work package is the work defined at the lowest level of the WBS for which cost and duration can be estimated and amaged. (Project Management Institute, 2017)

7. **Inspection:** Includes activities such as measuring, examining, and validating to determine whether work and deliverables meet requirements. Inspections are called reviews, product reviews or walkthroughs. (Project Management Institute, 2017)
8. **Precedence Diagramming Method:** This is a technique used for constructing a schedule model in which activities are represented by nodes and are graphically linked by one or more logical relationships to show the sequence in which the activities are to be performed. (Project Management Institute, 2017)
9. **Analogous estimating:** Is a technique for estimating the duration or cost of an activity or a project using historical data from a similar activity or project.
10. **Three-point estimating:** It is an estimation technique that helps define an approximate range for an activity's duration. (Project Management Institute, 2017)
11. **Microsoft Project Professional 2019:** Project management software developed by Microsoft, it is designed to assist a project manager in developing a schedule, assigning resources to tasks, tracking progress, managing the budget and analyzing workload. (Microsoft Project, 2020)
12. **Cost aggregation:** Cost estimates are aggregated by work packages in accordance with the WBS, then aggregated for the higher component of the WBS and ultimately, for the entire project.
13. **Data Analysis:** This tool can be used to determine budget processes that can include the reserve analysis, which can establish the management reserves for the project. Management reserves are an amount of the project budget withheld for management control purposes and are reserved.
14. **Audits:** An Audit is a structured, independent process used to determine if project activities comply with organizational and project policies, processes and procedures. (Project Management Institute, 2017)
15. **Testing Evaluation:** Testing is an organized and constructed investigation conducted to provide objective information about the quality

16. **Problem Solving: Problem** solving entails finding solutions for issues or challenges. It can include gathering additional information, critical thinking, creative, quantitative, and/or logical approaches. (Project Management Institute, 2017).
17. **Ground Rules:** Ground rules, defined in the team charter set the expected behavior for project team members, as well as stakeholders, with regard to stakeholder engagement.

**Chart 3 Tools**

Objectives	Tools
Create a Project charter to define the key input elements to produce the project management plan	Expert Judgment Meetings Data Gathering Microsoft Excel
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Data gathering Expert Judgment Microsoft Excel
To develop a scope management plan to assure includes all required work to the project success	Expert Judgment Meetings Document Analysis Decomposition Inspection Microsoft Visio Professional 2019 for the WBS creation
To develop a requirements management plan to setup and understand how requirements will be	Expert Judgment Data gathering Data Representation

identified, documented, analyzed and managed for the project.	
To develop a schedule management plan to ensure the timely completion of the project.	Expert Judgment Data gathering Decomposition Precedence Diagramming method Analogous estimates Three-point estimates Microsoft Project Professional 2019
To develop a cost management plan to predict coming expenses to reduce the chances of going over budget.	Expert Judgment Data gathering Decomposition Analogous estimates Three-point estimates Cost aggregation Data Analysis
To develop a quality management plan to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance	Expert Judgment Data gathering Testing evaluation Audits Problem solving Meetings
To develop a resource management plan to identify, obtain, and manage the resources needed for the successfully completion of the project	Expert Judgment Data gathering Analogous estimates Bottom-up estimates Resource calendars
To develop a communication management plan to ensure the communication is effective for	Expert Judgment Communication methods Project Reporting

stakeholder and at the same time to define necessary activities to implement the communication strategy	Meetings
To develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks	Expert Judgment Data analysis Risk Categorization Data Representation Strategies for Threats Strategies for Opportunities
To develop a procurement management plan to purchase products, services by the develop of agreements	Expert Judgment Data analysis Meetings
To develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.	Expert Judgment Data analysis Ground Rules Meetings
Create a Project charter to define the key input elements to produce the project management plan	Expert Judgment Meetings Data Gathering Microsoft Excel
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Data gathering Expert Judgment Microsoft Excel

(Source: A.Rios, The Author, March 2020)



### 3.4 Assumptions and constraints

Assumption is what you believe to be true. These are anticipated events or circumstances that are expected during the project life cycle. The assumptions are based on experience or information available on hand.

On the other hand, constraints are limitations imposed on the project, the PMBOK guide recognizes six constraints: scope, quality, schedule, budget, resources and risk. These can be classified in 2 types, Business and Technical. (Usmani, 2019)

**Chart 4 Assumptions and constraints**

Objectives	Assumptions	Constraints
To create a Project charter to define the key input elements to produce the project management plan	All the documentation is available to create the project charter.	The creation of the project charter needs to happen at the same time as the stakeholder identification and we could have a delay to complete both on time.
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Resources and main stakeholder have been identified.	The creation of the project charter needs to happen at the same time as the stakeholder identification and we could have a delay to complete both on time.

Objectives	Assumptions	Constraints
To develop a scope management plan in order to assure all required work to complete a success project	The project charter has been approved.	The scope can suffer a change when the wireless survey is completed, therefore the wireless survey results will be part of the definition phase.
To develop a requirements management plan in order to understand the process of how	Previous network infrastructure projects and business documents are available to document requirements.	Requirements can be modified when the wireless survey results are received.
To develop a schedule management plan to ensure the timely completion of the project.	A proposed Go-live date has been setup.	The project must be completed within 6 months in order to allocate the budgeted cost.
To develop a cost management plan in order to predict coming expenses to reduce the chances of going over budget.	Project budget has been defined from previous year and a contingency reserve is added to project.	The project must not exceed 150,000 USD. This was the budget approved for the project the previous year
To develop a quality management plan in order to determine quality policies and procedures relevant to the project for both project deliverables and project process,	Previous network infrastructure projects and business documents are	Possible resource unavailability due to illness.

Objectives	Assumptions	Constraints
defines who is responsible for what, and documents compliance	available to document requirements.	
Develop a resource management plan to identify, obtain, and manage the resources needed for the successfully completion of the project	Resources already identified for the project.	Possible resource unavailability due to illness.
Develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy	The organization has the communication tools in place.	Communication availability due to failure or nature.
Develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks	Previous network infrastructure projects and business documents are available to document risks	Major project risk need to be identified in the definition phase.
Develop a procurement management plan to purchase products, services by the develop of agreements.	Previous network infrastructure projects and business documents are available to document procurement. Standard suppliers and vendors are already set.	Purchase orders must be placed on time to receive hardware on the estimated time.
Develop a project stakeholder management plan to define people,	Previous network infrastructure projects	The project team members are remote

Objectives	Assumptions	Constraints
group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.	and business documents are available to document project stakeholder's information. Main stakeholders for the project have been identified.	, therefore skills must be employ to plan and manage stakeholders efficiently.

(Source: A. Rios, The Author, March 2020)

### 3.5 Deliverables

A deliverable is an input/output term that refers to the unique and individual products, elements, results or items that are produces for delivery at completion for a specific project component. (Alby, 2020)

#### Chart 5 Deliverables

Objectives	Deliverables
Create a Project charter to define the key input elements to produce the project management plan	Project Charter Assumption Log
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Stakeholder Registry
To develop a scope management plan to assure includes all required work to the project success	Scope management Plan WBS WBS Dictionary
To develop a requirements management plan to setup and understand how requirements will be identified,	Requirements Management Plan Requirements Documentation Requirements traceability matrix

documented, analyzed and managed for the project.	
To develop a schedule management plan to ensure the timely completion of the project.	<p>Schedule Management Plan</p> <p>Activity List</p> <p>Schedule Network diagram</p> <p>Resource assignments</p> <p>Resource estimations</p> <p>Schedule in Gantt chart</p> <p>Project Timeline</p>
Develop a cost management plan to predict coming expenses to reduce the chances of going over budget.	<p>Cost Management Plan</p> <p>Cost Baseline</p>
Develop a quality management plan to determine quality policies and procedures relevant to the project for both project deliverables and project process, defines who is responsible for what, and documents compliance	<p>Quality management Plan</p> <p>Quality metrics</p> <p>Test Strategy</p> <p>User Acceptance Test template</p>
Develop a resource management plan to identify, obtain, and manage the resources needed for the successfully completion of the project	<p>Resource Management Plan</p> <p>RAIC Template</p> <p>Technical Resource Sign off</p>
Develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy	<p>Communication Management plan</p> <p>Communication Matrix</p> <p>Communication escalation process</p>
Develop a risk management plan to identify and evaluate risks to successfully complete	<p>Risk management plan</p> <p>Risk Qualification and Prioritization</p> <p>Risk Registry Template</p>

the project and reduce the probability and/or impact of negative risks	Risk Registry with responses
Develop a procurement management plan to purchase products, services by the develop of agreements	Procurement management plan
Develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.	Stakeholder engagement plan Stakeholder Power\Interest Matrix Stakeholder Management Strategy
Create a Project charter to define the key input elements to produce the project management plan	Project Charter Assumption Log
To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction	Stakeholder Registry

(Source: A. Rios, The Author, March 2020)

## **4 RESULTS**

### **4.1. Project Lifecycle and approach and Integration Management**

The project lifecycle and approach that will be used for the actual network infrastructure upgrade in a manufacturing plan will be following the current company process, as mentioned before in Figure 2, consist of 6 phases. In addition to this, the company methodology involves the concept of holding formal gate reviews as needed or at a minimum in between key phases of the project. We can see a similarity of this on the PRiSM methodology, that consist of having a gate review after each project phase (Carboni, Duncan, Gonzalez, Milsom, & Young, 2018). These reviews are a formal mechanism used to help manage projects and guide the activities needed to facilitate decision making. At the end of each phase the following questions should be answered:

- Is all the required work completed as it relates to the respective phase?
- Does the project still make sense financially?
- Did we re-evaluate priority/ranking?
- Are project risks identified and accounted for?
- Should project effort continue?

This approach will help the company to have gate reviews at the end of each phase and review if the project is at the desired expectation from the main project stakeholders.

### **4.2. Initiating Process Group**

To start with the creation of the project management plan, we need to have the project charter describing the project itself and any of the organization information. In reference to the PMBOK Guide, the 4.1 Develop Project Charter process group is where the Project charter will be the output. The inputs for this process are shown on figure 4.

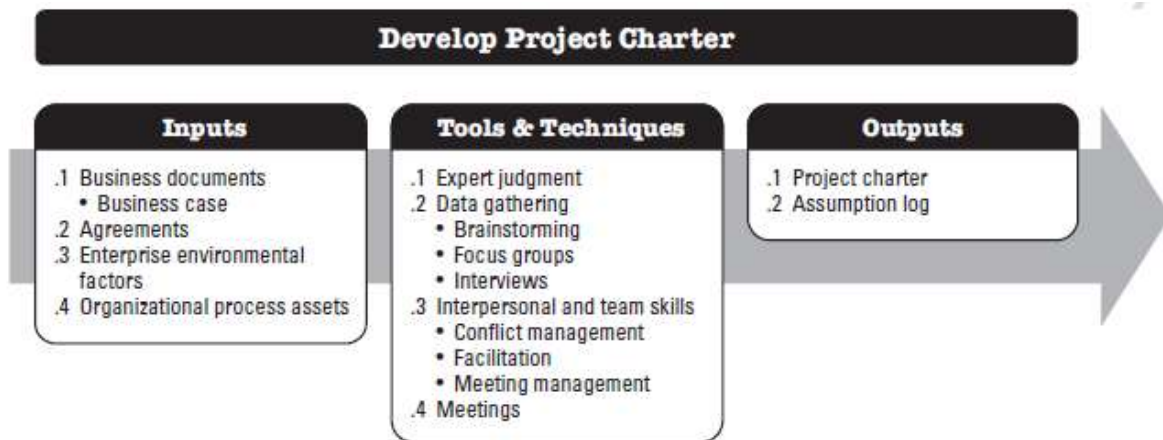


Figure 4: Develop Project Charter Process

This is our first objective for the FPG. The creation of the project charter was done with facilitation with the main project stakeholders, the template was taken from the standard template that the PMO office with additional improved sections to detail all the project information according to the PMBOK Guide and ensure all the necessary information was included.

A Project charter it is a high-level document that contains:

- Project purpose;
- Measurable project objectives and related success criteria
- High-Level requirements
- High-level project description, boundaries, and key deliverables
- Overall project risk;
- Summary milestone schedule.
- Preapproved financial resources;
- Key stakeholder list;
- Project approval requirements
- Project exit criteria
- Assigned project manager, responsibility, and authority level
- Name and authority of the sponsor or other person(s) authorizing the project charter

(Project Management Institute, 2017)



The inputs for this process are: business documents from the company, the business case was written a year ago as these type of projects are created as a result of an Infrastructure risk assessment process from the previous year, lesson learned from other projects containing similar information, agreements or SOW from vendors that will be part of the project. The built of this document was completed by the data gathering techniques and with expert judgment discussing with the Sr. Project manager assigned to the project as he had experience before on working with this type of projects. The figure 5 is the project charter created.

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Project Charter

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##### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

##### **Contents:**

*Project Purpose – General Objective*

*Specific Objectives*

*Project Scope*

*In Scope*

*Out of scope*

*Project Approach*

*Timeframe/Duration*

*Project Cost/Budget*

*Expected Benefits*

*Project Completion*

*Major Milestones*

*Decision Gate Committee (DGC)*

*Project Change Control Board (PCCB)*

*Resources*

*Team Process*

*High Issues/Constraints/Risks*

## Project Purpose

The objective of this project is to upgrade the network infrastructure for the Monterrey MX Manufacturing Plant for Eaton Corporation in order to support wireless coverage in all the facility and provide wired network connectivity in some areas in the plant for future growth.

## Specific Objectives

- Assessment of existing network Infrastructure to determine hardware requirements
- Coordinate the execution of a Wireless survey with approved vendor
- Assemble network equipment bill of materials (BOM)
- Design, procurement, installation, and configuration of new network infrastructure.
  - Switches
  - Access Points
  - Network Cabling

Procurement Includes:

- Obtaining proposals from Approved Vendors
- Verifying vendor quote against project requirements
- Purchasing services and equipment
- Testing of the network infrastructure (IT Unit Test)
- Complete all required network administrative and/or maintenance tasks:
  - Upload design documents to Network services SharePoint
  - Add devices to local network monitoring tools
  - Procure Smartnet (Support) for all new Cisco equipment
  - Establish/validate ongoing support for the environment
  - Recover/dispose of old network equipment as needed

## Project Scope

### In Scope

Scope ID	Description
S_3.1	Assessment of existing network infrastructure
S_3.2	Wireless Survey execution for the entire manufacturing plant in coordination with vendor
S_3.3	Support the design and procurement of the equipment according the BOM provided by the vendor and validated by the Network Engineer. <ul style="list-style-type: none"> <li>• (21) Wireless Access Point with antennas– Model 3700</li> <li>• (3) Cisco Network switches – Model 3750x 48 ports</li> <li>• (6) Wireless access point antennas for current AP</li> <li>• Cabling required for Wireless Access Points in specified areas</li> </ul>
S_3.4	Installation of the equipment defined in the BOM provided by Network Engineer and relocation of 7 existing access points.
S_3.5	Remote Configuration of the equipment by vendor.
S_3.6	IT Unit test performance by Network Engineer and Local SIS
S_3.7	Coordination of UAT with local SIS and Network Vendor
S_3.8	One day support for Go-Live implementation
S_3.9	One week of warranty with project team
S_3.10	Complete all required network administrative services

### **Out of Scope**

- Users relocations or equipment move
- WAN Upgrade
- Procurement of Non-IT related items
- VoIP or platform procurement/deployment
- Security Evaluation & Design
- Security equipment procurement/deployment

### **Project approach**

#### Phase 1(Initiation):

- Assess current network infrastructure
- Resources assignment
- Project scope

#### Phase 2(Definition)

- Provide solution design (3 Cisco Switches and 21 new wireless access points and 7 onsite AP
- Coordinate wireless survey
- Provide solution quotes
- Agreement for Go Live
- Review project risks

#### Phase 3(Development) :

- Configuration of 3 Cisco Switches model 3750-48 and 21 new wireless access points and relocate 7 AP already on site.
- IT Unit Test

#### Phase 4(Validation) :

- Switches configuration validation
- Wireless Access Points configuration validation

#### Phase 5(Production) :

- Installation of 3 Cisco Switches model 3750-48 and 21 wireless access points and 7 existing access point relocation.
- UAT
- First day of support

#### Phase 6(Audit) :

- Sponsor Survey
- Lesson Learned session
- Smartnet contract for 3 Cisco switches

### **Timeframe/Duration**

Start Date: June 8, 2020

Anticipated Go Live Date: December 4th, 2020

End Date: December 2020

### **Project Cost/Budget**

All project budget has been approved from previous year assessment; it might be a slight change on the costs to update this year changes.

QTY	Cost	DESCRIPTION of Capital Purchases	TOTAL US\$
-----	------	----------------------------------	------------

28	\$240.00	Network Cabling	\$6,720.00
3	\$9,365.20	Cisco Switches	\$28,095.60
8	\$777.40	Wireless Access Points (Internal) - Offices	\$6,219.20
13	\$829.40	Wireless Access Points (External) - Production	\$10,782.20
18	\$415.48	Antennas for Current Access Points - Production	\$7,478.64
1	\$3,049.44	Logistics charge and Mexico Duties	\$3,049.44
			<b>Total Capital</b>
			<b>\$62,345.08</b>
<b>QTY</b>	<b>Cost</b>	<b>DESCRIPTION of Expense</b>	<b>TOTAL US\$</b>
1	\$8,208.22	Wireless Survey	\$8,208.22
			<b>Total Expense</b>
			<b>\$8,208.22</b>
<b>QTY</b>	<b>Cost</b>	<b>DESCRIPTION Monthly Recurring Expenses</b>	<b>TOTAL US\$</b>
1	\$124.92	ATT Smartnet - 36 months - Maintenance - Lan switch - gold - HARDWARE (3 switches)	\$124.92
			<b>Monthly Recurring</b>
			<b>\$124.92</b>

### **Expected benefits**

<b>Benefits – what will be gained?</b>	<b>Metrics – How will the results be measured?</b>
<b>Standardization:</b> A simplified best of breed approach to technology selection and implementation while linking technology selection to cost containment.	Qualitative
<b>Consolidation:</b> Reduce the footprint of network technology by leveraging enhanced distribution options.	Qualitative
<b>Enhancement:</b> Provides wireless network coverage by installing more wireless access points	Qualitative
<b>Investment Protection:</b> Comprehensive maintenance with Cisco SmartNet Support.	Qualitative

### **Project Completion**

#### **1) Completion Description**

- a) All switches are connected and working as required
- b) All the plant has a wireless network coverage
- c) UAT completion to ensure client connectivity
- d) All opened issues because of the migration are closed successfully

#### **2) Success Description**

Infrastructure is operating without interruption and is of adequate and sufficient capacity to support business requirements.

- a) The project is complete on or before the 99 Go-Live Milestone in Portfolio

- b) The project is complete on or below budget.
- c) The project Sponsor Survey receives a score of  $\geq 4.5$
- d) IT hours estimation is within 10% variance
- e) The Project Closure document has been signed by the Site or PM ensuring there are not open items or unresolved issues

### Major Milestones

<b>Milestone</b>	<b>Due Date</b>
Project Start	Jun 2020
Requirements Approval	July 2020
Phase 2 (Definition) Complete	Aug 2020
Phase 4 (Validation) Complete	Nov 2020
Go-Live	Dec 4 <sup>th</sup> , 2020
Phase 5 (Production) Complete	Dec 2020
Project Closure	Dec 2020

### Decision Gate Committee (DGC)

<b>Name</b>	<b>Role</b> (sponsor, IT resource manager/contributor, change management control, Business Unit Representative, Production support leader, etc)	<b>Gate Required</b> (specific gate(s), or ALL)
SIS Zone Manager	IT SIS Zone Manager	All
Finance manager	Monterrey Plant Controller	Gate 2
Plant Manager	Monterrey Plant Manager	All
Business Relationship Manager	BRM	All

### Resources

<b>Role</b>	<b>Functional Area or Person's Name</b>	<b>Participation Level</b> (% of time, dates)	<b>Responsibilities</b>
Project Manager	Project Manager	70%	Manage the project
Sr. Project Manager	Sr. Project Manager	10%	Support for Manage the project
BRM	Business Relationship Manager	5%	Obtain approval for required hardware and resources support
Infrastructure – Local SIS	Local SIS	50%	Order the IT equipment and coordinate install
Infrastructure - GAN	GAN Engineer	50%	Evaluate the network design, provide/review quotes, configure and test network equipment
Infrastructure – Network Vendor	Network Infrastructure	20%	Evaluate the network design, provide quotes, configure, ship and test network equipment
Infrastructure – Network Vendor Wireless	Network Services	10%	Evaluate the wireless network, provide quotes for equipment need it.

### **Team Process**

<b>Process Item</b>	<b>Purpose</b>	<b>Frequency</b>	<b>Participation/Distribution, Day(s)/Time(s)</b>
Team Meetings	General Update	- Weekly when project in progress	Participants: All named resources above Day: Tuesday Time: TBD Distribution: Resources, DGC SharePoint:
Steering Body Meetings	General update, issues & concerns	Monthly and as needed	Participants: DGC Day: TBD Time: TBD Distribution: Email SharePoint: TBD

### **High-level Issues/Constraints/Risk**

- Capital request must be submitted and approved before Gate 2
- Lead time for Cisco equipment delivery
- Mounting WAPs in the Shop Floor
- Resources availability due to out of office
- Month-end should be avoided for surveys and hardware installation.
- Weekends for outages is preferred

**Approved by:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Figure 5: Project Charter Template for Network Infrastructure projects**

In addition, as part of the initiating process group we will engage with the initial stakeholder of the project, therefore this will guide us to the other process group 13.1 Identify Stakeholders. If we remember correctly this process requires the project charter as an input and additional processes, but for now this will be our starting point for this process, and it will be revised back when we are on the planning process groups, as the process is performed periodically throughout the project as needed. (Project Management Institute, 2017).

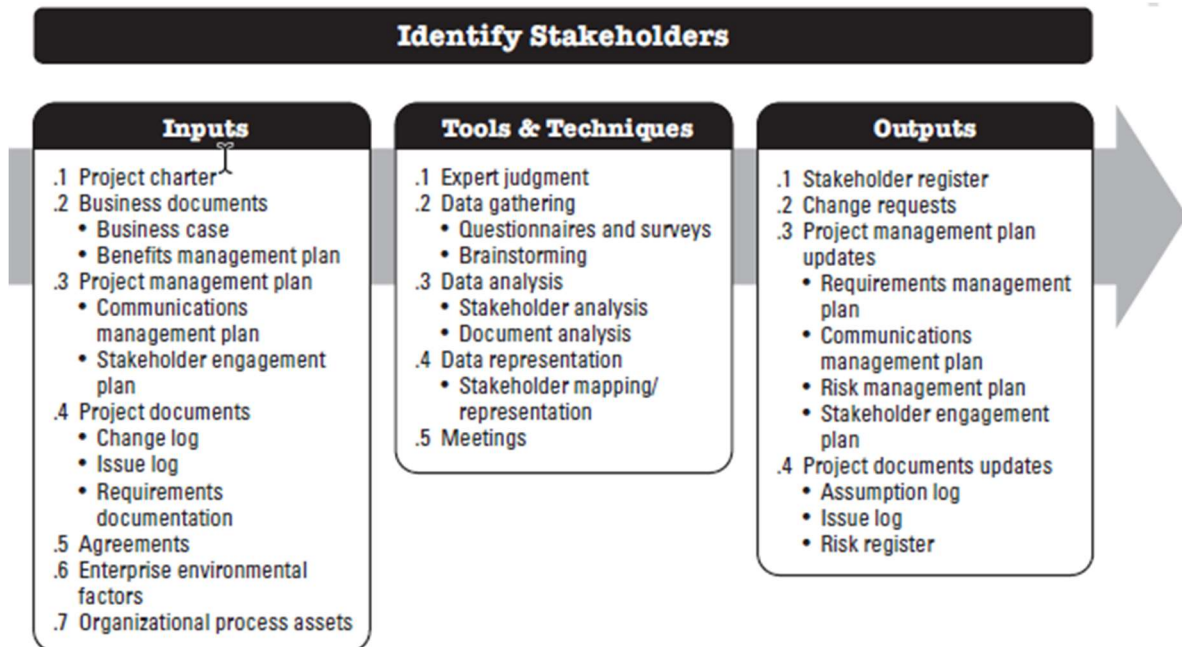


Figure 6: Identify Stakeholders Process

Hence, during this Initiating process group we will be developing the project charter and identifying the initial stakeholders, we can jump from one process to the other until we have both defined. The company didn't have an Stakeholder Registry template so this was created from scratch following the PMBOK guide standards and a template downloaded from ProjectManagement.com (ProjectManagement.com, 2020).

