UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN TO DEVELOP A NATIONAL PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS IN BELIZE

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DEDICATION

This research project is dedicated to my sister, Yazmin Urbina, for believing in me, encouraging, and supporting me with my life decisions. To my nieces and nephews for giving me an even better reason to strive for excellence and be a better role model to them. I also want to dedicate this project to my friend, Stacy Badillo, who played a very important role in helping me to finish this Master's Program strong. Thank you Stace for being my biggest cheerleader!

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Lastly, I would like to express gratitude to my family and friends who supported me during this process and kept motivating me to carry on.

ABSTRACT

This document was developed with the objective to compile a project management plan that integrates project management principles to develop a National Plan to expand internet connectivity to remote and rural areas in Belize. The Covid-19 pandemic has shown us clearly that the internet is no longer a luxury rather access to internet has become a necessity. Currently rural and remote communities in Belize have identified challenges accessing affordable internet highlighting the gap between urban and rural connectivity.

Consequently, the final product of this project includes a plan to deploy internet access to rural communities of Belize. The plan will consist of related management plans for scope, schedule, costs, quality, resources, communications, risks, and stakeholders. Given that this project will not require services other than internal resources time, there is no need for a procurement plan.

For this project, the applied research method was used along with guidance from the Project Management Institute.

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ABBREVIATIONS AND ACRONYMS

BDI	Broadband Development Index
BTL	Belize Telemedia Limited
CPI	Cost Performance Index
CV	Cost Variance
EVA	Earned Value Analysis
FTTH	Fiber to the Home
GSM	Global System for Mobile Communications
ICT	National Information and Communications Technology
ICU	International Telecommunication Union
IICCA	Instituto de Investigación y Capacitación
IDB	Inter-American Development Bank
LTE	Long Term Evolution (of Mobile Networks)
MS	Microsoft
NBP	National Broadband Plan
PDM	Precedence Diagramming Method
PERT	Program Evaluation and Review Technique
PMBOK® Guide	Project Management Body of Knowledge Guide
PMI	Project Management Institute
PMP	Project Management Plan
PoP	Point of Presence
RAN	Radio Access Network
RoI	Return of Investment
SPI	Schedule Performance Index
SRCi	Substantial Rural Connectivity Index
SUCi	Substantial Urban Connectivity
SWOT	Strengths, Weaknesses, Opportunities and Threats
SV	Schedule Variance
TaiwanICDF	International Cooperation and Development Fund
UMTS	Universal Mobile Telecommunications System
WBS	Work Breakdown Structure

EXECUTIVE SUMMARY

The National Information and Communications Technology (ICT) Development Index by the International Telecommunication Union (ITU) shows that Belize performs well in areas such as the amount of international internet bandwidth per internet users, while the country needs more efforts in developing both fixed-telephone subscriptions and broadband subscriptions or households with internet. The research showed the historically low level of connectivity throughout the territory. The Substantial Rural Connectivity Index (SRCi) and Substantial Urban Connectivity (SUCi) study revealed that Belize belongs to the cluster with low significant rural connectivity, which means that there is a huge gap between urban connectivity and rural connectivity and the population does not have access to connectivity services of sufficient quality (IDB, IICCA, 2020). Highlighted in the study was the limited availability of broadband with an average of only 16.6% of the rural population able to access internet services.

In 2018, the Government of Belize made efforts to increase connectivity throughout the country by securing funding from the Taiwan ICDF to deploy internet, broadband Fiber to the Home (FTTH) service throughout Belize. Currently, the largest existing fiber network in the country, owned by Belize Telemedia Limited (BTL), can serve over 90,000 households with the fastest internet service in the country. Although the network has significantly increased the fixed broadband coverage, internet speeds and stability, its coverage was mainly on urban town, cities, and nearby villages.

The general objective of this document is to develop a plan to expand internet access to rural and remote areas of Belize. The specific objectives are to produce a project charter to outline the project purpose, objectives, and milestones; to create a Scope Management Plan that includes all work necessary to successfully implement the project; and to develop a Schedule Management Plan that includes a project schedule that will ensure the project is completed within the time frame.

The document also includes a Cost Management Plan clearly defining the project budget required to complete the project; a Quality Management Plan to outline the quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints; a resource management plan to identify the human resources needed to complete the project; and a communication plan to ensure timely and effective communication of the project status. Additionally, the document aims at producing a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them, as well as a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement. Note that this project will not require a procurement plan since there will be no need to contract external goods or services.

The methodology used for this project includes descriptive, analytical, and applied research. The descriptive and analytical research method served a key role in statistics and data analysis of past and existing FTTH projects. Applied research was used to find practical solutions for deploying internet to rural and remote areas of Belize. Consequently, the results chapter shows that the research conducted was conclusive as there was sufficient resources within the company to develop a plan to expand internet access to rural and remote areas of Belize. Some of the major risks identified were delays in schedule which could be mitigated by establishing a monitoring system that will require weekly reports and assessments.

Although the executing organization, Digi, has a Program Management Officer and some project management components instituted, a revision of all these documents was done and presented in the results chapter. The successful implementation of the project which includes the phased action plan also referred to the National Plan will be used by Digi to present to the Government of Belize-E-Governance Department with the intention to seek funding for the expansion of internet to rural areas since it was highlighted in the ICT National Strategy of Belize.

1 INTRODUCTION

This chapter includes a brief background of the project, the problem statement, its purpose and the objectives by which this project was chosen.

1.1 Background

In 2011, the Government of Belize presented a National Information and Communications Technology (ICT) Strategy with the vision of accelerating development and improving quality of life for all Belizeans through universal access and widespread usage of ICT. The way