Chart 6 Stakeholder Registry

## STAKEHOLDER REGISTRY

PROJECT	NETWORK INFRASTRUCTURE UPGRADE IN A MANUFACTURING PLANT				DATE	6/29/2020	
NAME	ROLE	ORGANIZATION/ENTERPRISE	LOCATION	WANTS/NEEDS	POSSIBLE ACTIONS WITH POSITIVE IMPACT	POSSIBLE ACTIONS WITH NEGATIVE IMPACT	CONTACT INFORMATION
Project Manager	Project Manager	PMO	Juarez MX	Meet project metrics and delivery a successful project to the business.	Manage project according to company standards and guidance of Sr Project Manager	Manage project not following current standards or advice from Sr. Project manager	<a href="mailto:alejandra.riosos@eaton.com">alejandra.riosos@eaton.com</a>
Sr. Project Manager	Sr. Project Manager	PMO	Mexico DF	Meet project metrics and delivery a successful project to the business.	Provide Project management methodology and expert judgement advise	Changes on project leadership style of current project manager	<a href="mailto:SrProjectMgr@eaton.com">SrProjectMgr@eaton.com</a>
PMO Manager	PMO Manager	PMO	Ohio, US	Meet project metrics and delivery a successful project to the business.	Project management methodology and expert judgement	None	<a href="mailto:PMOmanager@eaton.com">PMOmanager@eaton.com</a>
Local SIS	Local IT Infrastructure Analyst	Site Infrastructure Support	Montrey, MX	Want a network that requires little attention or maintenance and ready for future growth.	Guidance of manufacturing plant process and procedures for Project manager	Provide wrong information to team about initial hardware inventory	<a href="mailto:LocalSis@eaton.com">LocalSis@eaton.com</a>
SIS Manager	Local IT Infrastructure Region Manager	Site Infrastructure Support	Reynosa, MX	Want a network that requires little attention or maintenance and ready for future growth.	On time Budget approval	Delay on getting budget approval	<a href="mailto:SisManager@eaton.com">SisManager@eaton.com</a>
GAN Engineer	Network Engineer	Global Area Network	California, US	Want a network that requires little	Correct network design	Wrong network design	<a href="mailto:GanEngineer@e">GanEngineer@e</a>



				attention or maintenance and ready for future growth.			<a href="mailto:aton.com">aton.com</a>
GAN Manager	Network Manager	Global Area Network	Ohio, US	Want a network that requires little attention or maintenance and ready for future growth.	On time approval for network design	Delay approval for network diagram	<a href="mailto:GanManager@aton.com">GanManager@aton.com</a>
Network Services	Network Services Vendor	Dimension Data	Monte Rey, MX	Want to provide a working solution for the business and have a good relationship for future projects	On time delivery for requested services	Delay on delivery requested services	<a href="mailto:NetworkServices@eaton.com">NetworkServices@eaton.com</a>
Local Network Cabling Company	Local Network Cabling Company	HNet Solutions	Monte Rey, MX	Want to provide a working network cabling to support solution	On time delivery for requested services	Delay on delivery requested services	support@HnetSolutions.com
Network Infrastructure	Network Infrastructure Vendor	Netelligent	Mexico DF	Want to provide a working solution for the business and have a good relationship for future projects	On time delivery of requested infrastructure	Delay on delivery network infrastructure	<a href="mailto:NIV@eaton.com">NIV@eaton.com</a>
Finance Manager	Finance Manager	Manufacturing Plant	Monte Rey, MX	Needs to have the warehouses with full wired and wireless network coverage for future growth	On time budget approval	Delay budget approval	<a href="mailto:FinanceManager@eaton.com">FinanceManager@eaton.com</a>
Plant Manager	Plant Manager	Manufacturing Plant	Monte Rey, MX	Needs to have the warehouses with full wired and	Support project manager on issues escalation	Do not support project manager	<a href="mailto:PlantManager@eaton.com">PlantManager@eaton.com</a>

				wireless network coverage for future growth		on issues escalation	
Business Relations Manager	Business Relations Manager	Corporate	Juarez MX	Needs to have the warehouses with full wired and wireless network coverage	Support project manager on issues escalation	Do not support project manager on issues escalation	<a href="mailto:BRM@eaton.com">BRM@eaton.com</a>
The system users	End-users	Manufacturing Plant	Monterrey, MX	Need the network to perform optimally after delivery	NA	NA	NA
Network Support Team	Network Support Team	Global Area Network	Multiple	They want a network that requires little attention or maintenance and one that fits easily into the existing portfolio	NA	NA	NA

(Source: A. Rios, The Author, June 2020)

### 4.3. Planning Process Group

The rest of the objectives for this FGP as describe before, consist of creating the subsequent plans that constitute the Project Management plan.

#### 4.3.1. Scope Management Plan

This is our objective number 3 of this FGP. Within this section we will be documenting how the project scope will be defined, developed, monitored, controlled, and verified. The Infrastructure PMO office did not have a scope management plan template; therefore, a new template was created downloading it from a web source. (Docs, 2020)

The main input for start the Plan scope management process is the project charter which we already have identified in the previous section. Taking this document and some other Organizational process assets found on the company such as previous

project files and lesson learned. We have the scope management plan detail in figure 7.

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Scope Management Plan

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##### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

##### **Contents:**

*Introduction*

*Scope Management approach*

*Roles and Responsibilities*

*Scope definition*

*Project Scope Statement*

*Work breakdown structure*

*Scope Verification*

*Scope Control*

*Sponsor Acceptance*

##### ***Introduction***

The Scope Management Plan provides the scope framework for this project. This plan documents the scope management approach; roles and responsibilities as they pertain to project scope; scope definition; verification and control measures; scope change control; and the project's work breakdown structure. Any project communication which pertains to the project's scope should adhere to the Scope Management Plan.

This project is for upgrade the current network infrastructure for the Monterrey MX Manufacturing Plant for Eaton Corporation in order to support wireless coverage in all the facility and provide wired network connectivity in some areas in the plant for future growth. This includes the network design, procure required network infrastructure, configure and install network infrastructure according design, testing/validation. External vendors are required for a wireless survey assessment.

##### ***Scope Management Approach***

For this project, scope management will be the responsibility of the Project Manager. The scope for this project is defined by the Scope Statement, Work Breakdown Structure (WBS) and WBS Dictionary. The Project Manager, Sponsor and Stakeholders will establish and approve documentation for measuring project scope which includes deliverable quality checklists and work performance measurements. Proposed scope changes may be initiated by the Project Manager, Stakeholders or any member of the project team. All change requests will be submitted to the Project Manager who will then evaluate the requested scope change. Upon acceptance of the scope change request the Project Manager will submit the scope change request to the Change Control Board and Project Sponsor for acceptance. Upon approval of scope changes by the Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all stakeholders. Based on feedback and input from the Project Manager and Stakeholders, the Project Sponsor is responsible for the acceptance of the final project deliverables and project scope.

### ***Roles and Responsibilities***

The Project Manager, Sponsor(s) and team will all play key roles in managing the scope of this project. As such, the project sponsor(s), manager, and team members must be aware of their responsibilities in order to ensure that work performed on the project is within the established scope throughout the entire duration of the project. The table below defines the roles and responsibilities for the scope management of this project.

<b>Name</b>	<b>Role</b>	<b>Responsibilities</b>
Business Relationship Manager	Sponsor	<ul style="list-style-type: none"> <li>- Approve or deny scope change requests as appropriate</li> <li>- Evaluate need for scope change requests</li> <li>- Accept project deliverables</li> </ul>
Finance Manager	Sponsor	<ul style="list-style-type: none"> <li>- Approve or deny scope change requests as appropriate</li> <li>- Evaluate need for scope change requests</li> <li>- Accept project deliverables</li> </ul>
Alejandra Rios	Project Manager	<ul style="list-style-type: none"> <li>- Measure and verify project scope</li> <li>- Facilitate scope change requests</li> <li>- Facilitate impact assessments of scope change requests</li> <li>- Assist to the scheduled change control meetings for get approval, meetings are held weekly at 5 AM MT on Tuesdays.</li> <li>- Communicate outcomes of scope change requests to the team</li> <li>- Update project documents upon approval of all scope changes</li> </ul>
Sr. Project Manager	Sr. Project Manager	<ul style="list-style-type: none"> <li>- Support Project manager on Scope change processes as required</li> </ul>
PMO Manager	PMO Manager	<ul style="list-style-type: none"> <li>- Organize and facilitate scheduled change control meetings on Tuesdays at 5am MT</li> </ul>
Local SIS	Team member	<ul style="list-style-type: none"> <li>- Participate in defining change resolutions</li> <li>- Evaluate the need for scope changes and communicate them to the project manager as necessary</li> </ul>
GAN Engineer	Team member	<ul style="list-style-type: none"> <li>- Participate in defining change resolutions</li> <li>- Evaluate the need for scope changes and communicate them to the project manager as necessary</li> </ul>

## Scope Definition

The scope for this project was defined through a comprehensive requirements collection process. First, a thorough analysis was performed on the company's current network infrastructure based on local SIS and GAN engineer feedback by taking pictures of the hardware equipment and an initial hardware inventory. From this information, the project team developed the project requirements documentation, the requirements management plan, and the requirements traceability matrix.

The project description and deliverables were developed based on the requirements collection process and input from the GAN engineer and the network infrastructure vendor. This process of expert judgment provided feedback on the most effective ways to meet the original requirements of providing a new network infrastructure design from which the company can improve the network capacity for future growth.

## Project Scope Statement

The project scope statement provides a detailed description of the project, deliverables, constraints, exclusions, assumptions, and acceptance criteria. Additionally, the scope statement includes what work should not be performed in order to eliminate any implied but unnecessary work which falls outside the of the project's scope.

This project includes the following deliverables:

Scope ID	Description
S_3.1	Assessment of existing network infrastructure
S_3.2	Wireless Survey execution for the entire manufacturing plant in coordination with vendor
S_3.3	Support the design and procurement of the equipment according the BOM provided by the vendor and validated by the Network Engineer. <ul style="list-style-type: none"> <li>• (21) Wireless Access Point with antennas– Model 3700</li> <li>• (3) Cisco Network switches – Model 3750x 48 ports</li> <li>• (6) Wireless access point antennas for current AP</li> <li>• Cabling required for Wireless Access Points in specified areas</li> </ul>
S_3.4	Installation of the equipment defined in the BOM provided by GAN Engineer and relocation of 7 existing access points and cabling required
S_3.5	Remote Configuration of the equipment by vendor and GAN Engineer
S_3.6	IT Unit test performance by Network Engineer and Local SIS
S_3.7	Coordination of UAT with local SIS and Network Vendor
S_3.8	One day support for Go-Live implementation
S_3.9	One week of warranty with project team
S_3.10	Complete all required network administrative services (Transition to support)

## Out of Scope

- Users relocations or equipment move
- WAN Upgrade
- Procurement of Non-IT related items

- VoIP or platform procurement/deployment
- Security Evaluation & Design
- Security equipment procurement/deployment

### ***Project Constraints***

- Budget must not exceed \$150,000 USD
- Project execution should be part of 2020 as this is included in the budget
- Mounting wireless access point in the shop floor will require a coordination with production or external resources.
- Lead time for cisco equipment
- Weekends is preferred for outages

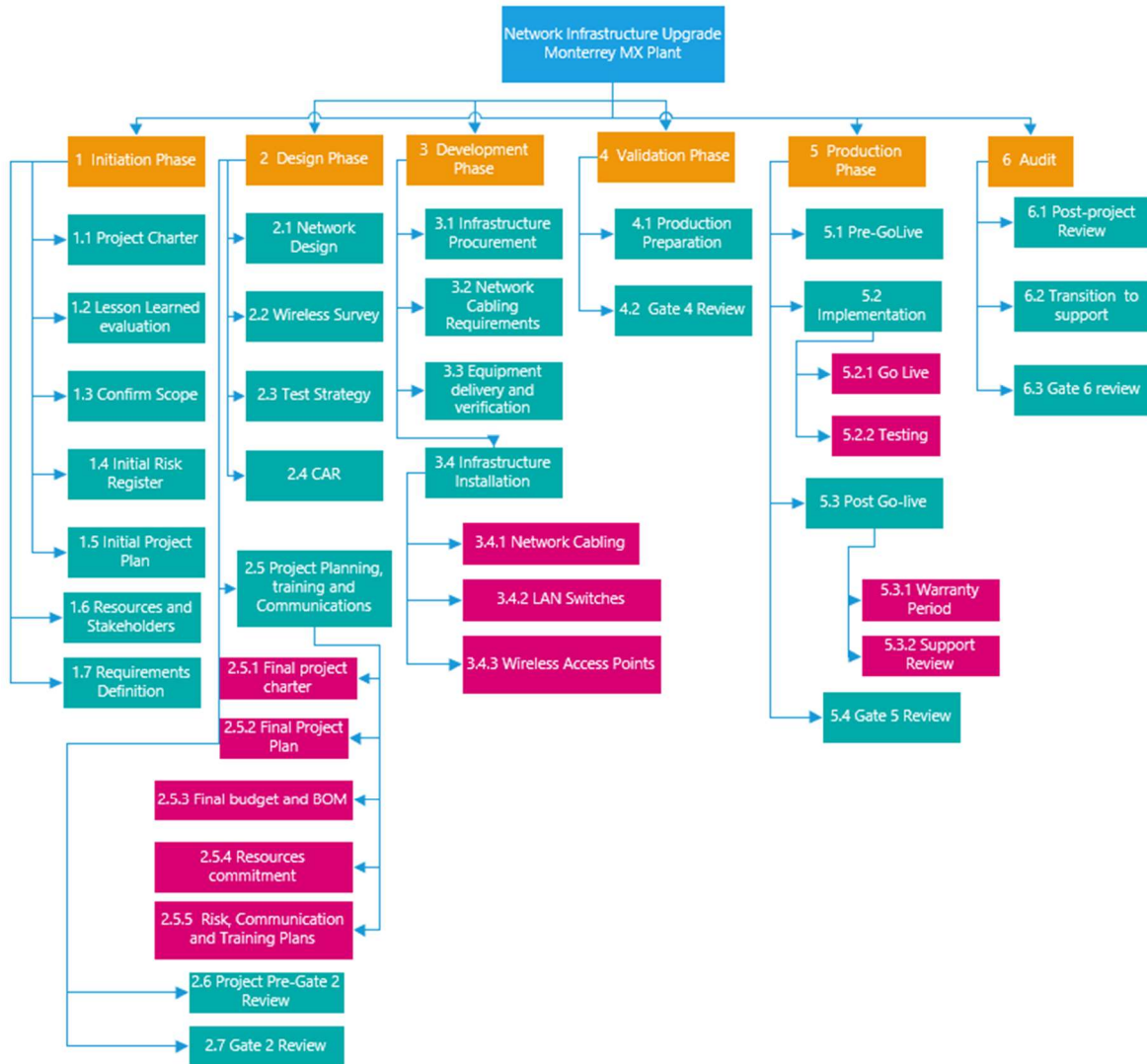
### ***Project Assumptions***

- All resources have been assigned and ready to work on the project activities
- Budget is already approved
- All the network and current cabling has been upgraded it recently to the company standards
- Network IDF and MDF have enough physical space for install new equipment
- Month-end should be avoided for surveys and infrastructure installs.

### ***Work breakdown structure***

In order to effectively manage the work required to complete this project, it will be subdivided into the project phases of the project to defined the required work on each phase This will allow the Project Manager to manage the project's scope more effectively as the project team works on the tasks necessary for project completion. The project is broken down into 6 phases: the initiation phase, design phase; the development phase; the Validation\Testing phase; the production phase; and the audit phase. Each of these phases is then subdivided further down to work packages which will require no more than 40 hours of work including the project management activities in each phase for tracking the deliverables.

Chart 7 Work breakdown structure



(Source: A. Rios, The Author, July 2020)

Chart 8 Work breakdown Dictionary

Level	WBS Code	Name	Description of Work	Resources Required
1	1	Initiation Phase	Project manager is already assigned, and status is moved to In progress, this is the initial project information.	
2	1.1	Project Charter	Create initial project charter with information received from Sponsor, review business case and detail project information with project team	Project manager, Local SIS, GAN Engineer

2	1.2	Lesson Learned evaluation	Review lesson learned from other network infrastructure project and add to project charter	Project manager, Local SIS, GAN Engineer
2	1.3	Confirm Scope	Confirm scope with Sponsor and local IT	Project manager, Local SIS, GAN Engineer
2	1.4	Initial Risk Register	Create initial risk registry with identified risks	Project manager, Local SIS, GAN Engineer
2	1.5	Initial Project Plan	Create initial project plan with WBS	Project Manager
2	1.6	Resources\Stakeholders	Create initial Stakeholder registry	Project Manager, BRM
2	1.7	Requirements Definition	Create requirements definition details and submit for approval	Project Manager
<b>1</b>	<b>2</b>	<b>Design Phase</b>	<b>In this phase all the current network design and future state will be detailed, budget will be defined and approved for start ordering required equipment</b>	
2	2.1	Network Design	Develop current LAN design and future state with the required new equipment, design approval	GAN Engineer, Local SIS, GAN Manager, Netelgent
2	2.2	Wireless Survey	Request proposal, approve proposal conduct wireless survey, present results, and design, prepare BOM	Dimension Data, Local SIS, GAN Manager, GAN Engineer
2	2.3	Test Strategy	Create test strategy documentation for perform the necessary testing	GAN Engineer, Project Manager
2	2.4	CAR	Review received quotes and create the CAR (capital appropriation request) in the local system for budget release process	BRM, GAN Engineer, Local SIS
2	2.5	Project Planning, training and Communications	Create all planning activities remaining	Project Manager
3	2.5.1	Update project charter	Update project charter and submit for approval	Project Manager
3	2.5.2	Final Project Plan	Finalize project plan with resources assigned and activities details	Project Manager, GAN Engineer, Local SIS
3	2.5.3	Final Budget and BOM	Finalize budget following internal processes and Bill of materials	Project Manager, GAN Engineer, Local SIS
3	2.5.4	Resources commitment	Resources provide their final estimates and hours commitment	Project Team
3	2.5.5	Risk, communication, and training plans	Create risk plan, create communication and training plan	Project Team



2	2.6	Pre-Gate 2 Review	Gather all the planning activities and review project documentation and create the Pre-Gate 2 presentation review	Project Manager and Sr Project Manager
2	2.7	Gate 2 Review	Gather with all the project team to lock the project design phase and decide if we continue to next phase	Project Team
1	3	<b>Development Phase</b>	<b>This phase starts with placing orders for all the required components and the delivery, configuration, and installation of these</b>	
2	3.1	Infrastructure Procurement	Procurement activities, acquire Infrastructure and place orders	Project manager, Local SIS, GAN Engineer
2	3.2	Network cabling requirements	Review network cabling requirements and request to vendors	Project manager, Local SIS, GAN Engineer
2	3.3	Equipment delivery and verification	Track equipment delivery, review received equipment is as BOM and confirm inventory	Project manager, Local SIS, GAN Engineer
2	3.4	Infrastructure Installation	All the work required for install the equipment specified in the design	Project manager, Local SIS, GAN Engineer
3	3.4.1	Network cabling	Activities related to all network cabling installation and testing	Local SIS, Vendor
3	3.4.2	LAN Switches	Activities related with LAN switches installation, configuration, and testing	Local SIS, GAN Engineer
3	3.4.3	Wireless Access Points	Activities for Install new and relocate existing access points	GAN Engineer, Local SIS,
1	4	<b>Validation Phase</b>	<b>This phase will be for validating hardware is working and prepare implementation plan for migration.</b>	
2	4.1	Production Preparation	Test Infrastructure is working Create implementation and backout plan and review with team, Review change request process and submit	Project manager, Local SIS, GAN Engineer
2	4.2	Gate 4 Review	Gather all requirements for Gate 4 and Conduct the Gate 4 Review for proceed with the project	Project Manager
1	5	<b>Production Phase</b>	<b>This phase activities will be the Implementation and Go Live when the equipment will be installed and when it will be fully operational in production</b>	
2	5.1	Pre-Go Live	Prepare all communication templates to send out to impacted stakeholders, revise the implementation plan if need it, have the Go no Go Decision	Project Manager

2	5.2	Implementation	Activities that will entail the final infrastructure install and validation	Project Manager
3	5.2.1	Go Live	Activities related to the installation of equipment in their final location	Project Manager, GAN Engineer, Local SIS
3	5.2.2	Testing	Validate hardware is working as expected and User validation with sign off	Project Manager, GAN Engineer, Local SIS
2	5.3	Post Go-Live	Activities for support implementation and ensure solution is working as expected	Project Manager
3	5.3.1	Warranty Period	Activities for monitoring solution is working as expected	Project Manager
3	5.3.2	Support Review	Activities to provide support and solution to identified issues and resolution	Project Manager
2	5.4	Gate 5 Review	Gather all requirements for Gate 5 and Conduct the Gate 5 Review for proceed with the project	Project Manager
<b>1</b>	<b>6</b>	<b>Audit Phase</b>	<b>This phase activities will be related to the final project activities and ensure project has met the deliverables and complete project documentation</b>	
2	6.1	Post- Project Review	Activities related to post implementation such as Validate scope, requirements completion, lesson learned and end of project survey	Project Manager
2	6.3	Transition to support	Activities related to transition solution for a proper support by the support team and complete administrative activities	Project Manager, GAN Engineer,
2	6.4	Gate 6 Review	Activities for finalize project and release team	Project Manager

(Source: A. Rios, The Author, July 2020)

### **Scope Verification**

As this project progresses the Project Manager will verify project deliverables against the original scope as defined in the scope statement, WBS and WBS Dictionary. Once the Project Manager verifies that the scope meets the requirements defined in the project plan, the Project Manager and Sponsor will meet for formal acceptance of the deliverable, this is done on the Phase 6 - Audit. During this meeting the Project Manager will present the deliverable to the Project Sponsor for formal acceptance. The Project Sponsor will accept the deliverable by signing off the Gate 6 Review. This will ensure that project work remains within the scope of the project on a consistent basis throughout the life of the project.

## Scope Control

The Project Manager and the project team will work together to control of the scope of the project. The project team will leverage the WBS Dictionary by using it as a statement of work for each WBS element. The project team will ensure that they perform only the work described in the WBS dictionary and generate the defined deliverables for each WBS element. The Project Manager will oversee the project team and the progression of the project to ensure that this scope control process is followed.

If a change to the project scope is needed the process for recommending changes to the scope of the project must be carried out. First the project manager must analyze and determine impact of the change, then the project manager uses the PCB form [Chart 7](#) and proceed to capture the impacts of the project, compare old baseline to new baseline. Changes must be approved by the DGC (decision gate committee) and the PMO, once the PCB is reviewed, the form must be included in the project documentation / submit changes in the form of a project change to baseline or PCB request. Project Manager must participate on a weekly meeting to present the PCB and details the impacts with the PCCB ( Project change control board). The project change control board will approve or reject the change.

If the PCB is accepted:

1. The project manager communicates the response to the project team including the sponsor
2. The project manager coordinate with the PMO to update the PCB reason on the project documentation
3. The PM uploads the PCB form as an attachment in the project documentation for record the decision.
4. The PM communicates back to the PCCB the changes on the project documentation

## Sponsor Acceptance

Approved by the Project Sponsor:

\_\_\_\_\_ Date: \_\_\_\_\_

<Project Sponsor>

<Project Sponsor Title>

Figure 7: Scope Management Plan

## Chart 9 PCB Form

### Project Change to Baseline (PCB)

Date	Requested By	Project #	Project Name
Project Type	Project Phase	Status	
Benefit	ProjectType Name		
Service Provider	Functional / Process Area	Location	Business Operation

<b>I/T Project Leader</b>	<b>Analyst/Resource Manager</b>	<b>CRM</b>	<b>PMO</b>
<b>Date Opened</b>	<b>Date Assigned</b>	<b>Date Scheduled</b>	<b>Date In Process</b>
<b>Definition Completed</b>	<b>Development Completed</b>	<b>Validation Completed</b>	<b>Production Completed</b>
<b>New Project Type</b>	<b>New Project Type</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Project Phase</b>	<b>New Project Phase</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Project Type</b>	<b>New Project Type</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Estimated IT Effort in Hours</b>	<b>New Estimated IT Effort in Hours</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Estimated Capital</b>	<b>New Estimated Capital</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Estimated Expense Non Labor</b>	<b>New Estimated Expense Non Labor</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Estimated Expense Labor</b>	<b>New Estimated Expense Labor</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Soft Savings Expected</b>	<b>New Baseline Soft Savings Expected</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Hard Savings Expected</b>	<b>New Hard Savings Expected</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline Revenue Increase Expected</b>	<b>New Revenue Increase Expected</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Baseline 99 Go Live Due</b>	<b>New 99 Go Live Due</b>	<b>Change (Y/N)</b>	<b>Change Code</b>
<b>Specific Reason For Change</b>			
<b>Change Approvals:</b>			
		<b>Comments</b>	<b>Date</b>
IT Lead / PM			

		Comments	Date
Analyst / Resource Manager			
		Comments	Date
CRM			
		Comments	Date
PMO			

(Source: Local PMO Documentation, June 2020)

#### 4.3.1.1. Requirements Management Plan

As part of the plan scope management, another important process plan that come as an output of this is the Requirements management plan, this is our objective number 4th of this FGP, see figure 8. The PMO office didn't have such plan documented, so we created a template from scratch following the PMBOK guide as reference of what contents should be included in this and an online template (Docs, Requirements Management Plan, 2020). The main aspects that need to be specified here are:

- How requirements activities will be planned, tracked, and reported
- Configuration management activities such as, how changes will be initiated, hoe impacts will be analyzed; how they will be traced, tracked, and reported; as well as the authorization levels required to approve these changes.
- Requirements prioritization process
- Metrics that will be used and the rationale for using them
- Traceability structure that reflects the requirements attributes captured on the traceability matrix.

(Project Management Institute, 2017)

# Infrastructure Network Program Templates

## Infrastructure PMO Office

### Requirements Management Plan

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#### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### **Contents:**

*Introduction*

*Requirements Management Approach*

*Configuration Management*

*Requirements Prioritization Process*

*Requirements traceability Matrix*

#### **Introduction**

The purpose of this project management plan is to establish a common understanding of how requirements will be identified, analyzed, documented, and managed for the network infrastructure upgrade for Monterrey MX manufacturing plant.

Requirements will be divided into Sponsor, WAN design, Local Area Network, Users and Support. Project requirements are the requirements identified to meet the needs of the project and ensure its completion and readiness to hand over to operations. These consist mostly of non-technical requirements, the inputs for this plan is the Project Charter and the Stakeholder Register.

#### **Requirements Management Approach**

The approach that will be used for requirements management will be divided into 4:

1. *Requirements Identification:* The project team will use some methods to collect requirements, such as: Interviews, focus groups, workshops, questionnaires. These will be conducted among the stakeholders to ensure all requirements are captured.
2. *Requirements Analysis:* The project team will analyze requirements to determine where in the WBS the requirements will fall or what work activities pertain to requirements. In this stage the priority will be set.
3. *Requirements Documentation:* After requirements have been identified and analyzed, they will be documented in the requirements definition documentation and assign a responsible.
4. *Ongoing Requirements Management:* The project manager will ensure all team members are reporting requirements status and raising any issues. This will happen during all the project phases. The project manager will follow the change control process

## **Configuration Management**

If a change to the project requirements is needed the process for recommending changes must be evaluated before approval and implementation. First the project manager must analyze and determine impact of the change, then the project manager uses the PCB form [Chart 7](#) and proceed to capture the impacts of the project, compare old baseline to new baseline. Changes must be approved by the DGC (decision gate committee) and the PMO, once the PCB is reviewed, the form must be included in the project documentation / submit changes in the form of a project change to baseline or PCB request. Project Manager must participate on a weekly meeting to present the PCB and details the impacts with the PCCB (Project change control board). The project change control board will approve or reject the change.

If the PCB is accepted:

1. The project manager communicate the response to the project team including the sponsor
2. The project manager coordinate with the PMO to update the PCB reason on the project documentation
3. The PM uploads the PCB form as an attachment in the project documentation for record the decision.
4. The PM communicates back to the PCCB the changes on the project documentation

## **Requirements Prioritization Process**

The project manager will facilitate stakeholder meetings to establish priorities for all project requirements. The requirements will be prioritized using a three-level scale.

Priority Level	Definition
High	Critical requirement without which the product or service is not acceptable to the stakeholders
Medium	A necessary but deferrable requirement which makes the product or service less usable but functional
Low	A nice feature to have if there are resources but the final product or service function well without it.

As the project continues and additional constraints are identified or there are issues with resources, it may be necessary for the project team and stakeholders to meet for select the requirements that must be archived, which can be changed, or which can be omitted.

## **Metrics**

Cost:

- The project will be delivered below the proposed budget of \$ 150,000 USD
- Reduce the cost of infrastructure failure by procurement of a maintenance support for the next 3 years

Quality:

- All switches and wireless access points are working as expected and validated by GAN Engineer, Local SIS and end-users.

Performance:

- Network latency improvement on the uncovered areas of the manufacturing plant.

## **Requirements Traceability Matrix**

The main purpose of the requirements traceability matrix is to ensure all product requirements are completed in accordance with the project charter. Any approved changes to the scope or requirements will need to update to reflect in here. The traceability matrix will have all requirements identified with a Requirement ID, the requestor, Priority, Requirement Owner, Scope ID link, Completion date.

### ***Sponsor Acceptance***

Approved by the Project Sponsor:

\_\_\_\_\_ Date: \_\_\_\_\_  
 <Project Sponsor>  
 <Project Sponsor Title>

#### **Figure 8: Requirements Management Plan**

In addition to the Requirements Management plan, a process that follow this plan and we need to complete is Collect Requirements, a requirement will be a thing that we need to do to deliver a specific item on the scope. The inputs for this process are the Project charter, scope management plan and requirements management plan. As part of the objective number 4 of this FGP the requirements documentation see figure 9 and requirements traceability matrix (figure 10) were created as an output. To document all the project requirements as mentioned in the PMBOK guide, the company has a template called Requirements Definition, we will use this template as a base, then the data gathered was part as interviews with the stakeholders and revising project requirements in previous similar projects.

## **Infrastructure Network Program Templates**

### **Infrastructure PMO Office**

#### **Requirements Definitions**

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Project Information

Project Number: 44309

Project name: *Network Infrastructure Upgrade in a Manufacturing plant*



Requestor/Project Sponsor: Project Sponsor

**Contents:**

Background and Current Situation  
 Proposed Solution  
 In Scope Features  
 Specific Requirements  
 Production Implementation Requirements  
 Training  
 Support requirements  
 Licensing Requirements  
 Testing/UAT Requirements

**Background and Current Situation**

<b>The problem of</b>	1. The <u>Monterrey MX Lighting Manufacturing Plant</u> site is growing and it needs a network infrastructure upgrade to support it and it doesn't have a complete wireless network coverage in warehouses area.
<b>Affects</b>	1. The quality of the network service for the facility 2. The ability of the Network Services Team to support the network in case of failure 3. The ability of the business to connect to the network
<b>The impact of which is</b>	1. Poor Wireless Network Coverage 2. Ability to add devices to the wired network in areas connected to MDF, IDF3 and IDF5 network closets.
<b>A successful solution would</b>	1. Provide wired network connectivity in the areas connected to the MDF, IDF3, IDF5 network closets. 2. Provide wireless network coverage for all the facility

**Proposed Solution**

- 1.1. Upgrade/Enhance the existing network infrastructure at Monterrey MX Lighting Manufacturing Plant
  - Review and revise LAN topology according the site needs
  - Coordinate Wireless survey
  - Coordinate network cabling
  - Assemble network equipment bill of materials
- 1.2. Facilitate capital and/or expense needed for the project:
  - Provide a comprehensive quote to business to provision all equipment
- 1.3. Install the following equipment
  - (21) New Wireless Access Point – 3700
  - (7) Current Wireless access Point - 3600
  - (3) New Cisco Network switches – 3750x 48 ports
- 1.4. Coordination of services

- Equipment Configuration (21 New WAPs, 7 WAPs Relocation and 3 Cisco Switches)
- 1.5. Complete all required network administrative and/or maintenance tasks:
- Upload design documents to Network services SharePoint
  - Add devices to Monitoring tools
  - Procure Smartnet for 3 Cisco switches 3750x
  - Establish/validate ongoing support for the environment
  - Recover/dispose of old network equipment as needed

### ***In Scope Features***

<b>Scope ID</b>	<b>Description</b>
<b>S_3.1</b>	Assessment of existing network infrastructure
<b>S_3.2</b>	Wireless Survey execution for the entire manufacturing plant in coordination with vendor
<b>S_3.3</b>	Support the design and procurement of the equipment according the BOM provided by the vendor and validated by the Network Engineer. <ul style="list-style-type: none"> <li>• (21) Wireless Access Point with antennas– Model 3700</li> <li>• (3) Cisco Network switches – Model 3750x 48 ports</li> <li>• (6) Wireless access point antennas for current AP</li> <li>• Cabling required for Wireless Access Points in specified areas</li> </ul>
<b>S_3.4</b>	Installation of the equipment defined in the BOM provided by Network Engineer and relocation of 7 existing access points.
<b>S_3.5</b>	Remote Configuration of the equipment by vendor.
<b>S_3.6</b>	IT Unit test performance by Network Engineer and Local SIS
<b>S_3.7</b>	Coordination of UAT with local SIS and Network Vendor
<b>S_3.8</b>	One day support for Go-Live implementation
<b>S_3.9</b>	One week of warranty with project team
<b>S_3.10</b>	Complete all required network administrative services (Transition to support)

### ***Specific Requirements***

<b>ID</b>	<b>Description</b>	<b>Request ed By</b>	<b>Priority</b>	<b>Requirement Owner</b>	<b>Scope ID</b>
<b><u>Sponsorship</u></b>					
R_SP.01	Go-Live December 4th, 2020	BRM	High	PM	
<b><u>WAN Design</u></b>					
R_WN.01	Recommendation about current WAN channel	PM	Medium	GAN Engineer	S_3.1
<b><u>Local Area Network (wired and wireless) design</u></b>					
R_LN.01	Design of local area network to support 3 switches additions and wireless access points	PM	High	GAN Engineer	S_3.1
R_LN.02	Provide a quote for Network design services and BOM	PM	Medium	Netelligent	S_3.3
R_LN.03	Evaluate and approve Design and Provided Quotes	PM	High	GAN Engineer	S_3.3

R_LN.04	Provide a quote for evaluate WLAN in Monterrey Site	PM	Medium	Dimension Data	S_3.2
R_LN.05	Create PO for evaluate WLAN Site Survey	PM	High	Local SIS	S_3.3
R_LN.06	Provide SoW for WLAN site Survey	PM	High	Dimension Data	S_3.2
R_LN.07	Approve SoW for WLAN site Survey	PM	High	BRM	S_3.2
R_LN.08	Evaluate WLAN for Monterrey MX Site	PM	High	Dimension Data	S_3.2
R_LN.09	Provide report and required equipment for WLAN	PM	High	Dimension Data	S_3.2
R_LN.10	Approve WLAN Design	PM	High	GAN Engineer and Netelligent	S_3.1
R_LN.11	Create PO for WLAN Required equipment	PM	Medium	Local SIS	S_3.3
R_LN.12	Create PO for LAN Equipment	PM	Medium	Local SIS	S_3.3
R_LN.13	Installation of the 3 network switches 3750-48, 21 Wireless Access Points and relocation of 7 current AP in the Monterrey Plant	GAN Engineer	High	Local SIS	S_3.4
R_LN.14	Configuration, implementation, and testing of the 3 network Switches and 21 Wireless Access Points. Vlans for (wired and wireless networks)	PM	High	GAN Engineer and Netelligent	S_3.5
R_LN.15	IT Test and UAT for Wired and wireless network	PM	High	GAN Engineer and Netelligent	S_3.6
R_LN.16	Provide quote and contract smartnet for 3 CISCO switches 3750-48	PM	Medium	GAN Engineer	S_3.7
R_LN.17	Coordination of the cabling company for install the required cabling for AP need it	PM	Medium	Local SIS	S_3.4
<b>Users</b>					
R_US.01	UAT performed with SIS only to confirm Corporate applications are working as planned	PM	High	Local SIS	S_3.7
<b>Support</b>					
R_SU.01	One day support for first day of operation	PM	Medium	Local SIS, GAN Engineer	S_3.8
R_SU.02	One week of warranty for project	PM	Medium	Project Team	S_3.9
R_SU.03	Complete Transition to support documentation	PMO	Medium	Local SIS, GAN Engineer	S_3.10

### **Production Implementation Requirements**

- Switches and Wireless access point installation does not require a network outage as these are additions to network not replacements.
- Cabling install might require an outage of production and coordination with production manager.

### **Training**

- No training requirements

Application Name				
Nature of Change*				
Task/Process Effects*				
User Groups	Common User Tasks/Impacts*	Locations	# Users	
User familiarity with application (Type "x")	<input type="checkbox"/>	None	<input type="checkbox"/>	Proficient
	<input type="checkbox"/>	Novice	<input type="checkbox"/>	Expert
User familiarity with tasks/processes	<input type="checkbox"/>	None	<input type="checkbox"/>	Proficient
	<input type="checkbox"/>	Novice	<input type="checkbox"/>	Expert
Notes/Considerations				
Translation Needs				

\* Please provide specific detail such as the screen names or navigations involved to aid in analysis.

### **Support Requirements**

- Support process already in place

Item	Value	Additional Comments
Service Desk Group:		
User Base and Number:	<i>User Group: # users</i>	User Group Details:
Est. Monthly Calls:		
Support Availability Required:	<input type="checkbox"/> Normal Business Hours (8-5 EST) <input type="checkbox"/> 24 x 7 <input type="checkbox"/> Other:	
Foreign Language Support:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Languages Supported:

## Licensing Requirements

- Not applicable

## Testing UAT Requirements

- UAT will be developed
- New switches:
  - Test connections from local equipment
- New data closet testing requirements:
  - Test LAN functionality (Hardware device connection to the LAN)
  - Test diverse network path(s) back to closet
- New Wireless Access Point requirements:
  - Test agreed upon locations within facility for wireless network signal
  - Validate wireless coverage according wireless survey results

Figure 9: Requirements Definition

Requirements Traceability Matrix							
Project Name:	Network infrastructure upgrade for Monterrey MX Manufacturing Plant						
Req ID	Description	Requested By	Priority	Owner	Scope ID	Target Date	Complete Date
<b><u>Sponsorship</u></b>							
R_SP.01	Go-Live December 4th, 2020	BRM	High	PM			
<b><u>WAN Design</u></b>							
R_WN.01	Recommendation about current WAN channel	PM	Medium	GAN Engineer	S_3.1		
<b><u>Local Area Network (wired and wireless) design</u></b>							
R_LN.01	Design of local area network to support 3 switches additions and wireless access points	PM	High	GAN Engineer	S_3.1		
R_LN.02	Provide a quote for Network design services and BOM	PM	Medium	Netelligent	S_3.3		
R_LN.03	Evaluate and approve Design and Provided Quotes	PM	High	GAN Engineer	S_3.3		
R_LN.04	Provide a quote for evaluate WLAN in Monterrey Site	PM	Medium	Dimension Data	S_3.2		
R_LN.05	Create PO for evaluate WLAN Site Survey	PM	High	Local SIS	S_3.3		
R_LN.06	Provide SoW for WLAN site Survey	PM	High	Dimension Data	S_3.2		
R_LN.07	Approve SoW for WLAN site Survey	PM	High	BRM	S_3.2		
R_LN.08	Evaluate WLAN for Monterrey MX Site	PM	High	Dimension Data	S_3.2		
R_LN.09	Provide report and required equipment for WLAN	PM	High	Dimension Data	S_3.2		

R_LN.10	Approve WLAN Design	PM	High	GAN Engineer and Netelligent	S_3.1		
R_LN.11	Create PO for WLAN Required equipment	PM	Medium	Local SIS	S_3.3		
R_LN.12	Create PO for LAN Equipment	PM	Medium	Local SIS	S_3.3		
R_LN.13	Installation of the 3 network switches Model 3750-48, 21 Wireless Access Points and relocation of 7 current Access Points	GAN Engineer	High	Local SIS	S_3.4		
R_LN.14	Configuration, implementation and testing of the 3 network Switches and 21 Wireless Access Points. Vlans for (wired and wireless networks)	PM	High	GAN Engineer and Netelligent	S_3.5		
R_LN.15	IT Test and UAT for Wired and wireless network	PM	High	GAN Engineer and Netelligent	S_3.6		
R_LN.16	Provide quote and contract smartnet for 3 CISCO switches 3750-48	PM	Medium	GAN Engineer	S_3.7		
R_LN.17	Coordination of the cabling company for install the required cabling for AP need it	PM	Medium	Local SIS	S_3.4		
<b>Users</b>							
R_US.01	UAT performed with SIS only to confirm Corporate applications are working as planned	PM	High	Local SIS	S_3.7		
<b>Support</b>							
R_SU.01	One day support for first day of operation	PM	Medium	Local SIS, GAN Engineer	S_3.8		
R_SU.02	One week of warranty for project	PM	Medium	Project Team	S_3.9		
R_SU.03	Complete Transition to support documentation	PMO	Medium	Local SIS, GAN Engineer	S_3.10		

Figure 10: Requirements traceability Matrix

### 4.3.2. Schedule Management Plan

Our next objective for this FGP is the develop of an schedule management plan, this plan will help us to establish the policies, procedures and documenting how are we planning, developing, managing, executing, and controlling the project schedule (Project Management Institute, 2017). In other words, we will set the game rules on who to manage the time flow in the project. The company didn't have an actual schedule management plan, therefore, we took a template from the web (Docs, Schedule Management Plan, 2020) and we included all the items specified on the PMBOK guide, the inputs for this process were the project charter, the scope management plan and the development approach that the company use. The tools and techniques used were project documentation from other similar projects,

meetings, and expert judgment by contacting other PM's that had worked on similar projects. We can review the final schedule management plan on figure 11.

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Schedule Management Plan

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##### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

##### **Contents:**

*Introduction*

*Schedule Management Approach*

*Schedule Control*

*Schedule and scope changes*

##### **Introduction**

The project schedule is the timeline for how the project will be executed. The schedule is a very important part of any project, these provide the project team, sponsor and stakeholders a high level overview of the project's status at any given time. The purpose for this document is to define the approach that the project team will follow for create the project schedule. In addition, it will include how the project team will monitor the project schedule and manage changes after the baseline has been approved.

##### **Schedule Management approach**

Project Schedules will be created using the MS Project 2019 by following the program template in the project documentation. The structure is defined according the 6 main phases of the project and the WBS.

All the project team and resources have the responsibility to review and participate in the development of the preliminary schedule. Then, they must agree by providing a 3-point estimates for their work assigned. The resource manager must approve this then the project sponsor will approve schedule baselined.

The following will be the main project milestones as outlined on the project charter:

<b>Milestone</b>	<b>Due Date</b>
Project Start	Jun 2020
Requirements Approval	July 2020
Phase 2 (Definition) Complete	Aug 2020
Phase 4 (Validation) Complete	Nov 2020
Go-Live	Dec 4 <sup>th</sup> , 2020
Phase 5 (Production) Complete	Dec 2020
Project Closure	Dec 2020

Roles and responsibilities:

The project manager will be responsible for facilitation work package definition, sequencing, and estimating duration and resources with the project team. The project schedule will be create following the program template and validate with all the team members.

The project team is responsible for participating in work package definition, sequencing, and duration. The 3-point estimate template will be used for this.

The project sponsor will participate in reviews of the proposed schedule and approve the final schedule before it is baselined.

### **Schedule Control**

Project schedule will be reviews and updates as necessary on a weekly basis with actual start, actual finish, and competition percentages which will be reviewed on the weekly project meetings.

Additional meeting will be setup with the team for review estimates, determining impacts of schedule variances, submitting schedule change requests and reporting schedule status according the project communication plan.

### **Schedule and Scope Changes**

If a change to the project scope or schedule is needed the process for recommending changes to the scope of the project must be carried out. First the project manager must analyze and determines impact of the change, then the project manager uses the PCB form ([Chart 7](#)) and proceed to capture the impacts of the project, compare old baseline to new baseline. Changes must be approved by the DGC (decision gate committee) and the PMO, once the PCB is reviewed, the form must be included in the project documentation / submit changes in the form of a project change to baseline or PCB request see Chart . Project Manager must participate on a weekly meeting to present the PCB and details the impacts with the PCCB (Project change control board). The project change control board will approve or reject the change.

If the PCB is accepted:

1. The project manager communicates the response to the project team including the sponsor
2. The project manager coordinates with the PMO to update the PCB reason on the project documentation
3. The PM uploads the PCB form as an attachment in the project documentation for record the decision.
4. The PM communicates back to the PCCB the changes on the project documentation

Approved by the Project Sponsor:



Date: \_\_\_\_\_

<Project Sponsor>  
 <Project Sponsor Title>

**Figure 11: Schedule Management Plan**

Within the project schedule management process, the following processes were developed at the same time: defining activities, sequencing activities, and estimating activity durations, the final output was the schedule. These 3 mentioned processes were revisited repeatedly to complete the final schedule. For defining activities, the tools and techniques we used were expert judgment, as the project manager has worked before on similar projects, in addition, decomposition was another tool that was beneficial for this process and meeting with main stakeholders of the project. The output after applying this was the final activities list shown on **figure 12**.

ID	WBS	Task Name
<b>1</b>	<b>1</b>	<b>FGP- Network Upgrade Project Template</b>
<b>2</b>	<b>1.1</b>	<b>Initiation Phase</b>
3	1.1.1	Milestone: Project Manager Start Date
<b>4</b>	<b>1.1.2</b>	<b>Project Charter</b>
5	1.1.2.1	Create Project Charter
6	1.1.2.2	Create Initial Cost Assessment
<b>7</b>	<b>1.1.3</b>	<b>Lesson learned Evaluation</b>
8	1.1.3.1	Review previous projects lesson learned and apply to project
<b>9</b>	<b>1.1.4</b>	<b>Confirm Scope</b>
10	1.1.4.1	Gather with team to confirm scope
11	1.1.4.2	Update Project Charter as necessary
<b>12</b>	<b>1.1.5</b>	<b>Initial Risk Register</b>
13	1.1.5.1	Create initial risk register
<b>14</b>	<b>1.1.6</b>	<b>Initial Project Plan</b>
15	1.1.6.1	Create initial Project Plan
<b>16</b>	<b>1.1.7</b>	<b>Resources\Stakeholders</b>
17	1.1.7.1	Create stakeholder registry
<b>18</b>	<b>1.1.8</b>	<b>Requirements Definition</b>
<b>19</b>	<b>1.1.8.1</b>	<b>Requirements gathering</b>
20	1.1.8.1.1	WAN, LAN, Cabling Requirements

<b>21</b>	<b>1.1.8.1.2</b>	<b>Wireless Requirements</b>
22	1.1.8.1.2.1	Complete wireless survey questionnaire
23	1.1.8.1.2.2	Request wireless assessment quote
24	1.1.8.1.3	Validate Inventory as is
25	1.1.8.2	Draft Requirements definition document
26	1.1.8.3	Submit requirements for approval
27	1.1.8.4	Revision/Updates to requirements docs
28	1.1.8.5	Milestone: Requirements Approved
<b>29</b>	<b>1.2</b>	<b>Design Phase</b>
<b>30</b>	<b>1.2.1</b>	<b>Network Design</b>
31	1.2.1.1	Develop WAN, LAN Cabling design for future state
32	1.2.1.2	Design Review and Rework
33	1.2.1.3	Request Design Approval
34	1.2.1.4	Design Complete
<b>35</b>	<b>1.2.2</b>	<b>Wireless Survey</b>
36	1.2.2.1	Request proposal or Update previous year proposal
37	1.2.2.2	Approve proposal
38	1.2.2.3	Schedule Wireless Survey
39	1.2.2.4	Conduct Wireless survey
40	1.2.2.5	Develop technical wireless result and design
41	1.2.2.6	Review Wireless survey Results
42	1.2.2.7	Approve Wireless survey results and design
43	1.2.2.8	Prepare BOM for wireless
<b>44</b>	<b>1.2.3</b>	<b>Test Strategy</b>
45	1.2.3.1	Complete test strategy
46	1.2.3.2	Secure Resources
47	1.2.3.3	Test Strategy approval
<b>48</b>	<b>1.2.4</b>	<b>CAR</b>
49	1.2.4.1	Review Quotes
50	1.2.4.2	Draft CAR
51	1.2.4.3	Review and Submit CAR
52	1.2.4.4	Finance get approval
53	1.2.4.5	CAR Approved
<b>54</b>	<b>1.2.5</b>	<b>Project Planning, training and communications</b>
55	1.2.5.1	Update project Charter as necessary
56	1.2.5.2	Complete project plan
57	1.2.5.3	Finalize project budget and BOM
<b>58</b>	<b>1.2.5.4</b>	<b>Resources\Stakeholders</b>
59	1.2.5.4.1	Resources provide final estimates and hours commitment
<b>60</b>	<b>1.2.5.5</b>	<b>Risk, Communication and training plan</b>
61	1.2.5.5.1	Finalize risk registry and evaluation

62	1.2.5.5.2	Create communication plan
63	1.2.5.5.3	Create training plan
<b>64</b>	<b>1.2.6</b>	<b>Pre-Gate 2 Review</b>
65	1.2.6.1	Review deliverables with Project team
66	1.2.6.2	Conduct Pre-Gate 2 Review
<b>67</b>	<b>1.2.7</b>	<b>Gate 2 Review</b>
68	1.2.7.1	Prepare for Gate 2 Review
69	1.2.7.2	Conduct Gate 2 Review
70	1.2.8	Milestone: Phase 2 Complete
<b>71</b>	<b>1.3</b>	<b>Development Phase</b>
<b>72</b>	<b>1.3.1</b>	<b>Infrastructure Procurement</b>
73	1.3.1.1	Submit PO for LAN, Wireless
<b>74</b>	<b>1.3.2</b>	<b>Network Cabling Requirements</b>
75	1.3.2.1	Review network requirements and submit order
<b>76</b>	<b>1.3.3</b>	<b>Equipment delivery and verification</b>
77	1.3.3.1	Receive equipment
78	1.3.3.2	Verify with BOM and Inventory
<b>79</b>	<b>1.3.4</b>	<b>Infrastructure Installation</b>
<b>80</b>	<b>1.3.4.1</b>	<b>Network Cabling</b>
81	1.3.4.1.1	Install Cabling
<b>82</b>	<b>1.3.4.2</b>	<b>LAN Switches</b>
83	1.3.4.2.1	Write scripts
84	1.3.4.2.2	Configure switches
<b>85</b>	<b>1.3.4.3</b>	<b>Wireless Access Point</b>
86	1.3.4.3.1	Configure new wireless access points
<b>87</b>	<b>1.3.4.3.2</b>	<b>Existing Wireless Access point</b>
88	1.3.4.3.2.1	Relocate WAPs
89	1.3.4.3.2.2	Configure WAPs
90	1.3.4.4	Create test scripts
<b>91</b>	<b>1.4</b>	<b>Validation Phase</b>
<b>92</b>	<b>1.4.1</b>	<b>Production Preparation</b>
93	1.4.1.1	Infrastructure validation
94	1.4.1.2	Create Implementation and Backout plan
95	1.4.1.3	Submit Change request
<b>96</b>	<b>1.4.2</b>	<b>Gate 4 Review</b>
97	1.4.2.1	Prepare for Gate 4 review
98	1.4.2.2	Conduct Gate 4 Review
99	1.4.3	Milestone: Phase 4 Complete
<b>100</b>	<b>1.5</b>	<b>Production Phase</b>
<b>101</b>	<b>1.5.1</b>	<b>Pre-Golive</b>
102	1.5.1.1	Receive change request approval

103	1.5.1.2	Create end user communication
104	1.5.1.3	Conduct Go-No Go Decision
105	1.5.1.4	Send customer Go-live notice
<b>106</b>	<b>1.5.2</b>	<b>Implementation</b>
<b>107</b>	<b>1.5.2.1</b>	<b>Go Live</b>
108	1.5.2.1.1	Manage Communication and migration
109	1.5.2.1.2	Install LAN switches on final location
110	1.5.2.1.3	Install new Wireless Access Point and Relocate existing
<b>111</b>	<b>1.5.2.2</b>	<b>Testing</b>
112	1.5.2.2.1	Conduct IT Testing
113	1.5.2.2.2	Conduct User Acceptance Testing and Signoff
114	1.5.2.3	Milestone: Implementation Complete
<b>115</b>	<b>1.5.3</b>	<b>Post-Go Live</b>
<b>116</b>	<b>1.5.3.1</b>	<b>Warranty Period</b>
117	1.5.3.1.1	Provide warranty period
<b>118</b>	<b>1.5.3.2</b>	<b>Support Review</b>
119	1.5.3.2.1	Review open and closed incidents
<b>120</b>	<b>1.5.4</b>	<b>Gate 5 Review</b>
121	1.5.4.1	Prepare for Gate 5 Review
122	1.5.4.2	Conduct Gate 5 Review
123	1.5.5	Milestone: Production Phase End
<b>124</b>	<b>1.6</b>	<b>Audit Phase</b>
<b>125</b>	<b>1.6.1</b>	<b>Post Project Review</b>
126	1.6.1.1	Document lesson learned
127	1.6.1.2	Conduct Post project review
128	1.6.1.3	Submit end of project survey to sponsors
<b>129</b>	<b>1.6.2</b>	<b>Transition to Support</b>
130	1.6.2.1	Complete transition to support documentation
131	1.6.2.2	Conduct transition to support meeting
<b>132</b>	<b>1.6.3</b>	<b>Gate 6 Review</b>
133	1.6.3.1	Prepare for gate 6 review
134	1.6.3.2	Conduct Gate 6 Review
135	1.6.4	Milestone: Project Closure

Figure 12: Activity List

Once the activities were defined, a sequence for the activities was created, sequence activities is the process of identifying and documenting relationships among the project activities, the key benefit of this process is that it defines the logical sequence of work to obtain the greatest efficiency given all project

constraints. (Project Management Institute, 2017). The main inputs for sequence activities was the activity list mentioned before on **figure 12**.

The tools and techniques used for sequencing were precedence diagramming method, we defined predecessor and successor activities relationships. Most of relations used were FS (Finish to Start) that is the default relation in the scheduling software used (Microsoft Project Professional 2019). The network diagram was part of the output for this process. See **Figure 13**.

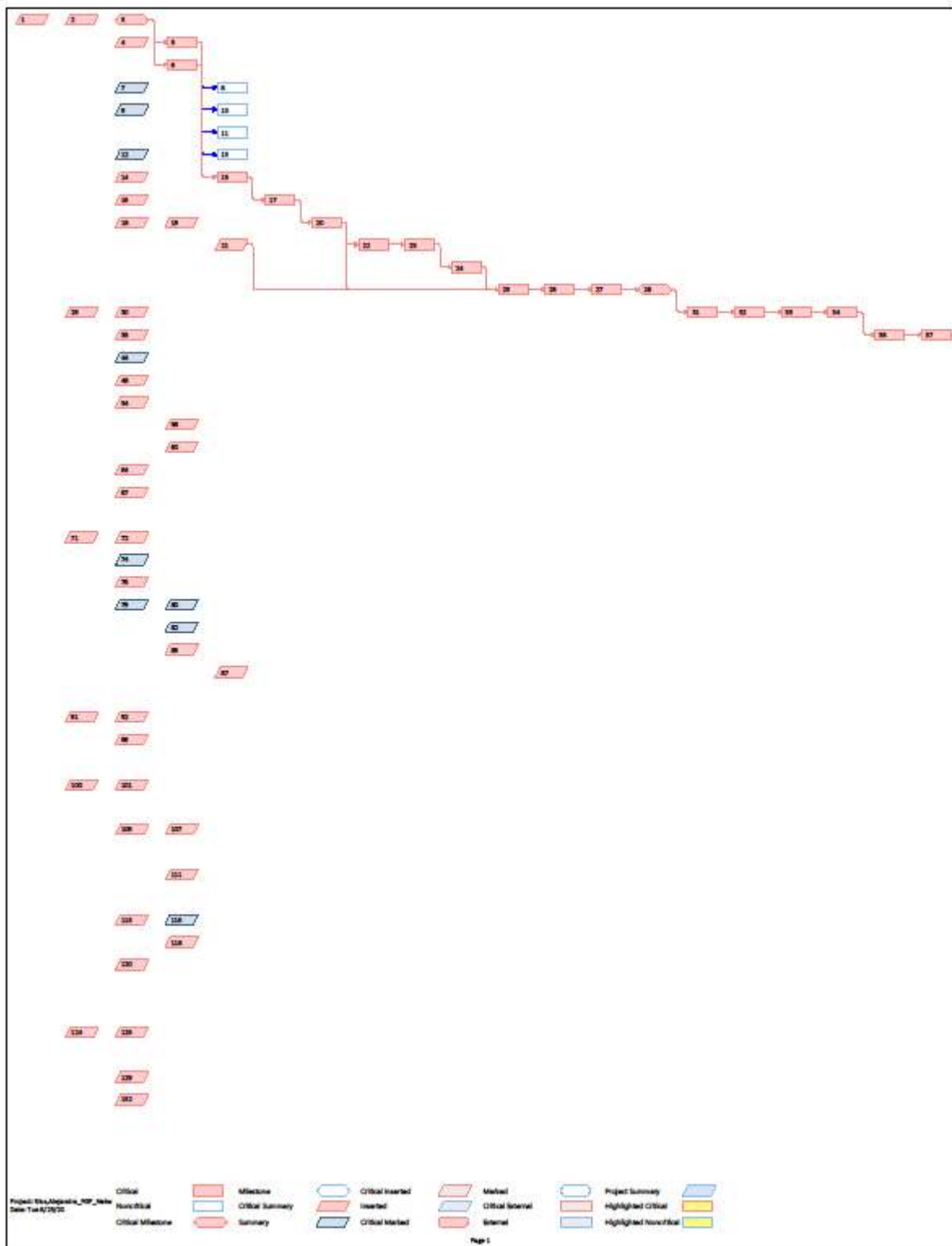


Figure 13: Network Infrastructure Upgrade Project - Network Diagram ( Double click on Image to View complete file)

At the same time, the estimates were added to the activity list, if we remember correctly to perform this process, we need the resource names and estimated work for each activity. The techniques used for estimate the work need it were Expert judgment, the project manager and Sr project manager had experience working with this type of projects and also the 3-point estimate, the company PMO office had a template in place, so we decided to use it for our estimates process, this was given to the project resources for add the tasks\activities. The weight results column will be calculated automatically with the formula  $(\text{Optimistic} + 4 * (\text{Likely}) + \text{Pessimistic}) / 6$  See **Figure 14** for template. Some meetings were held with the resources for complete the estimates and with the Sr. Project Manager to adjust times.

Effort\Duration 3 Point Estimate						
<b>Instructions:</b> White Cells are data entry and Gray cells are automatically calculated. When inserting a line be sure to copy the formula from line above. Note how days are added to the lead-time calculation in example below. This is just a very rough way of buffering for weekends for projects that span several weeks in duration. Proposed start dates can end up on a weekend.		Can't imagine the result being smaller than this (low 1% probability of success)	Best Guess - if I had to pick one value	Can't imagine the result being larger than this (high 99% probability of success)		
#	Task Details	Optimistic	Likely	Pessimistic	Weighted Result	Comments
					0.00	
					0.00	
					0.00	
					0.00	
					0.00	
					0.00	
					0.00	
					0.00	
<b>Total Effort Estimate (Hours)</b>					<b>0.00</b>	

Figure 14: 3-Point Estimate Template - PMO Documentation

<b>Effort\Duration 3 Point Estimate - GAN Engineer</b>					
<b>Instructions:</b> White Cells are data entry and Gray cells are automatically calculated. When inserting a line be sure to copy the formula from line above. Note how days are added to the lead-time calculation in example below. This is just a very rough way of buffering for weekends for projects that span several weeks in duration. Proposed start dates can end up on a weekend.		<b>Can't imagine the result being smaller than this (low 1% probability of success)</b>	<b>Best Guess - if I had to pick one value</b>	<b>Can't imagine the result being larger than this (high 99% probability of success)</b>	
<b>#REF!</b>	<b>Task Details</b>	<b>Optimistic</b>	<b>Likely</b>	<b>Pessimistic</b>	<b>Weighted Result</b>
<b>Requirements Gathering</b>	WAN, LAN Cabling requirements	4	6	8	6
<b>Network Design</b>	Develop, Rework, approval	5	6	7	6
<b>Wireless Survey</b>	Work with vendor and review proposal	1	2	3	2
<b>Test Strategy</b>	Write test strategy	1	2	3	2
<b>CAR</b>	Review quotes	1	2	3	2
<b>Equipment Delivery and Verification</b>	Verify BOM	1	2	3	2
<b>Install</b>	LAN, WAP, Configuration	4	6	8	6
<b>Validation</b>	Test, validation	1	2	3	2
<b>Implementation</b>	Go live and warranty	3	4	5	4
<b>Post project and transition to support</b>	Post project and transition to support	2	3	4	3
<b>Gate Reviews</b>	Meeting time gates review	2	3	4	3
<b>Total Effort Estimate (Hours)</b>		25	38	51	<b>38</b>

Figure 15: 3-Point Estimate – GAN Engineer.



<b>Effort\Duration 3 Point Estimate - Local SIS</b>					
#REF!	Task Details	Optimistic	Likely	Pessimistic	Weighted Result
<b>Requirements Gathering</b>	WAN, LAN Cabling requirements	1	2	3	2
<b>Validate inventory</b>	review inventory and validate	6	8	10	8
<b>Wireless Survey</b>	work with vendor for complete wireless survey	10	12	14	12
<b>CAR</b>	coordinate approval	0.5	1	1.5	1
<b>Submit PO</b>	submit PO	0.5	1	1.5	1
<b>Equipment Delivery and Verification</b>	verify BOM	2	3	4	3
<b>Install</b>	LAN, WAP, install coordination with vendor	4	5	6	5
<b>Validation</b>	Test, validation	1	2	3	2
<b>Implementation</b>	Go live and warranty	4	5	6	5
<b>Post project and transition to support</b>	post project and transition to support	1	2	3	2
<b>Gate Reviews</b>	Meeting time gates review	2	3	4	3
<b>Total Effort Estimate (Hours)</b>		32	44	56	<b>44</b>

Figure 16: 3-Point Estimate – Local SIS.

After compiling the information with the resources. The final version of the schedule was created with Resources names, Duration, work in hours, start date, finish date, predecessors, and successors activity Attributes See **Figure 17** and timeline on **Figure 18**.

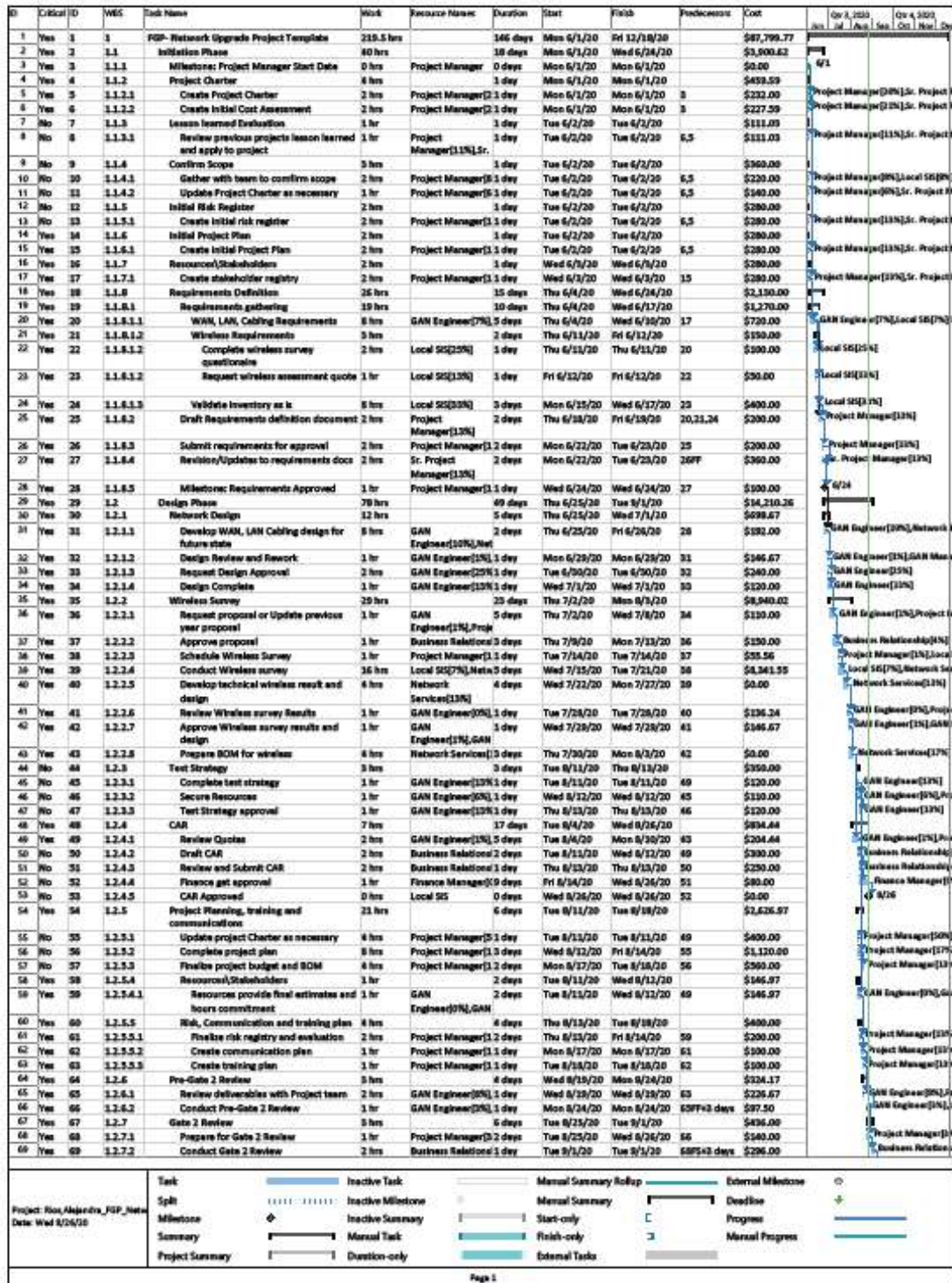


Figure 17: Network Infrastructure Upgrade Project Plan in Gantt Chart (Double click on image to view complete file)

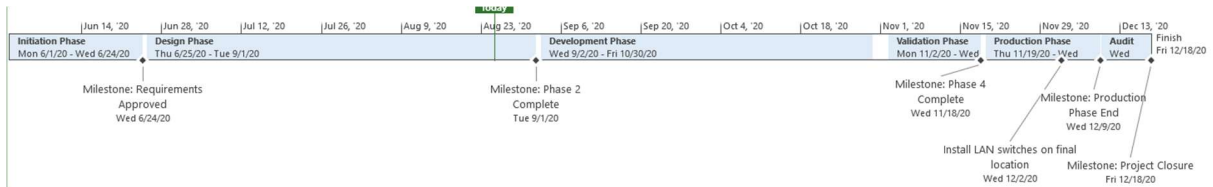


Figure 18: Network Infrastructure Upgrade Project Timeline

### 4.3.3. Cost Management Plan

Out next FGP objective was to create the Cost Management Plan, this plan will help us to define how the project costs will be estimated, budgeted, managed, monitored, and controlled. The key benefit of this process is that it provides guidance and direction how to manage the cost through the project. (Project Management Institute, 2017). To create this plan, we obtained a template from the web and we followed the Schedule management plan as an input and review the current processes of the company. See Figure 19.

## Infrastructure Network Program Templates

### Infrastructure PMO Office

### Cost Management Plan

#### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### Contents:

*Introduction*

*Cost Management Approach*

*Measuring Project Costs*

*Reporting Format*

*Cost Variance response process*

*Cost Change Control  
Project Budget*

***Introduction***

The Project Manager will be responsible for managing and reporting on the project's cost throughout the duration of the project. During the monthly project status meeting, the Project Manager will meet with management to present and review the project's cost performance for the preceding month. Performance will be measured using earned value. The Project Manager is responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget. The Project Sponsor has the authority to make changes to the project to bring it back within budget.

In addition, the project cost will be estimated using cost aggregation by work packages and adding the materials cost in the final version of the schedule in the scheduling software tool used Microsoft Project Professional 2019.

***Cost Management approach***

Costs for this project will be managed at the fourth level of the Work Breakdown Structure (WBS). Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CA's will measure and manage the financial performance of the project. Although activity cost estimates are detailed in the work packages, the level of accuracy for cost management is at the fourth level of the WBS. Credit for work will be assigned at the work package level. Work started on work packages will grant that work package with 50% credit; whereas, the remaining 50% is credited upon completion of all work defined in that work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary; as such, those values will be changed to yellow in the project status reports. Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage; as such, those values will be changed to red in the project status reports. This will require corrective action from the Project Manager in order to bring the cost and/or schedule performance indexes below the alert level. Corrective actions will require a project change request and be must approved by the Project Sponsor before it can become within the scope of the project.

***Measuring project cost***

Performance of the project will be measured using Earned Value Management. The following four Earned Value metrics will be used to measure to projects cost performance:

- Schedule Variance (SV)
- Cost Variance (CV)
- Schedule Performance Index (SPI)
- Cost Performance Index (CPI)

If the Schedule Performance Index or Cost Performance Index has a variance of between 0.1 and 0.2 the Project Manager must report the reason for the exception. If the SPI or CPI has a variance of greater than 0.2 the Project Manager must report the reason for the exception and provide management a detailed corrective plan to bring the projects performance back to acceptable levels.

Performance Measure	Yellow	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2

## **Reporting Format**

Reporting for cost management will be included in the monthly project status report. The Monthly Project Status Report will include a section labeled, “Cost Management”. This section will contain the Earned Value Metrics identified in the previous section. All cost variances outside of the thresholds identified in this Cost Management Plan will be reported on including any corrective actions which are planned. Change Requests which are triggered based upon project cost overruns will be identified and tracked in this report.

## **Cost Variance Response Process**

The Control Thresholds for this project is a CPI or SPI of less than 0.8 or greater than 1.2. If the project reaches one of these Control Thresholds a Cost Variance Corrective Action Plan is required. The Project Manager will present the Project Sponsor with options for corrective actions within five business days from when the cost variance is first reported. Within three business days from when the Project Sponsor selects a corrective action option, the Project Manager will present the Project Sponsor with a formal Cost Variance Corrective Action Plan. The Cost Variance Corrective Action Plan will detail the actions necessary to bring the project back within budget and how the effectiveness of the actions in the plan will be measured. Upon acceptance of the Cost Variance Corrective Action Plan it will become a part of the project plan and the project will be updated to reflect the corrective actions.

## **Cost Change Control Process**

If a change to the project cost is needed the process for recommending changes to the cost of the project must be carried out. First the project manager must analyze and determine impact of the change, then the project manager uses the PCB form ([Chart 7](#)) and proceed to capture the impacts of the project, compare old baseline to new baseline. Changes must be approved by the DGC (decision gate committee) and the PMO, once the PCB is reviewed, the form must be included in the project documentation / submit changes in the form of a project change to baseline or PCB request see [Chart](#) . Project Manager must participate on a weekly meeting to present the PCB and details the impacts with the PCCB (Project change control board). The project change control board will approve or reject the change.

If the PCB is accepted:

5. The project manager communicates the response to the project team including the sponsor
6. The project manager coordinates with the PMO to update the PCB reason on the project documentation
7. The PM uploads the PCB form as an attachment in the project documentation for record the decision.
8. The PM communicates back to the PCCB the changes on the project documentation

## **Project Budget**

The project Budget for this project is detailed below:

Item	Type	Cost
Wireless Survey	Material	\$ 8,208.22
Cisco Switches	Material	\$ 28,095.60
Wireless Access Points	Material	\$ 24,480.04
Network Cabling	Material	\$ 6,720.00
Logistics charge and Mexico duties	Material	\$ 3,049.44
	<b>Total</b>	<b>\$ 70,553.30</b>
Work	Labor	\$ 17,246.47
		\$ 87,799.77
Contingency Reserve 8%		\$ 7,023.98
Management Reserve 5 %		\$ 4,389.99
Cost baseline		\$ 94,823.75
<b>Project Budget</b>		<b>\$ 99,213.74</b>

Approved by the Project Sponsor:

\_\_\_\_\_

Date: \_\_\_\_\_

<Project Sponsor>

<Project Sponsor Title>

**Figure 19: Cost Management Plan**

The first process to complete the Project cost budget was to estimate costs, this process was done by adding the standard rate for all the resources in the scheduling software, including the material costs in the work package that will be used. This will add up the total cost by work package. The final estimates were the output for this process, in addition we use the reserve analysis by adding a contingency reserve of 8% and a management reserve of 5% to include any unknown risks see **Figure 20**.

ID	WBS	Task Name	Work	Duration	Start	Finish	Cost
1	1	FGP- Network Upgrade Project Template	219.5 hrs	146 days	Mon 6/1/20	Fri 12/18/20	\$87,799.77
2	1.1	Initiation Phase	40 hrs	18 days	Mon 6/1/20	Wed 6/24/20	\$3,900.62
3	1.1.1	Milestone: Project Manager Start Date	0 hrs	0 days	Mon 6/1/20	Mon 6/1/20	\$0.00
4	1.1.2	Project Charter	4 hrs	1 day	Mon 6/1/20	Mon 6/1/20	\$459.59



7	1.1.3	Lesson learned Evaluation	1 hr	1 day	Tue 6/2/20	Tue 6/2/20	\$111.03
9	1.1.4	Confirm Scope	3 hrs	1 day	Tue 6/2/20	Tue 6/2/20	\$360.00
12	1.1.5	Initial Risk Register	2 hrs	1 day	Tue 6/2/20	Tue 6/2/20	\$280.00
14	1.1.6	Initial Project Plan	2 hrs	1 day	Tue 6/2/20	Tue 6/2/20	\$280.00
16	1.1.7	Resources\Stakeholders	2 hrs	1 day	Wed 6/3/20	Wed 6/3/20	\$280.00
18	1.1.8	Requirements Definition	26 hrs	15 days	Thu 6/4/20	Wed 6/24/20	\$2,130.00
29	1.2	Design Phase	78 hrs	49 days	Thu 6/25/20	Tue 9/1/20	\$14,210.26
30	1.2.1	Network Design	12 hrs	5 days	Thu 6/25/20	Wed 7/1/20	\$698.67
35	1.2.2	Wireless Survey	29 hrs	23 days	Thu 7/2/20	Mon 8/3/20	\$8,940.02
44	1.2.3	Test Strategy	3 hrs	3 days	Tue 8/11/20	Thu 8/13/20	\$350.00
48	1.2.4	CAR	7 hrs	17 days	Tue 8/4/20	Wed 8/26/20	\$834.44
54	1.2.5	Project Planning, training and communications	21 hrs	6 days	Tue 8/11/20	Tue 8/18/20	\$2,626.97
64	1.2.6	Pre-Gate 2 Review	3 hrs	4 days	Wed 8/19/20	Mon 8/24/20	\$324.17
67	1.2.7	Gate 2 Review	3 hrs	6 days	Tue 8/25/20	Tue 9/1/20	\$436.00
70	1.2.8	Milestone: Phase 2 Complete	0 hrs	0 days	Tue 9/1/20	Tue 9/1/20	\$0.00
71	1.3	Development Phase	41.5 hrs	44 days	Wed 9/2/20	Mon 11/2/20	\$64,503.93
72	1.3.1	Infrastructure Procurement	1 hr	1 day	Wed 9/2/20	Wed 9/2/20	\$50.00
74	1.3.2	Network Cabling Requirements	1 hr	1 day	Thu 9/3/20	Thu 9/3/20	\$50.00
76	1.3.3	Equipment delivery and verification	3.5 hrs	29 days	Thu 9/3/20	Tue 10/13/20	\$55,993.93
79	1.3.4	Infrastructure Installation	36 hrs	37 days	Fri 9/11/20	Mon 11/2/20	\$8,410.00
91	1.4	Validation Phase	11 hrs	14 days	Tue 11/3/20	Fri 11/20/20	\$1,058.89
92	1.4.1	Production Preparation	8 hrs	10 days	Tue 11/3/20	Mon 11/16/20	\$710.00
96	1.4.2	Gate 4 Review	3 hrs	4 days	Tue 11/17/20	Fri 11/20/20	\$348.89
99	1.4.3	Milestone: Phase 4 Complete	0 hrs	0 days	Fri 11/20/20	Fri 11/20/20	\$0.00
100	1.5	Production Phase	40 hrs	15 days	Mon 11/23/20	Thu 12/10/20	\$2,979.02
101	1.5.1	Pre-Go Live	6 hrs	7 days	Mon 11/23/20	Tue 12/1/20	\$658.43
106	1.5.2	Implementation	23 hrs	6 days	Tue 12/1/20	Mon 12/7/20	\$1,260.00
107	1.5.2.1	Go Live	21 hrs	5 days	Tue 12/1/20	Sat 12/5/20	\$1,125.00
111	1.5.2.2	Testing	2 hrs	2 days	Sat 12/5/20	Mon 12/7/20	\$135.00
114	1.5.2.3	Milestone: Implementation Complete	0 hrs	0 days	Mon 12/7/20	Mon 12/7/20	\$0.00
115	1.5.3	Post-Go Live	9 hrs	3 days	Mon 12/7/20	Thu 12/10/20	\$870.59
116	1.5.3.1	Warranty Period	6 hrs	3 days	Mon 12/7/20	Thu 12/10/20	\$510.00
118	1.5.3.2	Support Review	3 hrs	2 days	Mon 12/7/20	Wed 12/9/20	\$360.59

120	1.5.4	Gate 5 Review	2 hrs	1 day	Wed 12/9/20	Thu 12/10/20	\$190.00
123	1.5.5	Milestone: Production Phase End	0 hrs	0 days	Thu 12/10/20	Thu 12/10/20	\$0.00
124	1.6	Audit Phase	9 hrs	6 days	Thu 12/10/20	Fri 12/18/20	\$1,147.05
125	1.6.1	Post Project Review	3 hrs	2 days	Thu 12/10/20	Mon 12/14/20	\$312.50
129	1.6.2	Transition to Support	3 hrs	2 days	Mon 12/14/20	Wed 12/16/20	\$489.55
132	1.6.3	Gate 6 Review	3 hrs	2 days	Wed 12/16/20	Fri 12/18/20	\$345.00
135	1.6.4	Milestone: Project Closure	0 hrs	0 days	Fri 12/18/20	Fri 12/18/20	\$0.00

Task Name	Work	Duration	Start	Finish	Cost
Initiation Phase	40 hrs	18 days	Mon 6/1/20	Wed 6/24/20	\$3,900.62
Design Phase	78 hrs	49 days	Thu 6/25/20	Tue 9/1/20	\$14,210.26
Development Phase	41.5 hrs	44 days	Wed 9/2/20	Mon 11/2/20	\$64,503.93
Validation Phase	11 hrs	14 days	Tue 11/3/20	Fri 11/20/20	\$1,058.89
Production Phase	40 hrs	15 days	Mon 11/23/20	Thu 12/10/20	\$2,979.02
Audit Phase	9 hrs	6 days	Thu 12/10/20	Fri 12/18/20	\$1,147.05
<b>Total Cost</b>					<b>\$87,799.77</b>
<b>Contingency Reserve 8%</b>					<b>\$7,023.98</b>
<b>Cost Baseline</b>					<b>\$94,823.75</b>
<b>Management Reserve 5%</b>					<b>\$4,389.99</b>
<b>Project Budget</b>					<b>\$99,213.74</b>

Figure 20: Network Infrastructure Upgrade - Cost Estimates and Baseline

#### 4.3.4. Quality Management Plan

Another objective for our FGP is to complete a Quality Management plan, this plan will help us to identify quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements, it will provide guidance and direction on how quality will be managed and verified throughout the project. Our main inputs for create the mentioned plan were the project charter, requirements management plan, and scope baseline. The plan was taken from a template and adjusted to fit the company procedures. Refer to **Figure 21**



# Infrastructure Network Program Templates

## Infrastructure PMO Office

### Quality Management Plan

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#### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### Contents:

*Introduction*

*Roles and responsibilities*

*Quality Key Factors*

*Quality Metrics and baseline*

*Quality Activity Matrix*

*Quality Documents and Continuous improvement*

#### **Introduction**

The quality management plan for this project will establish the activities, processes, and procedures to deliver a product or service to the specifications of the customer or stakeholder. The purpose for this plan is to:

- Ensure quality is planned
- Define the roles and responsibilities and how quality will be managed
- Define Key factors
- Define Activity Matrix control activities
- Define acceptable quality standards

#### **Quality Roles and Responsibilities**

Role	Responsibilities
Project Manager (PM)	<ul style="list-style-type: none"> <li>• Communicate quality (risks and issues) to internal and external stakeholders.</li> <li>• Communicate with project staff regularly to direct project activities and stay current on project quality status.</li> <li>• Develop and maintain project management plans.</li> <li>• Monitor milestones, activities, timelines, resources, budgets, and critical path</li> <li>• Develop and track project metrics.</li> <li>• Oversee contractor activities.</li> <li>• Review contractor deliverables</li> </ul>

Technical Manager (PM or designee)	<ul style="list-style-type: none"> <li>• Identify and escalate any critical project issues to the Project Manager.</li> <li>• Establish technical policies, processes, procedures, and defined quality standards.</li> <li>• Execute technical policies, processes, procedures and ensure adherence to defined quality standards.</li> <li>• Communicate project status, quality (risks and issues) to the quality manager, PM, executives, program managers.</li> </ul>
Quality Manager (Technical Manager or designee)	<ul style="list-style-type: none"> <li>• Identify and escalate any critical project issues to the Project Manager and/or Technical Manager.</li> <li>• Identify Quality Standards and Metrics</li> <li>• Provide QA inputs for developing project work products and ensuring that quality targets are defined for each deliverable and process.</li> <li>• Provide oversight of relocation processes and procedures and provide evaluation reports related to standards compliance, process variances, and identifying process improvement opportunities.</li> <li>• Implement QA techniques to ensure the quality of the deliverables to be produced by the project.</li> <li>• Implement QC techniques to control the quality of the deliverables produced by the project.</li> </ul>
Test Team	<ul style="list-style-type: none"> <li>• Define testing acceptance criteria for performing acceptance testing when new equipment has been installed in the final location.</li> <li>• Perform user acceptance testing</li> </ul>

### Quality Key factors

Factor	Factor Definition	Quality Objective
Benefits	Cost avoidance to Eaton by providing Centralized infrastructure services as opposed to standalone systems – economies of scale	Centralized support, system managements, monitoring and processes
Time/Schedule	To deliver project output	Delivery project on time and schedule.
Hardware efficiencies	Leveraging Kentucky Data Centers vs. having to maintain or upgrade standalone equipment	Avoid standalone equipment and maintenance support
Consolidation of application	Consolidate applications and licensing into one CORE	Reduced maintenance and application costs
Customer Satisfaction	Quality of deliverable and quality of process	Increase customer satisfaction providing centralized services and Access to the network.
Risks	Including uncertainty or threats to project success	Create a risk log and maintain it update on a weekly basis, review with stakeholders

### Quality Metrics and Baseline

Process Area	Metric	Measurement	Acceptance targets	Reported by
Change control	Number of opened change requests	Total new change requests created in the reporting period.	Number of charge request less than 3 changes.	IT Infrastructure PMO
Issues	Average aging of issues	Total calendar days active for active issues / number of active issues	Total calendar days active less than 5 days	PM
Risks	Average Aging of Risks	Total calendar days active for active risks / number of active risks.	Total calendar days active less than 5 days	PM
Schedule	Schedule Performance Index (SPI) Earned Value (EV) / Planned Value (PV)).	SPI must be one or greater, or else less work is completed than the planned work. In other words, you are behind schedule	SPI >= 1	IT Infrastructure PMO
Schedule	Baseline Finish versus Actual Number of Planned Tasks that should have finished / Total Number of Tasks in Finish	No more than 10% of planned tasks are late as per the baseline finish date	Total number of tasks late is less than 10%	IT Infrastructure PMO
Project Data health	All documentation has been completed at the project stage	Total of completed documents according the project management phase	Green will be for all completed documents on the phase Orange for 1 document missing Red for 2 or more documents missing	IT Infrastructure PMO

### Quality Activity Matrix

Deliverable	Requirement(s)	Manage and Control activities	Frequency	Responsible
Assessment of existing network infrastructure	-Recommendation about current WAN channel	Manage: Follow up with vendor the recommendation and inform team	Bi-Weekly	GAN Engineer

	-Design of local area network to support 3 switches additions and wireless access points - Approve WLAN Design	Control: Identify any risk associated with the delivery date provided and inform PM as soon as possible on the weekly meeting	Weekly	GAN Engineer, Project Manager
Wireless Survey execution for the entire manufacturing plant in coordination with vendor	-Provide a quote for evaluate WLAN in Monterrey Site - Provide SoW for WLAN site Survey - Approve SoW for WLAN site Survey - Evaluate WLAN for Monterrey MX Site - Provide report and required equipment for WLAN	Manage: Follow up with vendor the proposed dates	Bi-Weekly	GAN Engineer
		Control: Identify any risk associated with the survey date provided by vendor and inform PM as soon as possible on the weekly meeting	Weekly	GAN Engineer, Project Manager
Support the design and procurement of the equipment according to the BOM provided by the vendor and validated by the Network Engineer.	-Provide a quote for Network design services and BOM -Evaluate and approve Design and Provided Quotes - Create PO for evaluate WLAN Site Survey - Create PO for WLAN Required equipment - Create PO for LAN Equipment	Manage: Revise with vendor and local SIS the design before proceeding for procurement	Bi-Weekly	GAN Engineer
		Control: Identify any risk associated with the delivery date provided by vendor and inform PM as soon as possible on the weekly meetings	Weekly	GAN Engineer
Installation of the equipment defined in the BOM provided by Network Engineer and relocation of 7 existing access points.	- Installation of the 3 network switches 3750-48, 21 Wireless Access Points and relocation of 7 current AP in the Monterrey Plant	Manage: Revise with GAN Engineer and vendor installation process	Bi-Weekly	GAN Engineer, Local SIS
		Control: Identify any issues at the install and initial configuration for hardware to report to vendor	Weekly	GAN Engineer, Local SIS
Remote Configuration of the equipment by vendor.	- Configuration, implementation, and testing of the 3 network Switches and 21 Wireless Access Points. Vlans for (wired and wireless networks)	Manage: Coordinate with team	Bi-Weekly	GAN Engineer, Local SIS
		Control: Inform PM of any risk associated with the tasks	Weekly	GAN Engineer, Local SIS
IT Unit test performance by Network Engineer and Local SIS	IT Test and UAT for Wired and wireless network -	Manage: Coordinate with IT	Bi-Weekly	GAN Engineer, Local SIS
		Control: Inform PM of any risk associated with the tasks	Weekly	GAN Engineer, Local SIS
Coordination of UAT with local SIS and Network Vendor	UAT performed with SIS only to confirm Corporate applications are working as planned	Manage: Coordinate with end users	Once - After Infrastructure implementation	GAN Engineer, Local SIS
		Control:	Weekly	GAN Engineer, Local SIS

		Inform PM of any risk associated with the tasks		
One day support for Go-Live implementation	One day support for first day of operation	Manage: Ensure all resources are available for support operation the first day of implementation	Once - After Infrastructure implementation	GAN Engineer, Local SIS
		Control: Inform PM of any risk associated with this task	Weekly	GAN Engineer, Local SIS
One week of warranty with project team	One week of warranty for project	Manage: Ensure all resources are available to support operation 1 week after implementation	Before Hardware move and after Go live	PM
		Control: Resolve any issues encountered after Go live	Weekly	PM
Complete all required network administrative services (Transition to support)	Complete Transition to support documentation	Manage: Discuss with team the pending administrative activities for transition to support	After Production Gate signoff	PM
		Control:	Weekly	GAN Engineer
		Control: Identify any issues when transitioning to support	Weekly	Local SIS

### ***Quality Documents and Continuous improvement***

The 2 documents that will be used as part of the quality assurance for the project will be the Test Strategy and User Acceptance test.

The Test strategy document intends to provide an overview of the different levels and types of testing in scope and the approach to be followed for executing these tests including the test data and test environment management approach. It also aims to provide roles and responsibilities, estimates and schedule for overall testing of the project to all stakeholders. This document is defined in the Definition phase and the approval must be part of this phase to move to development. **See Chart 10 Test strategy template.**

### **Chart 10 Test Strategy Template**

#### **Infrastructure Network Program Templates**

#### **Infrastructure PMO Office**

#### **Test Strategy**

Project Information

Project Number:   44309  

Project name:   Network Infrastructure Upgrade in a Manufacturing plant  

Requestor/Project Sponsor:            Project Sponsor           

Contents:

*Introduction*

*Testing Scope*

*Testing Sequence*

## Testing Infrastructure

Note: This template is intended to serve as a guideline for defining the Test Strategy for a project. Projects may choose to use their own formats. However, at a minimum the following items should be covered in the Test Strategy:

- Types of Testing to be conducted
- Testing Approach
- Owners with R&R
- Testing Environments & Tools
- Risks

## Introduction

This document will provide an overview of the Scope, Approach, Estimates and Schedule for overall testing of project 44309- Monterrey, MX - Lighting Facility Infrastructure

### Project/Application/Implementation Overview

- **Project Objective**

The objective of this project is to provide computers and devices connectivity support to recent and future plant growth adding new network equipment including cabling, switches, as well as provide a wireless survey for request the necessary access points that covers the entire facility of Monterrey MX

- **Testing Objective**

Validate connectivity from the production floor as well as offices in the facility to Eaton's network and other systems.

### Applications/Interfaces involved

- Printers, Laptops, RF Scanners to the Eaton network and through WLAN and AVTS.

### Underlying Technology

- AVTS, WLAN

## Testing Scope

Sr.#	System/Applications/ Interfaces	Interface?	Functional Modules	Functional Requirements/Features
1	Eaton Network	Y	Intranet, SharePoint, email, Share drives, printers, scanners	Connect to different network services, System functionality this is only a test of connectivity.

Sr.#	Level/Type of Testing	Testing Activities	Owner	Role	Manual/ Automated
1	Unit Testing	Test Execution	Local SIS	Local IT	Manual
2	UAT for Network	Test Execution	GAN Engineer	Network	Manual

## Testing Sequence

Local SIS will need to perform the IT unit test when the equipment is being configured, then the system users will perform the UAT after the Go Live to verify all connectivity is good.

## Testing Infrastructure

Testing Type	Environment	Environment Owner	Environment Availability/Preparation?
System/Systems Integration Testing (SIT)	Production	<b>Local SIS</b>	<b>Preparation</b>

Testing Type	Test Data Requirements	Data Creation Approach	Data Maintenance Approach
Connectivity	<b>Eaton Network, Connect to Intranet;</b>		

	<b>Email. Share folders, printers</b>		
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Purpose	Tool	# users	Remarks
Requirements Management	Manual test	1	Test by Local SIS on site.

(Source: Local PMO Documentation, July 2020)

The user acceptance testing its typically performed by end users of the product or service delivered, this document is intended to perform a series of tasks to verify everything is working as expected in the system users end. **See Chart 11 User Acceptance Test template.**

### Chart 11 User Acceptance Test template

User Acceptance Test Plan								
Department Name			Project Name				Project Number	
			Monterrey, MX - Lighting Facility Infrastructure Upgrades - PP2015 Approved				44309	
Test Script								
Test Number	Requirement Number	Tested By	Test Date	Test Instructions	Test Data	Expected Results	Actual Results	Pass / Fail
Switches								
IT_TEST01	R_LN.15	Netelligent		Verify switch by pinging and telnet to it to confirm it is live on the LAN				
IT_TEST02	R_LN.15	Local SIS		Test individual ports Switch 1 - MDF. Connect a computer to each port and verify connectivity	Outlook, Internet, SAP	Computer should receive a valid IP and connect without any issues		
IT_TEST03	R_LN.15	Local SIS		Test individual ports Switch 1 - MDF. Connect a computer to each port and verify connectivity	Outlook, Internet, SAP	Computer should receive a valid IP and connect without any issues		
IT_TEST04	R_LN.15	Local SIS		Test individual ports Switch 1 - MDF. Connect a computer to each port and verify connectivity	Outlook, Internet, SAP	Computer should receive a valid IP and connect without any issues		
Wireless AP's								
IT_TEST05	R_LN.15	Local SIS		Confirm Correct SSID are configured (epimetheus, mnemosyne, etc)	Wireless Profiles	Computer should have listed all the available profiles		
IT_TEST06	R_LN.15	Netelligent		Confirm WAP is associated with correct VLANS	Correct IP address	Computer should have the correct VLAN for wireless assigned		
IT_TEST07	R_LN.15	Netelligent		Confirm WAP is taking clients	Connections in a AP	Access Point should have clients associated		
IT_TEST08	R_LN.15	Local SIS		Obtain visual confirmation of WAP coverage by moving clients around in specific locations	Network Coverage in plant	Computer should have wireless connectivity in all the plant		
IT_TEST09	R_LN.15	Local SIS		Check hand off from one WAP to another	Hand off of WAP	Computer shouldnt have any wireless drop moving in all the plant		
IT_TEST10	R_LN.15	Local SIS		Test Cisco wireless phone throughout facility if applicable	Network Coverage in plant	Cisco wireless phone should connect with no issues		
IT_TEST11	R_LN.15	Local SIS		Test RF guns within warehouses	Network Coverage in warehouses	RF gun should connect and not drop connection in all the warehouse		

(Source: Local PMO Documentation, July 2020)

Process Description and Improvements
1. Hardware ordering: Reviewing lesson learned from other projects, the delivery time for Network Infrastructure is around 20 days. This Estimated time will be added to the project plan, therefore we won't be having issues on the schedule.
2. Planning Network Cabling required: We suggest removing the cabling required for the site from the scope of these type of projects as this is being handle by facilities. We will just add a task to verify and provide to them the Eaton standards required for cabling.
3. Hardware Inventory: On other projects similar to this, they experience issues with the new equipment on site, we will suggest of creating an inventory and adding labels to all the network infrastructure that is delivered on site to prepare for future tasks.

Approved by the Project Sponsor:

\_\_\_\_\_ Date: \_\_\_\_\_  
 <Project Sponsor>  
 <Project Sponsor Title>

**Figure 21: Quality Management Plan**

#### **4.3.5. Resource Management Plan**

Another deliverable for our FGP project and comes up after the quality management plan and scope baseline is the Resource management plan, this plan will help us to establish the approach and level of management effort needed for managing project resources based on the type of the project (Project Management Institute, 2017). A template was created taking the Stakeholder Register as an input and expert judgement and meetings were the tools and techniques that we utilized to outline the final output that will provide guidance on how project resource should be categorized, allocated, managed, and released. See **figure 22**.

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Resource Management Plan

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Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### **Contents:**

*Introduction*

*Identification of resources*

*Acquiring Resources*

*Roles and responsibilities*

*Project Organization Charts*



## *Project team resource management*

### **Introduction**

The resource management plan is an important part for the network infrastructure upgrade project, this plan will help in the management of the project resources through the project life cycle. The plan includes:

- Roles and responsibilities of team members throughout the project
- Project organization charts
- Staffing management plan to include:
  - a) How resources will be acquired
  - b) Timeline for resources/skill sets
  - c) Training required to develop skills
  - d) How performance reviews will be conducted
  - e) Recognition and rewards system

The purpose of the resources management plan is to achieve project success by ensuring the appropriate resources are acquired with the necessary skills, resources are trained if any gaps in skills are identified, team building strategies are clearly defines, and team activities are effectively managed.

### **Identification and Acquisition of Resources**

The physical resources needed for this project were identified as part of the Site Infrastructure Risk assessment projects, this means they are pre-assigned, this process is performed yearly and the Local SIS identifies potential infrastructure that will require replacement or upgrade for the upcoming year, then this moves to the budgeting process to detail the hardware and work that will be required for next year.

The human resources need it for this project were identified as part of the Network Infrastructure projects program by reviewing other similar projects documentation. The acquisition for the required resources was part of the previous year budgeting process performed by PMO Infrastructure during the August timeframe, where the office contacted the functional manager and provided an estimate for the work need it for this project to budget the work.

### **Roles and Responsibilities**

All the team members must clearly understand their roles and responsibilities in order to successfully perform their portion of the project. For the network infrastructure project, the following project team roles and responsibilities were established.

**Project Manager (PM), (1 position):** responsible for the overall success of the project. The PM must authorize and approve all project expenditures. The PM is also responsible for approving that work activities meet established acceptability criteria and fall within acceptable variances. The PM will be responsible for reporting project status in accordance with the communications management plan. The PM will evaluate the performance of all project team members and communicate their performance to functional managers. The PM is also responsible for acquiring human resources for the project through coordination with functional managers. The PM must possess the following skills: leadership/management, budgeting, scheduling, and effective communication, negotiation, influencing, team building.

**Sr. Project Manager (Sr. PM), (1 position):** responsible for supporting the Project Manager role and provide guidance on the best practices for this type of project. This Sr. PM will work with the PM closely by reviewing project documentation and providing expertise and advice on how to better manage the project. The Sr. PM is an experience PM on this type of projects and must possess the following skills: leadership/management, budgeting, scheduling, and effective communication.

**Site Infrastructure Support Analyst (Local SIS), (1 position):** Responsible for supporting all the site installation and configuration need it for the project. The Local SIS will be the main point of contact for any request need it for the site, they will work closely with Finance Manager and System users for follow up the

activities assigned. The Local SIS must possess the following skills: Problem solving, effective communication, management, business relationship, vendor management.

**Infrastructure GAN (GAN Engineer), (1 position):** Responsible for evaluating network design, provide/review recommendations, and work with vendors for present a proposal for the new solution. Configure and test Infrastructure network is working as expected. installation and configuration need it for the project. The GAN Engineer will work closely with vendors to ensure quotes are correct and according project requirements. The GAN engineer must possess the following skills: Problem solving, effective communication, management, business relationship, vendor management.

**Business Relationship Manager (BRM), (1 position):** Responsible for obtaining all the approval required for hardware and resource support. They own the budget for the project and it's the main project sponsor. The BRM will help with expedition of funding and resources need it. The BRM must possess the following skills: Leadership/Management, effective communication, management, business relationship, influencing, conflict management, negotiation.

**Network Infrastructure (Vendor), (1 position):** Responsible for evaluating network design, provide/review recommendations, and work with GAN Engineer for present a proposal for the new infrastructure required. Work on configure and test Infrastructure network is working as expected. installation and configuration need it for the project. Will work closely with the GAN Engineer to ensure quotes are correct and according project requirements. The network Infrastructure Vendor must possess the following skills: Problem solving, effective communication, management, business relationship, vendor management.

**Network Services (Vendor), (1 position):** Responsible for evaluating wireless network design, provide/review recommendations, and work with GA Engineer for present a proposal for the new wireless infrastructure need it. Work with GAN Engineer to configure and test wireless infrastructure is working as expected. installation and configuration need it for the project. The Network services vendor will work closely with GAN engineer to ensure quotes are correct and according project requirements. The Network services vendor must possess the following skills: Problem solving, effective communication, management, business relationship, vendor management.

## Project Organization Charts

The following RACI chart shows the relationship between project tasks and team members. Any proposed changes to project responsibilities must be reviewed and approved by the project manager. Changes will be proposed in accordance with the project's change control process. As changes are made all project documents will be updated and redistributed accordingly.

**Chart 12 RAIC Template**

Key:

R – Responsible for completing the work

A – Accountable for ensuring task completion/sign off

C – Consulted before any decisions are made

I – Informed of when an action/decision has been made

WBS Code	Name	Project manager	Sr. Project Manager	GAN Engineer	Local SIS	BRM	Network Infrastructure	Network Services
<b>1</b>	<b>Initiation Phase</b>							
1.1	Project Charter	A	C	R	R	I	I	I
1.2	Lesson Learned evaluation	A	C	R	R	I	I	I
1.3	Confirm Scope	A	C	R	R	I	I	I
1.4	Initial Risk Register	A	R	R	R	I	R	R
1.5	Initial Project Plan	A	R	R	R	I	R	R

1.6	Resources\Stakeholders	A	C	I	I	I	I	I
1.7	Requirements Definition	A	C	R	R	I	R	R
<b>2</b>	<b>Design Phase</b>							
2.1	Network Design	I	I	A	R	I	C	C
2.2	Wireless Survey	I	I	R	I	I	C	A
2.3	Test Strategy	R	C	A	R	I	C	C
2.4	CAR	I	I	I	R	A	I	I
2.5	Project Planning, training and Communications	A	C	R	R	I	R	R
2.6	Pre-Gate 2 Review	A	C	R	R	I	R	R
2.7	Gate 2 Review	A	C	I	I	I	I	I
<b>3</b>	<b>Development Phase</b>							
3.1	Infrastructure Procurement	R	I	R	A	I	R	R
3.2	Network cabling requirements	I	I	E	A	I	I	I
3.3	Equipment delivery and verification	I	I	C	A	I	I	I
3.4	Infrastructure Installation	I	I	R	A	I	C	C
<b>4</b>	<b>Validation Phase</b>							
4.1	Production Preparation	A	C	R	R	I	R	R
4.2	Gate 4 Review	A	C	I	I	I	I	I
<b>5</b>	<b>Production Phase</b>							
5.1	Pre-Go Live	A	C	I	I	I	I	I
5.2	Implementation	A	C	R	R	I	R	R
5.3	Post Go-Live	A	C	R	R	I	R	R
5.4	Gate 5 Review	A	C	I	I	I	I	I
<b>6</b>	<b>Audit Phase</b>							
6.1	Post- Project Review	A	C	R	R	I	I	I
6.3	Transition to support	I	I	A	I	I	I	I
6.4	Gate 6 Review	A	C	I	I	I	I	I

(Source: A.Rios Created by Author, July 2020)

### ***Project Team Resource Management***

As mentioned above, the project staff will consist on internal resources and external resources. The resources were assigned at the beginning of the project as part of a scheduling process performed the previous year. The resources must provide a technical sig off to the project manager as part of the definition phase. See template on **Chart 13**.

### Chart 13 Technical Resource Signoff

#### 44309 – Monterrey MX– Infrastructure Upgrade

#### GAN Engineer

#### Hours / Effort

- Approve
- Do Not Approve

*\*Note- time spent on the project for meetings and activities not listed in the project plan will not be reflected in this number.*

**38** Project Plan hours\* -  
GAN Engineer

#### Schedule

- Approve
- Do Not Approve

Milestone	Due
DefinitionPhase 2 Gate Review	August 17, 2020
Validation Phase 4 Gate Review	Oct, 2020
<b>Go Live</b>	<b>Dec 4th, 2020</b>
Production Phase 5 Gate Review	Dec, 2020

(Source: Created by Author, July 2020)

Resource calendars were created and added to the main project schedule. The project duration is about 6 months. Out of office will need to be recorded on the project schedule and add a backup resource in case we need to. It's known that resources are assigned to other projects too during this timeframe.

There is currently no training scheduled with regards to this project since the organization has adequate staff with required skill sets. However, if training requirements are identified, funding will be provided from the project reserve.

The project manager will review each team member's assigned work activities at the onset of the project and communicate all expectations of work to be performed. The project manager will then evaluate each team member throughout the project to evaluate their performance and how effectively they are completing their assigned work. Prior to releasing project resources, the project manager will meet with the appropriate functional manager and provide feedback on employee project performance. The functional managers will then perform a formal performance review on each team member.

There are planned recognition and reward items for project team members.

- Upon successful completion of the project, a dinner will be arranged with the main project team members on site. Even though the other project team members are remote will arrange to send gift cards for a dinner.

- Upon successful completion of the project, any team member who satisfactorily completed all assigned work packages on time will receive an “E Star” Thru the current company recognition system.
- Team members exceeding expectations on tasks will receive a monetary “E-Star” that will be provided by the BRM of the project

Approved by the Project Sponsor:

\_\_\_\_\_ Date: \_\_\_\_\_  
 <Project Sponsor>  
 <Project Sponsor Title>

**Figure 22: Resource Management Plan**

#### **4.3.6. Communication Management Plan**

To guarantee all the project communication was effective and received on time by all stakeholders, a communication management plan was developed. The inputs for this plan were project charter, resource management plan, stakeholder engagement plan, previous project information, current company communication types and delivery methods. The tools and techniques used were expert judgement from the local site and a communication requirements analysis performed. The template was adjusted with the company details. See the **Figure 23**

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Communication Management Plan

---

Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### **Contents:**

*Introduction*

*Communication Management Approach*  
*Communication Management Constraints*  
*Stakeholder communication Requirements*  
*Roles*  
*Communication Methods and technologies*  
*Communication Matrix*  
*Communication Flowcharts*  
*Guidelines for Meetings*  
*Communication Standards*  
*Communication Escalation Process*

## **Introduction**

This Communications Management Plan sets the communications framework for this project. It will serve as a guide for communications throughout the life of the project and will be updated as communication needs change. This plan identifies and defines the roles of people involved in this project. It also includes a communications matrix which maps the communication requirements of this project. An in-depth guide for conducting meetings details both the communications rules and how the meetings will be conducted, ensuring successful meetings. A project team directory is included to provide contact information for all stakeholders directly involved in the project.

## **Communication Management Approach**

The Project Manager will take a proactive role in ensuring effective communications on this project. The communications requirements are documented in the Communications Matrix presented in this document. The Communications Matrix will be used as the guide for what information to communicate, who is to do the communicating, when to communicate it and to whom to communicate.

As with most project plans, updates or changes may be required as the project progresses, or changes are approved. Changes or updates may be required due to changes in personnel, scope, budget, or other reasons. Additionally, updates may be required as the project evolve, and additional requirements are needed. The project manager is responsible for managing all proposed and approved changes to the communications management plan. Once the change is approved, the project manager will update the plan and supporting documentation and will distribute the updates to the project team and all stakeholders. This methodology is consistent with the project's Change Management Plan and ensures that all project stakeholders remain aware and informed of any changes to communications management.

## **Communication Management Constrains**

All project communication activities will occur within the project's approved budget, schedule, and resource allocations. The project manager is responsible for ensuring that communication activities are performed by the project team and without external resources which will result in exceeding the authorized budget. Communication activities will occur in accordance with the frequencies detailed in the Communication Matrix to ensure the project adheres to schedule constraints. Any deviation of these timelines may result in excessive costs or schedule delays and must be approved by the project sponsor.

The infrastructure PMO Office has standard formats and templates that must be used for all formal project communications. The details will be provided in the "standard formats and templates" section below.

## **Stakeholder Communication Requirements**

As part of identifying all project stakeholders, the project manager will communicate with each stakeholder to determine their preferred frequency and method of communication. This feedback will be maintained by the project manager in the project's Stakeholder Register. Standard project communications will occur in accordance with the Communication Matrix; however, depending on the identified stakeholder communication requirements, individual communication is acceptable and within the constraints outlined for this project.

In addition to identifying communication preferences, stakeholder communication requirements must identify the project's communication channels and ensure that stakeholders have access to these channels. If project information is communicated via secure means or through internal company resources, all stakeholders, internal and external, must have the necessary access to receive project communications.

Once all stakeholders have been identified and communication requirements are established, the project team will maintain this information in the project's Stakeholder Register and use this, along with the project communication matrix as the basis for all communications

## **Roles**

### **Project Sponsor - BRM**

The project sponsor is the champion of the project and has authorized the project by signing the project charter. This person is responsible for the funding of the project and is ultimately responsible for its success. Since the Project Sponsor is at the executive level communications should be presented in summary format unless the Project Sponsor requests more detailed communications.

### **Key Stakeholders**

Normally Stakeholders includes all individuals and organizations who are impacted by the project. For this project we are defining a subset of the stakeholders as Key Stakeholders. These are the stakeholders with whom we need to communicate with and are not included in the other roles defined in this section. The Key Stakeholders includes executive management with an interest in the project and key users identified for participation in the project.

### **Project Change Control Board**

The Change Control Board is a designated group which reviews technical specifications and authorizes changes within the organization's infrastructure. Technical design documents, user impact analysis and implementation strategies are typical of the types of communication this group requires.

### **System Users**

The final system users will be a group of people that will use the final Installed infrastructure and who will be accepting the final deliverable of this project they will be informed of the project status including potential impacts to the schedule for the final deliverable or the product itself.

### **Project Manager**

The Project Manager has overall responsibility for the execution of the project. The Project Manager manages day to day resources, provides project guidance and monitors and reports on the projects metrics as defined in the Project Management Plan. As the person responsible for the execution of the project, the Project Manager is the primary communicator for the project distributing information according to this Communications Management Plan.

### **Project Team**

The Project Team is comprised of all persons who have a role performing work on the project. The project team needs to have a clear understanding of the work to be completed and the framework in which the project is to be executed. Since the Project Team is responsible for completing the work for the project, they played a key role in creating the Project Plan including defining its schedule and work packages. The Project Team requires a detailed level of communications which is achieved through day to day interactions with the Project Manager and other team members along with weekly team meetings.

### **DGC**

The decision Gate Committee includes management representing the technical departments, the site finance department, and the budget owner. This committee provides approval for the project phases and send gate signoffs. The main purpose of the Committee is to ensure that the project is progressing and on track. The decision gate committee requires communication on matters which will change the scope of the project and its deliverables.

### **Network Support team**

The support team is an internal group that support all technical aspects of the project are addressed and that the project is implemented in a technically sound manner. The Technical Lead is responsible for all technical

designs, overseeing the implementation of the designs and developing as-build documentation. The Technical Lead requires close communications with the Project Manager and the Project Team.

### Network Vendors

The network vendors include the Network services and Network Infrastructure main vendor, they require to be in constant communication with the GAN engineer and the project manager to comply with the SoW defined.

### Communication Methods and Technologies

The Infrastructure PMO office maintains a SharePoint platform for all projects use to provide updates, archive various reports, and conduct project communications. This platform enables senior management, as well as stakeholders with compatible technology, to access project data and communications at any point in time. SharePoint also provides the ability for stakeholders and project team members to collaborate on project work and communication.

For stakeholders who do not have the ability to access SharePoint, a project portfolio is available. Access to the website is linked to the computer account. Any stakeholders identified who are not able to access SharePoint will be granted access to the Project portfolio. The project manager is responsible for ensuring all project communications and documentation are upload it to the project portfolio site and that the content mirrors what is contained on the SharePoint platform.

The company maintains software licenses for MS Project software. All project teams are responsible for developing, maintaining, and communicating schedules using this software. PERT Charts are the preferred format for communicating schedules to stakeholders. The project schedule will be maintained on both the SharePoint platform and the project portfolio.

All project communication and documentation, in addition to being maintained on the SharePoint platform and project portfolio, will be archived on the internal drive which resides in the PMO program directory. Organizational naming conventions for files and folder will be applied to all archived work.

### Communication Matrix

The following table identifies the communication requirements for this project:

**Chart 14 Communication Matrix**

Kickoff Meeting	Introduce the project team and the project. Review project objectives and management approach.	Face to Face	Once	<ul style="list-style-type: none"> <li>Project Sponsor</li> <li>Project Team Stakeholders</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Agenda Meeting Minutes</li> </ul>	Soft copy archived on project SharePoint site and project web site
Kickoff Meeting	Introduce the project team and the project. Review project objectives and management approach.	Face to Face	Once	<ul style="list-style-type: none"> <li>Project Sponsor</li> <li>Project Team Stakeholders</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Agenda Meeting Minutes</li> </ul>	Soft copy archived on project SharePoint site and project web site
Project Team Meetings	Review status of the project with the team.	Conference Call	Weekly	Project Team	Project Manager	<ul style="list-style-type: none"> <li>Agenda</li> <li>Meeting Minutes</li> <li>Project schedule</li> </ul>	Soft copy archived on project SharePoint site and

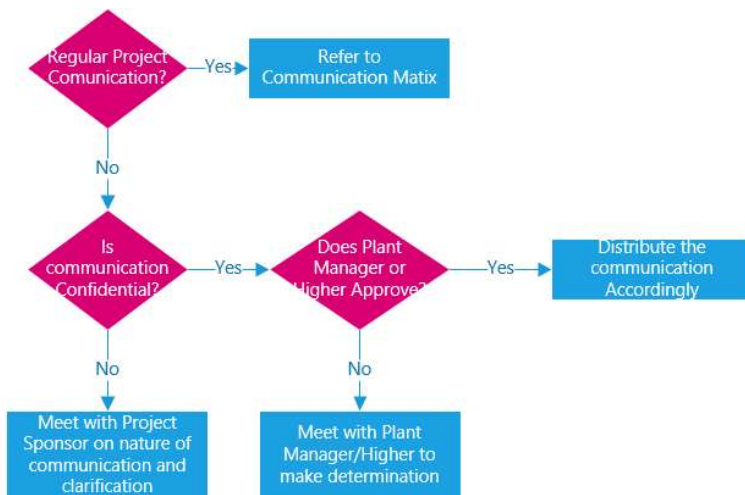


							project web site
Weekly Project update	Report with the status of the project	Email	weekly	<ul style="list-style-type: none"> <li>Project Team</li> <li>Project Sponsor</li> </ul>	Project Manager	Slide updates	Power Point template
Gate Signoff meeting	Review status of the project with the team and decision to move to next gate	Conference Call	As needed	<ul style="list-style-type: none"> <li>Project Team</li> <li>DGC</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Agenda Presentation</li> </ul>	Power Point presentation
Technical Design Meetings	Discuss and develop technical design solutions for the project.	<ul style="list-style-type: none"> <li>Face to Face Conference Call</li> </ul>	As Needed	Project Technical Staff	Technical Lead	<ul style="list-style-type: none"> <li>Agenda Meeting Minutes</li> </ul>	Soft copy archived on project SharePoint site and project web site
Project Status Reports	Report the status of the project including activities, progress, costs and issues.	Email	Monthly	<ul style="list-style-type: none"> <li>Project Sponsor</li> <li>Project Team</li> <li>Stakeholders PMO</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Project Status Report</li> <li>Project schedule</li> </ul>	Soft copy archived on project SharePoint site and project web site
Project Closure email	Final Project Status report	Email	When all deliverables are completed	<ul style="list-style-type: none"> <li>Project Sponsor</li> <li>Project Team</li> <li>Stakeholders PMO</li> </ul>	Project Manager	<ul style="list-style-type: none"> <li>Project Status Report</li> <li>Final Status</li> </ul>	Soft copy archived on project SharePoint site and project web site

(Source: Created by Author, July 2020)

### Communication Flowchart

The communication flowchart below was created to aid in project communication. This flowchart provides a framework for the project team to follow for this project. However, there may be occasions or situations which fall outside of the communication flowchart where additional clarification is necessary. In these situations, the Project Manager is responsible for discussing the communication with the Project Sponsor and deciding on how to proceed.



## ***Guidelines for Meetings***

### **Meeting Agenda**

Meeting Agenda will be distributed 1-2 business days in advance of the meeting. The Agenda should identify the presenter for each topic along with a time limit for that topic. The first item in the agenda should be a review of action items from the previous meeting.

### **Meeting Minutes**

Meeting minutes will be distributed within 1-2 business days following the meeting. Meeting minutes will include the status of all items from the agenda along with new action items and the Parking Lot list.

### **Action Items**

Action Items are recorded in both the meeting agenda and minutes. Action items will include both the action item along with the owner of the action item. Meetings will start with a review of the status of all action items from previous meetings and end with a review of all new action items resulting from the meeting. The review of the new action items will include identifying the owner for each action item.

### **Meeting Facilitator**

The facilitator is responsible for distributing the meeting agenda, facilitating the meeting and distributing the meeting minutes. The facilitator will ensure that the meeting starts and ends on time and that all presenters adhere to their allocated time frames.

### **Note Taker**

The Note Taker is responsible for documenting the status of all meeting items, maintaining a Parking Lot item list and taking notes of anything else of importance during the meeting. The Note Taker will give a copy of their notes to the facilitator at the end of the meeting as the facilitator will use the notes to create the Meeting Minutes.

### **Time Keeper**

The Time Keeper is responsible for helping the facilitator adhere to the time limits set in the meeting agenda. The Time Keeper will let the presenter know when they are approaching the end of their allocated time. Typically a quick hand signal to the presenter indicating how many minutes remain for the topic is sufficient.

## ***Communication Standards***

For this project, we will utilize standard organizational formats and templates for all formal project communications. Formal project communications are detailed in the project's communication matrix and include:

**Kickoff Meeting** – project team will utilize the standard templates for meeting agenda and meeting minutes. Additionally, any slides presented will use the ABC Corp. standard slideshow template.

**Project Team Meetings** – project team will utilize the standard templates for meeting agenda and meeting minutes. Additionally, any slides presented will use the company standard slideshow template.

**Technical Design Meetings** - project team will use standard templates for meeting agenda and meeting minutes. Additionally, any slides presented will use the company standard slideshow template.

**Monthly Project Status Meetings** - project team will use standard templates for meeting agenda and meeting minutes. Additionally, any slides presented will use the company standard slideshow template.

**Project Status Reports** – project team will use the standard templates for meeting agenda and meeting minutes. Additionally, the standard project status report document, available on the share drive, will be used to provide project status.

Informal project communications should be professional and effective but there is no standard template or format that must be used.

## ***Communication Escalation Process***

Efficient and timely communication is the key to successful project completion. As such, it is imperative that any disputes, conflicts, or discrepancies regarding project communications are resolved in a way that is conducive to maintaining the project schedule, ensuring the correct communications are distributed, and preventing any ongoing difficulties. In order to ensure projects stay on schedule and issues are resolved, ABC Corp. will use its standard escalation model to provide a framework for escalating communication issues. The table below defines the priority levels, decision authorities, and timeframes for resolution.

Priority	Definition	Decision Authority	Timeframe for Resolution
Priority 1	Major impact to project or business operations. If not resolved quickly there will be a significant adverse impact to revenue and/or schedule.	Plant Manager/Functional Manager	Within 4 hours
Priority 2	Medium impact to project or business operations which may result in some adverse impact to revenue and/or schedule.	Project Sponsor	Within one business day
Priority 3	Slight impact which may cause some minor scheduling difficulties with the project but no impact to business operations or revenue.	Project Manager	Within two business days
Priority 4	Insignificant impact to project but there may be a better solution.	Project Manager	Work continues and any recommendations are submitted via the project change control process

Approved by the Project Sponsor:

\_\_\_\_\_

Date: \_\_\_\_\_

<Project Sponsor>

<Project Sponsor Title>

**Figure 23: Communication Management Plan**

#### 4.3.7. Risk Management Plan

Another important part of the planning process is to plan risk management, a plan was created by analysis current company procedures and having meetings with the main stakeholders and the Sr Project Manager. The main inputs for this process are the project charter, where some initial risks were identified, all the project management plans and the tools and techniques used to build this plan were expert judgement, data analysis and meetings. The risk management plan will guide us on how risk management activities will be structured and performed thought the project life cycle. See figure 24

## Infrastructure PMO Office

### Risk Management Plan

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#### Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

#### **Contents:**

*Introduction*

*Risk Management Approach*

*Risk Identification*

*Risk Qualification and Prioritization*

*Risk Monitoring*

*Risk Mitigation and Avoidance*

#### **Introduction**

As organizations begin new projects, they begin operating in an area of uncertainty that comes along with developing new and unique products or services. By doing so, these organizations take chances which results in risk playing a significant part in any project. The purpose of the risk management plan is to establish the framework in which the project team will identify risks and develop strategies to mitigate or avoid those risks. However, before risks can be identified and managed, there are preliminary project elements which must be completed. These elements are outlined in the risk management approach.

Before risk management begins it is imperative that a foundation is established for providing structured project information, thus, the following project elements were completed and defined prior to developing this Risk Management Plan:

Define work scope, schedule, resources, and cost elements

- Develop project WBS/WBS dictionary
- Develop master schedule and detailed schedules
- Estimate project cost and finalize budget
- Identify required and available resources
- Establish performance measurement metrics

Define minimum and maximum baseline thresholds

- Schedule
- Resources
- Cost

Baseline reporting requirements

- Format
- Frequency of distribution
- Distribution list

Define Risk Management Roles and Responsibilities

- Project Manager chairs the risk assessment meetings

- Project team participates in risk assessment meetings and members serve as meeting recorder and timekeeper
- Key stakeholders participate in risk assessment meetings
- Project Sponsor may participate in risk assessment meetings

## **Risk Management Approach**

The approach we have taken to manage risks for this project included a methodical process by which the project team identified, scored, and ranked the various risks. The higher risk ratings were added to the project schedule to ensure that the assigned risk managers take the necessary steps to implement the mitigation response at the appropriate time during the schedule. Risk managers will provide status updates on their assigned risks in the bi-weekly project team meetings, but only when the meetings include their risk's planned timeframe. Upon the completion of the project, during the closing process, the project manager will analyze each risk as well as the risk management process. Based on this analysis, the project manager will identify any improvements that can be made to the risk management process for future projects. These improvements will be captured as part of the lessons learned knowledge base.

## **Risk Identification**

For this project, risk identification was conducted in the initial project risk assessment meeting what was reviewed as follow.

### **Historical Review of Similar Projects**

The project team reviewed the history of similar projects in order to determine the most common risks and the strategies used to mitigate those risks

### **Risk Assessment Meeting**

A risk assessment meeting was held with key team members and stakeholders. The risks identified during this meeting were added to the project plan and Risk Register.

### **Risk Qualification and Prioritization**

In order to determine the severity of the risks identified by the team, a probability and impact factor was assigned to each risk by using the template for risk identification. These 2 definitions were taken from the FMEA.

#### **Probability Rating Scale**

<b>Rating</b>	<b>Description</b>	<b>Potential Failure Rate</b>
<b>10</b>	<b>Very High:</b> Failure is almost inevitable.	More than one occurrence per day or a probability of more than three occurrences in 10 events (Cpk < 0.33).
<b>9</b>	<b>High:</b> Failures occur almost as often as not.	One occurrence every three to four days or a probability of three occurrences in 10 events (Cpk ≈ 0.33).
<b>8</b>	<b>High:</b> Repeated failures.	One occurrence per week or a probability of 5 occurrences in 100 events (Cpk ≈ 0.67).
<b>7</b>	<b>High:</b> Repeated failures.	One occurrence every month or one occurrence in 100 events (Cpk ≈ 0.83).
<b>6</b>	<b>Moderately High:</b> Frequent failures.	One occurrence every three months or three occurrences in 1,000 events (Cpk ≈ 1.00).
<b>5</b>	<b>Moderate:</b> Occasional failures.	One occurrence every six months to one year or five occurrences in 10,000 events (Cpk ≈ 1.17).
<b>4</b>	<b>Moderately Low:</b> Infrequent failures.	One occurrence per year or six occurrences in 100,000 events (Cpk ≈ 1.33).
<b>3</b>	<b>Low:</b> Relatively few failures.	One occurrence every one to three years or six occurrences in ten million events (Cpk ≈ 1.67).
<b>2</b>	<b>Low:</b> Failures are few and far between.	One occurrence every three to five years or 2 occurrences in one billion events (Cpk ≈ 2.00).
<b>1</b>	<b>Remote:</b> Failure is unlikely.	One occurrence in greater than five years or less than two occurrences in one billion events (Cpk > 2.00).

Impact Rating Scale

Rating	Description	Definition (Severity of Effect)
10	Dangerously high	Failure could injure the customer or an employee.
9	Extremely high	Failure would create noncompliance with federal regulations.
8	Very high	Failure renders the unit inoperable or unfit for use.
7	High	Failure causes a high degree of customer dissatisfaction.
6	Moderate	Failure results in a subsystem or partial malfunction of the product.
5	Low	Failure creates enough of a performance loss to cause the customer to complain.
4	Very Low	Failure can be overcome with modifications to the customer's process or product, but there is minor performance loss.
3	Minor	Failure would create a minor nuisance to the customer, but the customer can overcome it without performance loss.
2	Very Minor	Failure may not be readily apparent to the customer, but would have minor effects on the customer's process or product.
1	None	Failure would not be noticeable to the customer and would not affect the customer's process or product.

This process allowed the project manager to prioritize risks based upon the effect they may have on the project. The project manager utilized a probability-impact matrix to facilitate the team in moving each risk to the appropriate place on the chart.

- A score from 1 to 30 - will be a green
- A score from 40 to 70 - will be yellow
- A score from 80 to 100 - will be red

		Threats										Opportunities											
Probability	10	10	20	30	40	50	60	70	80	90	100	100	90	80	70	60	50	40	30	20	10	10	
	9	9	18	27	36	45	54	63	72	81	90	90	81	72	63	54	45	36	27	18	9	9	
	8	8	16	24	32	40	48	56	64	72	80	80	72	64	56	48	40	32	24	16	8	8	
	7	7	14	21	28	35	42	49	56	63	70	70	63	56	49	42	35	28	21	14	7	7	
	6	6	12	18	24	30	36	42	48	54	60	60	54	48	42	36	30	24	18	12	6	6	
	5	5	10	15	20	25	30	35	40	45	50	50	45	40	35	30	25	20	15	10	5	5	
	4	4	8	12	16	20	24	28	32	36	40	40	36	32	28	24	20	16	12	8	4	4	
	3	3	6	9	12	15	18	21	24	27	30	30	27	24	21	18	15	12	9	6	3	3	
	2	2	4	6	8	10	12	14	16	18	20	20	18	16	14	12	10	8	6	4	2	2	
	1	1	2	3	4	5	6	7	8	9	10	10	9	8	7	6	5	4	3	2	1	1	
		1	2	3	4	5	6	7	8	9	10	10	9	8	7	6	5	4	3	2	1		
		Negative Impact										Positive Impact											

Once the risks were assigned a probability and impact and placed in the appropriate position on the chart, the recorder captured the finished product and the project manager moved the process on to the next step: risk mitigation/avoidance planning.

**Risk Monitoring**

The most likely and greatest impact risks have been added to the project plan to ensure that they are monitored during the time the project is exposed to each risk. At the appropriate time in the project schedule the project manager will be monitoring the risks and evaluating them again. The following columns will be added to the risk register, Actions taken, Probability 2, Impact 2 and rating 2 and contingency plan. The dates will be added and register if the risk is decreasing or increasing.

**Chart 15 Risk Register monitoring columns**



Risk Registry																
Completed By	Today's Date			Project Name			Project Number			Trend						
Table below should be				Mandatory Columns			Optional Columns									
↔ Same as last week				↓ Decreasing risk			↑ Increasing Risk									
Risk Description	Category	Probability 1	Impact 1	Rating 1	Risk Responses - Planning (Mitigation Strategy)	Action Owner	Due Date	Escalation Point (Supplier Contact, Business Lead, BRM, Sponsor, Stakeholder, etc.)	Actions Taken	Probability 2	Impact 2	Rating 2	Contingency Plan	1-Jul	1-Aug	1-Sep
If the main IT resources are not available due to personal issues, we might miss the go live date	Resources	4	6	24	* Create a resource calendar (RR) * Create a backup resource list (RR)	Project Manager	8/11/2020	BRM						↔	↔	↔
If the hardware is not shipped on time we might miss the go live date	Schedule	4	5	20	* Weekly Follow up during provisioning to identify and manage possible delays (RR)	Project Manager	9/2/2020	GAN Manager						↔	↔	↔
If the CAR is not approved before gate 2, we might miss the go live date	Budget	4	4	16	* Ensure CAR is approved before Gate 2 (RR) * Provide all required information to complete CAR submission on time	Project Manager	8/28/2020	BRM						↔	↔	↔
If we receive any changes in the scope of the project there could be a delay on the implementation	Schedule	2	3	6	* Ensure requirements and design are approved before Gate 2 (RR)	Project Manager	9/1/2020	BRM						↔	↔	↔
If the hardware is damaged upon arrival, we could miss the project go live date	Schedule	1	5	5	* Check equipment for damage immediately upon arrival (RR) * Make sure to include equipment warranty in the provision process (RR) * Define replacement process with vendor in advance to apply it if this happens (RR)	Local SIS, GAN Engineer	10/9/2020	GAN Manager						↔	↔	↔

(Source: Created by Author, July 2020)

During the bi-weekly project team meeting the Project Manager for each risk will discuss the status of that risk; however, only risks which fall in the current time period will be discussed. Risk monitoring will be a continuous process throughout the life of this project. As risks approach on the project schedule the project manager will provide the necessary status updates which include the risk status, identification of trigger conditions, and the documentation of the results of the risk response.

### Risk Mitigation and Avoidance

The project manager has led the project team in developing responses to each identified risk. As more risks are identified, they will be qualified, and the team will develop avoidance and mitigation strategies. These risks will also be added to the Risk Register and the project plan to ensure they are monitored at the appropriate times and are responded to accordingly.

The risks for this project will be managed and controlled within the constraints of time, scope, and cost. All identified risks will be evaluated in order to determine how they affect this triple constraint. The project manager, with the assistance of the project team, will determine the best way to respond to each risk to ensure compliance with these constraints.

In extreme cases it may be necessary to allow flexibility to one of the project's constraints. Only one of the constraints for this project allows for flexibility as a last resort. If necessary, funding may be added to the project to allow for more resources in order to meet the time (schedule) and scope constraints. Time and scope are firm constraints and allow for no flexibility. Again, the cost constraint is flexible only in extreme cases where no other risk avoidance or mitigation strategy will work.

### Risk Registry

The Risk Register for this project is a log of all identified risks, their probability and impact to the project, the category they belong to, mitigation strategy, and when the risk will occur. The register was created through the initial project risk management meeting led by the project manager. During this meeting, the project team identified and categorized each risk. Risk categories are:

Additionally, the team assigned each risk a score based on the probability of it occurring and the impact it could potentially have. The Risk Register also contains the mitigation strategy for each risk as well as when the risk is likely to occur.

Chart 16 Risk Registry Template

Risk Registry																
Completed By	Today's Date	Project Name			Project Number							Trend				
Table below should be		Mandatory Columns			Optional Columns											
← Same as last week		↑ Decreasing risk			↓ Increasing Risk											
Risk Description	Category	Probability 1	Impact 1	Rating 1	Risk Responses - Planning (Mitigation Strategy)	Action Owner	Due Date	Escalation Point (Supplier Contact, Business Lead, BRM, Sponsor, Stakeholder, etc.)	Actions Taken	Probability 2	Impact 2	Rating 2	Contingency Plan	1-Jul	1-ago	1-Sep
if the hardware don't arrive on time we will miss the go live date	Schedule	6	7	42				BRM						↔	↔	↔
if the hardware is not shipped on time we might miss the go live date	Schedule	4	5	20										↔	↔	↔
If the main IT resources are not available due to personal issues, we might miss the go live date	Resources	3	4	12										↔	↔	↔
If we receive any changes in the scope of the project there could be a delay on the implementation	Schedule	2	3	6										↔	↔	↔
if the hardware is damaged upon arrival, we could miss the project go live date	Schedule	1	5	5										↔	↔	↔
If the CAR is not approved before gate 2, we might miss the go live date	Budget	4	4	16										↔	↔	↔

(Source: PMO Documentation, July 2020)

Approved by the Project Sponsor:

\_\_\_\_\_

Date: \_\_\_\_\_

<Project Sponsor>  
<Project Sponsor Title>

Figure 24: Risk Management Plan

The process that we started immediately after the Risk Management plan definition was the risk identification, the risk register was created with the initial risks for this



project and when the risk were identified, the probability and impact was set, then a risk response was defined for each risk.

**Chart 17 Risk Registry**

Risk Description	Category	Probability 1	Impact 1	Rating 1	Risk Responses - Planning (Mitigation Strategy)	Action Owner	Due Date	Escalation Point (Supplier Contact, Business Lead, BRM, Sponsor, Stakeholder, etc.)
if the hardware don't arrive on time we will miss the go live date	Schedule	6	7	42	* Weekly Follow up with local supplier about delivery (RR) * Buy an insurance with vendor for delivery (RS) * Add 1 additional week on the project schedule (RR)	GAN Engineer	9/2/2020	BRM
If the main IT resources are not available due to personal issues, we might miss the go live date	Resources	4	6	24	* Create a resource calendar (RR) * Create a backup resource list (RR)	Project Manager	8/11/2020	BRM
if the hardware is not shipped on time we might miss the go live date	Schedule	4	5	20	* Weekly Follow up during provisioning to identify and manage possible delays (RR)	Project Manager	9/2/2020	GAN Manager
If the CAR is not approved before gate 2, we might miss the go live date	Budget	4	4	16	* Ensure CAR is approved before Gate 2 (RR) * Provide all required information to complete CAR submission on time	Project Manager	8/26/2020	BRM
If we receive any changes in the scope of the project there could be a delay on the implementation	Schedule	2	3	6	* Ensure requirements and design are approved before Gate 2 (RR)	Project Manager	9/1/2020	BRM

if the hardware is damaged upon arrival, we could miss the project go live date	Schedule	1	5	5	<ul style="list-style-type: none"> <li>* Check equipment for damage immediately upon arrival (RR)</li> <li>* Make sure to include equipment warranty in the provision process (RR)</li> <li>* Define replacement process with vendor in advance to apply it if this happen (RR)</li> </ul>	Local SIS, GAN Engineer	10/9/2020	GAN Manager
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(Source: A.Ríos Created by Author, July 2020)

#### 4.3.8. Procurement Management Plan

The procurement management plan contains the activities to be undertaken during the procurement process. It should document how the project is financed, and the availability of funding should be aligned here, it will contain guidance on how the procurement will be coordinated, stakeholders' roles, Constraints and assumptions, risk management issues (Project Management Institute, 2017). The procurement plan has all the information about the procurements, but in summary, the creation of the plan was taken from a template and adjusted to the current company procedures, the company has already standard vendors selected that comply with the regulatory and requirements . **See figure 25**

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Procurement Management Plan

Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

## **Contents:**

*Introduction*

*Procurement Management Approach*

*Procurement Definition*

*Type of Contract to be Used*

*Procurement Risks*

*Procurement Risk Management*

*Procurement Constraints*

*Vendor Management*

## **Introduction**

This Procurement Management Plan sets the procurement framework for this project. It will serve as a guide for managing procurement throughout the life of the project and will be updated as acquisition needs change. This plan identifies and defines the items to be procured, the types of contracts. The importance of coordinating procurement activities, establishing firm contract deliverables, and metrics in measuring procurement activities is included. Other items included in the procurement management plan include: procurement risks and procurement risk management considerations; how costs will be determined; how standard procurement documentation will be used; and procurement constraints.

## **Procurement Management Approach**

The Project Manager will provide oversight and management for all procurement activities under this project. The Project Manager will work with the project team to identify all items to be procured for the successful completion of the project. The local finance and Local SIS will review the list be and purchasing department. The contracts and purchasing department will review the procurement items, determine whether it is advantageous to make or buy the items, and begin the vendor selection, purchasing and the contracting process.

## **Procurement Definition**

The following procurement items and/or services have been determined to be essential for project completion and success. The following list of items/services, justification, and timeline are pending PMO review for submission to the contracts and purchasing department.

<b>Service</b>	<b>Justification</b>	<b>Needed By</b>
Wireless Survey SoW	Needed to do a Wireless Survey on the manufacturing plant and obtain how many access points are required to have coverage on all the areas and support future growth	14 July 2020
Network Cabling	Network cabling required for new Wireless access points and for relocation of existing	11 Sept 2020
(3) Cisco Switches	Network switches required for increase capacity for future growth	14 Oct 2020
(21) Wireless Access Points	Wireless access points required per Wireless Survey SoW	14 Oct 2020
(18) Antennas for Current Access Points	Install additional antennas for wireless access points in production for increase coverage	14 Oct 2020
Logistics charge and Mexico Duties	Charges for delivery equipment in Mexico	14 Sept 2020
Network Switches Maintenance	3 year Maintenance for any hardware failure	20 Dec 2020

## **Type of contract to be used**

All items and services to be procured for this project will be solicited under firm-fixed price contracts. The project team will work with the purchasing department to define the item types, quantities, services and required delivery dates. The vendors used are the standard vendors that were selected by the company to purchase network infrastructure that comply with the company standards; therefore, no bid process will be required.

### ***Procurement Risks***

All procurement activities carry some potential for risk which must be managed to ensure project success. While all risks will be managed in accordance with the project's risk management plan, there are specific risks which pertain specifically to procurement which must be considered:

- Unrealistic schedule and cost expectations for vendors
- Manufacturing capacity capabilities of vendors
- Configuration management for upgrades and improvements of purchased technology
- Potential delays in shipping and impacts on cost and schedule
- Questionable past performance for vendors
- Potential that final product does not meet required specifications

These risks are not all-inclusive and the standard risk management process of identifying, documenting, analyzing, mitigating, and managing risks will be used.

### ***Procurement Risks Management***

As previously stated, project risks will be managed in accordance with the project's risk management plan. However, for risks related specifically to procurement, there must be additional consideration and involvement. Project procurement efforts involve external organizations and potentially affect current and future business relationships as well as internal supply chain and vendor management operations. Because of the sensitivity of these relationships and operations the project team will include the project sponsor and a designated representative from the contracting department in all project meetings and status reviews.

Additionally, any decisions regarding procurement actions must be approved by the project sponsor or, in his absence, the site plant manager. Any issues concerning procurement actions, or any newly identified risks will immediately be communicated to the project's contracting department point of contact as well as the project sponsor.

### ***Procurement Constrains***

There are several constraints that must be considered as part of the project's procurement management plan. These constraints apply to several areas which include schedule, cost, scope, resources, and technology:

**Schedule:** Project schedule is not flexible and the procurement activities, contract administration, and contract fulfillment must be completed within the established project schedule.

**Cost:** Project budget has contingency and management reserves built in; however, these reserves may not be applied to procurement activities. Reserves are only to be used in the event of an approved change in project scope or at management's discretion.

**Resources:** All procurement activities must be performed and managed with current personnel. No additional personnel will be hired or re-allocated to support the procurement activities on this project.

### ***Vendor Management***

The GAN Engineer is responsible for managing vendors. To ensure the timely delivery and high quality of products from vendors the GAN Engineer will follow up with local SIS and purchasing department and each vendor to discuss the progress for each procured item. The meetings can be in person or by teleconference. The purpose of these meetings will be to review all documented specifications for each product as well as to review the quality test findings. This forum will provide an opportunity to review each item's development or the service provided to ensure it complies with the requirements established in the project specifications. It

also serves as an opportunity to ask questions or modify contracts or requirements ahead of time to prevent delays in delivery and schedule. The GAN Engineer be responsible for scheduling this meeting on a bi-weekly basis until all items are delivered and are determined to be acceptable.

Approved by the Project Sponsor:

\_\_\_\_\_ Date: \_\_\_\_\_  
 <Project Sponsor>  
 <Project Sponsor Title>

**Figure 25: Procurement Management Plan**

#### **4.3.9. Stakeholder Engagement plan**

In the initiation process in chapter 4.2 we started this process with the stakeholder identification process by creating the stakeholder registry, one of the main inputs for our next process, the engagement stakeholder plan, this plan was created to identify the strategies and actions required to promote productive involvement of stakeholders in decision making and execution (Project Management Institute, 2017). We utilized a template from the web (Docs, Stakeholder engagement Plan, 2020) and adjusted the company processes in this template by utilizing the stakeholder engagement assessment matrix. See **Figure 26**

## Infrastructure Network Program Templates

### Infrastructure PMO Office

#### Stakeholder Engagement Plan

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Project Information

Project Number: 44309

Project name: Network Infrastructure Upgrade in a Manufacturing plant

Requestor/Project Sponsor: Project Sponsor

**Contents:**

*Introduction*  
*Identify Stakeholders*  
*Key Stakeholders*  
*Stakeholder Analysis*

### ***Introduction***

The Stakeholder Management Strategy for this project will be used to identify and classify project stakeholders; determine stakeholder power, interest, and influence; and analyze the management approach and communication methodology for project stakeholders. This will allow us to identify key influential stakeholders to solicit input for project planning and gain support as the project progresses. This will benefit the project by minimizing the likelihood of encountering competing objectives and maximizing the resources required to complete the project.

Early identification and communication with stakeholders are imperative to ensure the success of the project by gaining support and input for the project. Some stakeholders may have interests which may be positively or negatively affected by the project. By initiating early and frequent communication and stakeholder management, we can more effectively manage and balance these interests while accomplishing all project tasks.

### ***Identify Stakeholders***

The project team will conduct a brainstorming session to identify stakeholders for the project. The brainstorming session will include the primary project team and project sponsor. The session will be broken down into two parts. The first part will focus on internal stakeholders within the company. These stakeholders may include functional managers, operations personnel, finance personnel, warehouse and material handlers, and any other employee who will be affected by the project. The second part of the session will focus on external stakeholders. These may include suppliers, trial customers, partner organizations, or any other individuals who reside outside of the company.

The following criteria will be used to determine if an individual will be included as a stakeholder:

1. Will the person or their organization be directly or indirectly affected by this project?
2. Does the person or their organization hold a position from which they can influence the project?
3. Does the person have an impact on the project's resources (material, personnel, funding)?
4. Does the person or their organization have any special skills or capabilities the project will require?
5. Does the person potentially benefit from the project or are they in a position to resist this change?

Any individual who meets one or more of the above criteria will be identified as a stakeholder. Stakeholders from the same organization will be grouped to simplify communication and stakeholder management.

### ***Key Stakeholders***

As a follow on to Identify Stakeholders, the project team will identify key stakeholders who have the most influence on the project or who may be impacted the most by it. These key stakeholders are those who also require the most communication and management which will be determined as stakeholders are analyzed. Once identified, the Project Manager will develop a plan to obtain their feedback on the level of participation they desire, frequency and type of communication, and any concerns or conflicting interests they have.

Based on the feedback gathered by the project manager, the determination may be made to involve key stakeholders on steering committees, focus groups, gate reviews, or other project meetings or

milestones. Thorough communication with key stakeholders is necessary to ensure all concerns are identified and addressed and that resources for the project remain available.

### **Stakeholder Analysis**

Once all the project stakeholders have been identified, the project team will categorize and analyze each stakeholder. The purpose of this analysis is to determine the stakeholders' level of power or influence, plan the management approach for each stakeholder, and to determine the appropriate levels of communication and participation each stakeholder will have on the project.

The project team will categorize stakeholders based on their organization or department. Once all stakeholders have been categorized, the project team will utilize a power/interest matrix to illustrate the potential impact each stakeholder may have on the project. Based on this analysis the project team will also complete a stakeholder analysis matrix which illustrates the concerns, level of involvement, and management strategy for each stakeholder.

The chart below will be used to establish stakeholders and their levels of power and interest for use on the power/interest chart as part of the stakeholder analysis.

**Chart 18 Stakeholder Power/Interest Matrix**

Num	NAME	TYPE	POWER	INTEREST	IMPACT	INFLUENCE
1	Project Manager	INTERNAL	HIGH	HIGH	HIGH	HIGH
2	Sr. Project Manager	INTERNAL	LOW	HIGH	LOW	LOW
3	PMO Manager	INTERNAL	HIGH	HIGH	HIGH	HIGH
4	Local SIS	INTERNAL	LOW	HIGH	LOW	LOW
5	SIS Manager	INTERNAL	HIGH	LOW	HIGH	LOW
6	GAN Engineer	INTERNAL	LOW	HIGH	LOW	LOW
7	GAN Manager	INTERNAL	HIGH	LOW	LOW	HIGH
8	Network Services	EXTERNAL	LOW	HIGH	LOW	LOW
9	Network Infrastructure	EXTERNAL	LOW	HIGH	LOW	LOW
10	Finance Manager	INTERNAL	HIGH	HIGH	HIGH	LOW
11	Plant Manager	INTERNAL	HIGH	HIGH	LOW	HIGH
12	Business Relationship	INTERNAL	HIGH	HIGH	LOW	HIGH
13	The system users	INTERNAL	LOW	LOW	HIGH	LOW
14	Network Support Team	INTERNAL	LOW	LOW	HIGH	LOW

(Source: A.Rios Created by Author, July 2020)

Based on the analysis on the chart above, the stakeholders 13 and 14 will require minimal management effort as they reside on the lower left of the matrix. Stakeholders 2,4 must be kept satisfied by ensuring concerns and questions are addressed adequate. Stakeholders 2, 4,6,8,9 must be kept informed through frequent communication on project status and progress.

the Stakeholders 1,3,10,11,12 will need to manage closely that means they will need to be key players and must be involved in all levels of project planning and change management, additionally they should be participatory members in all project status meetings, gate reviews.

**Chart 19 Stakeholder Management Strategy**

Num	NAME	TYPE	EVALUATION LEVEL OF POWER/INTEREST/IMPACT/INFLUENCE		EVALUATION - LEVEL OF PARTICIPATION AND COMPROMISE
			MANAGEMENT STRATEGY BASED ON POWER/INTEREST	MANAGEMENT STRATEGY BASED ON IMPACT/INFLUENCE	
1	Project Manager	INTERNAL	Manage closely	Work for them	LEADER
2	Sr. Project Manager	INTERNAL	Keep informed	Keep informed with minimum effort	SUPPORTIVE
3	PMO Manager	INTERNAL	Manage closely	Work for them	NEUTRAL
4	Local SIS	INTERNAL	Keep informed	Keep informed with minimum effort	NEUTRAL
5	SIS Manager	INTERNAL	Keep satisfied	Keep informed and never ignored	SUPPORTIVE
6	GAN Engineer	INTERNAL	Keep informed	Keep informed with minimum effort	SUPPORTIVE
7	GAN Manager	INTERNAL	Keep satisfied	Work with them	NEUTRAL
8	Network Services	EXTERNAL	Keep informed	Keep informed with minimum effort	NEUTRAL
9	Network Infrastructure	EXTERNAL	Keep informed	Keep informed with minimum effort	SUPPORTIVE
10	Finance Manager	INTERNAL	Manage closely	Keep informed and never ignored	SUPPORTIVE
11	Plant Manager	INTERNAL	Manage closely	Work with them	NEUTRAL
12	Business Relationship	INTERNAL	Manage closely	Work with them	SUPPORTIVE
13	The system users	INTERNAL	Monitor with minimum effort	Keep informed and never ignored	UNAWARE
14	Network Support Team	INTERNAL	Monitor with minimum effort	Keep informed and never ignored	UNAWARE

(Source: A.Rios Created by Author, July 2020)

The stakeholder analysis matrix will be used to capture stakeholder concerns, level of participation, and management strategy based on the stakeholder analysis and power/interest matrix above. The stakeholder analysis matrix will be reviewed and updated throughout the project's duration in order to capture any new concerns or stakeholder management strategy efforts.

Approved by the Project Sponsor:

\_\_\_\_\_

Date: \_\_\_\_\_

<Project Sponsor>

<Project Sponsor Title>

**Figure 26: Stakeholder Management Plan**



## 5 CONCLUSIONS

1. The project charter was the first element of the Project management plan. The template used was from the company PMO templates and additional information was added according the PMBOK guide, the project charter included all the high-level information for the project.
2. In order to create the stakeholder registry the project charter was used as an input and the template was created, this registry will help the project team to identify and understand all the stakeholders and how their participation will be on the project.
3. The scope of the project was defined following the Scope Management plan, within this objective the WBS, WBS dictionary were created and this will ensure we have all the work for project success.
4. The requirements management plan was an output of defining the scope of the project a requirements documentation and traceability matrix was created, this contained all the requirements for the project.
5. A schedule management plan was created for define how the schedule will be developed, monitored and controlled, in addition we defined the Schedule baseline by creating the initial activity list using the scheduling software and work on resource assignments and sequencing. The final deliverable for this objective was the schedule in Gantt Chart to ensure the project activities will be completed on time.
6. The cost management plan was created for have a guide for estimate the cost of the projects and define the cost baseline, this will help the team to stay on budget.
7. A template was created for detailed the quality management plan which specified the quality management approach, quality metrics and the quality matrix for the project that will ensure that quality was part of the project processes and final deliverables.

8. The Resource management plan was the main output for objective number 8, this plan will help the project team to identify and classify the resources need it for the project. The project organization chart will
9. The communication management plan was created from a template and adjusted following the company current communication procedures, the communication matrix was a key process for this plan as here is where all the stakeholders are listed and how the communication will be doing during the project and how.
10. The Risk management plan was created following current company procedures and adjusting it to a template, the initial risk of the project was captured in a risk register and the qualitative risk analysis was perform including effective risk responses. Quantitative risk analysis was not performed due to the low complexity of the project.
11. The procurement management plan was developed using a template, the company has already established process for procurement infrastructure therefore they were outlined what applies to this project.
12. A stakeholder engagement plan was created including the stakeholder analysis chart that will help to understand the stakeholder expectations and manage them thru the project lifecycle.

## 6 RECOMMENDATIONS

1. The project charter template created by the company was an incredibly good document that had all the necessary information to start with the project definition. The only recommendation for this template was to include the success criteria and project approach.
2. The Gate and phased out for this type of projects is a good approach and we could see that in the process of defining the initiation and definition plans.
3. The PMO office should outline each of the plan and how those must be followed. There was not a formal document that contained this information within the organization.
4. There are several projects like this in different locations, this project management plan can serve as a baseline to use the templates in another similar project to reduce the management time.

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## APPENDICES

### Appendix 1: FGP Charter

<b>PROJECT CHARTER</b> (Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries)	
<b>Date:</b>	<b>Project Name:</b>
2/27/2020	Project Management Plan for a Network Infrastructure Upgrade in a Manufacturing plant.
<b>Knowledge Areas / PM Processes:</b>	<b>Application Area (Sector / Activity):</b>
Knowledge Areas: Project integration Management, Project Scope Management, Project Time management, Project Cost Management, Project Quality Management, Project Resource Management, Project Risk Management, Project Procurement Management, Project communication Management, Project Stakeholder management. PM Processes: Initiation and Planning	Information Technology
<b>Project Start Date:</b>	<b>Project Finish date:</b>
2/27/2020	8/12/2020
<b>Project Objectives (General and Specific):</b>	
<p><b>General Objective:</b>            To Develop a Project Management Plan for a network Infrastructure upgrade in a Manufacturing plant in order to have a baseline for all the activities that involve this type of projects and assure the Project success following the Project Management Institute best practices</p> <p><b>Specific Objectives:</b></p> <ol style="list-style-type: none"> <li>1. To create a project charter in order to define the key input elements to produce the project management plan</li> <li>2. To develop a stakeholder register in order to manage the project engagement to ensure the project satisfaction.</li> <li>3. To develop a scope management plan in order to assure all required work to complete a success project</li> <li>4. To develop a requirements management plan in order to understand the process of how requirements will be identified, documented, analyzed and managed for the project.</li> <li>5. To develop a schedule management plan to ensure the timely completion of the project.</li> <li>6. To develop a cost management plan to predict coming expenses to reduce the chances of going over budget.</li> <li>7. To develop a quality management plan in order to determine quality policies and procedures relevant to the project for both project deliverables and project process, assure the project customer satisfaction and complete all the project requirements based on stakeholders' specifications.</li> </ol>	

8. Develop a resource management plan to identify, obtain, and manage the resources needed for the successful completion of the project.
9. Develop a communication management plan to ensure the communication is effective for stakeholder and at the same time to define necessary activities to implement the communication strategy.
10. Develop a risk management plan to identify and evaluate risks to successfully complete the project and reduce the probability and/or impact of negative risks.
11. Develop a procurement management plan to purchase products, services by the develop of agreements.
12. Develop a project stakeholder management plan to define people, group or organization that could be impacted by the project and have a plan to effectively engage stakeholders.

#### **Project purpose or justification (merit and expected results):**

This project originates from a need to have a project management plan to manage a network upgrade in a manufacturing plant and have a process in place to follow. Having a project management plan can help to create the documents that will be used by the project team to successfully manage the project during the executing, monitoring, and controlling and closing procedures. The benefits of having a project plan will be:

- Having a good planning will reduce time on execution
- Provides a tracking mechanism against an established baseline
- Helps in project performance reporting
- Identifies and establishes communication needs and methods
- Have all the organization stakeholders informed of the project updates

The Project management plan can be used as a reference for future projects alike and have a baseline of all required work and documentation need it.

#### **Description of Product or Service to be generated by the Project – Project final deliverables:**

The main output of this project will be the project management plan for a network infrastructure upgrade in a manufacturing plant including all the documents templates.

#### **Assumptions**

The project manager has all resources to start working on the project.

#### **Constraints:**

The project must be completed in 3 months


#### **Preliminary Risks:**

- If my little baby got sick, it might have a delay on the final delivery of the project.
- If my computer is damaged, it might have a delay on the final delivery of the project.

#### **Budget:**

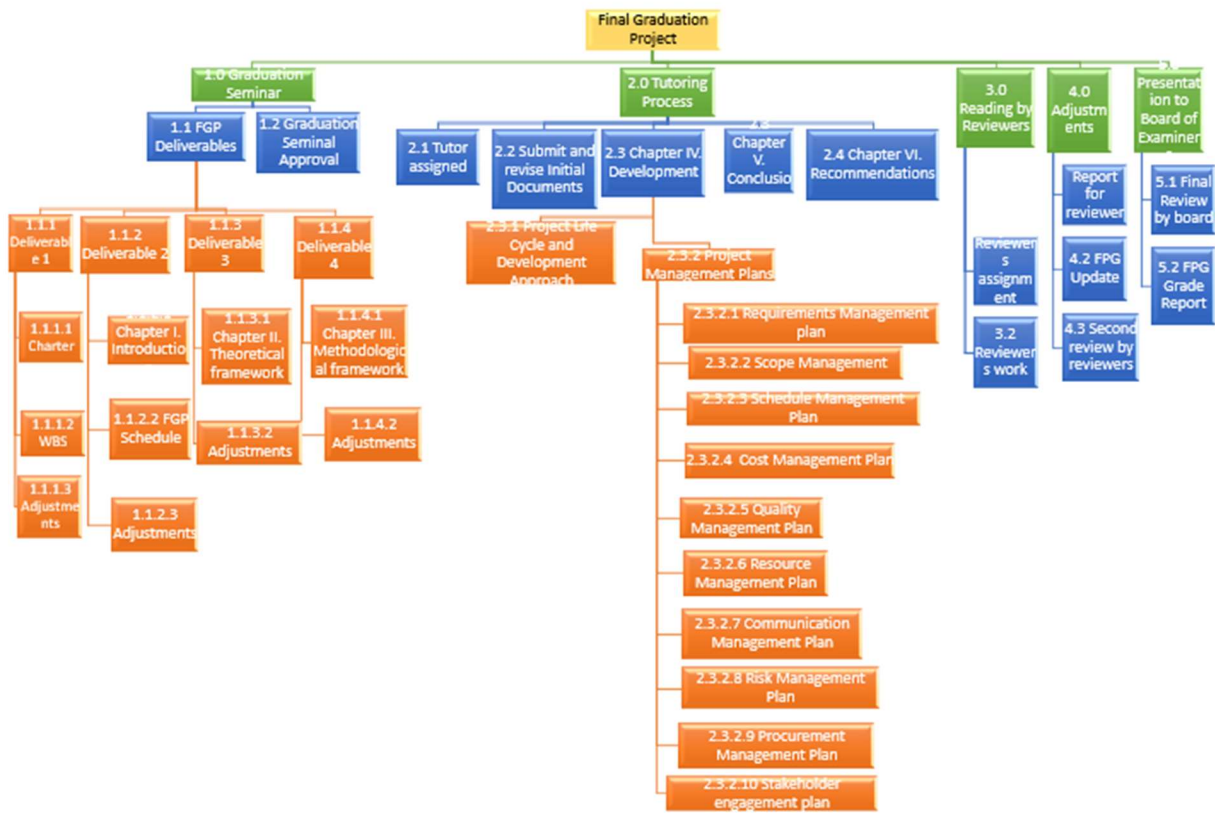
Final budget will include the estimated work in hours to complete this project plan and all the required cost to print, bind, and ship the FGP to Costa Rica.

#### **Milestones and dates:**

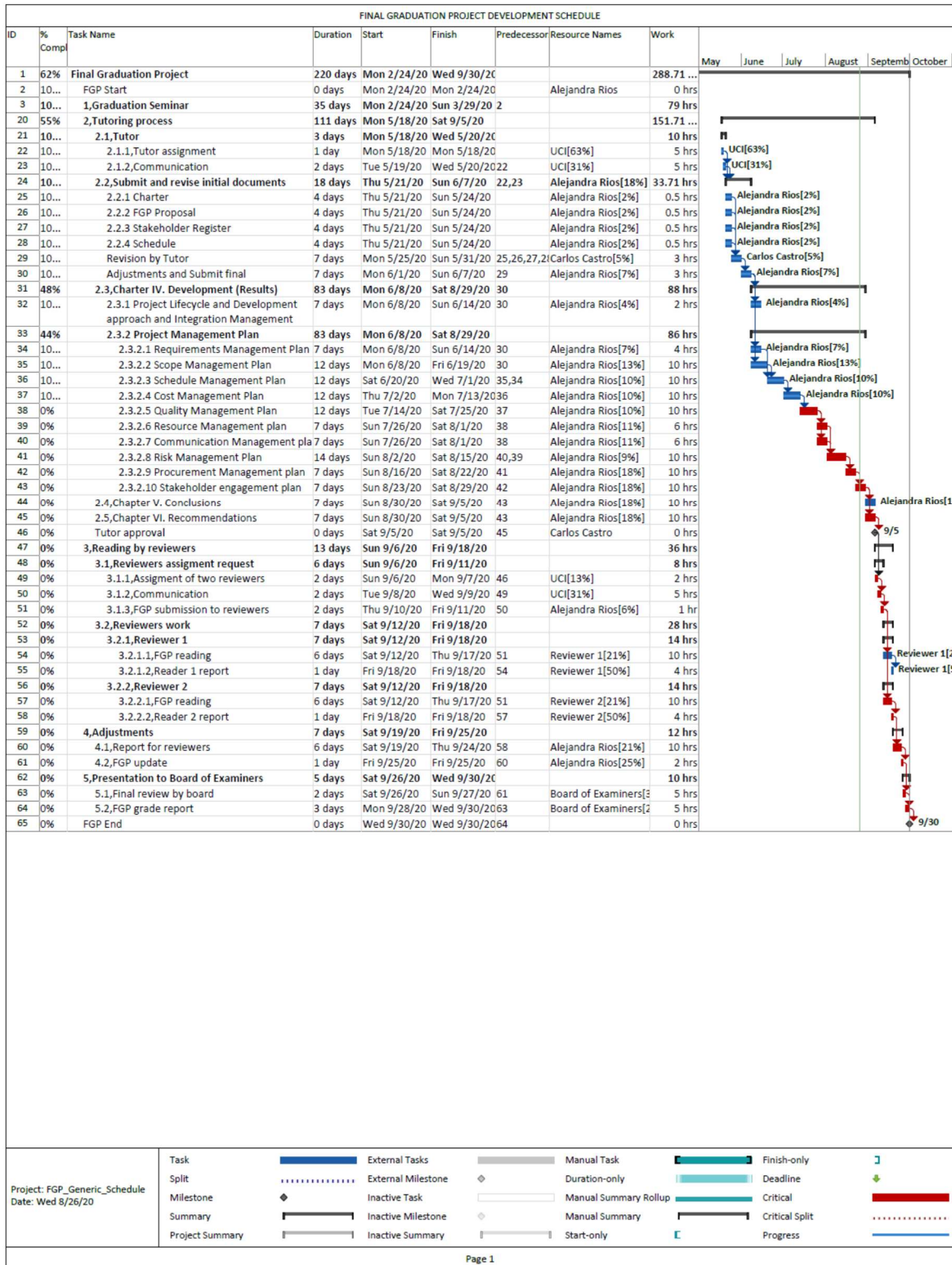
<b>Milestone</b>	<b>Start date</b>	<b>End date</b>
Start	Mon 2/24/20	Mon 2/24/20
FGP Charter	Mon 2/24/20	Sun 3/1/20
FGP WBS	Mon 2/24/20	Sun 3/1/20
Chapter I. Introduction	Mon 3/2/20	Sun 3/8/20
Chapter II. Theoretical framework	Mon 3/9/20	Sun 3/15/20
Chapter III. Methodological framework	Mon 3/16/20	Sun 3/22/20
Annexes: Bibliography	Mon 3/16/20	Sun 3/22/20
Annexes: Schedule	Mon 3/2/20	Sun 3/8/20
Approval	Mon 3/23/20	Sun 3/29/20
Tutoring	Mon 5/18/20	Sun 9/9/20
Submit and revise initial documents	Thu 5/21/20	Wed 6/7/20
Chapter IV: Development (Results)	Mon 7/8/20	Sun 9/2/20
Project Lifecycle and Development Approach and Integration Management	Mon 6/8/20	Sun 6/14/20
Project Management Plan	Mon 6/8/20	Sun 8/29/20
Chapter V: Conclusions	Sun 8/30/20	Sat 9/5/20
Chapter VI: Recommendations	Sun 8/30/20	Sat 9/5/20
Tutor approval	Sat 9/5/20	Sat 9/9/20
FGP Submission to reviewers	Thu 9/10/20	Sun 8/16/20
Review	Mon 9/17/20	Sun 8/23/20
Adjustments	Sat 9/19/20	Fri 9/25/20
Final presentation to Board	Mon 9/30/20	Fri 10/4/20
End	Fri 10/4/20	Fri 9/4/20
<b>Relevant historical information:</b>		
NA		
<b>Stakeholders:</b>		
<b>Direct stakeholders:</b> FGP Professor - Carlos Brenes Tutor – Carlos Castro Project Manager - Alejandra Rios Orozco Board of Examiners <b>Indirect stakeholders:</b> Academic Assistant - Gabriela Zúñiga Reviewers Family and Friends		
<b>Approval:</b>		
Project Manager: Alejandra Rios Orozco	Signature:	
Authorized by:	Signature:	



## Appendix 2: FGP WBS



### Appendix 3: FGP Schedule



### Appendix 4: Plant Layout with Wireless Access Points and Network Coverage

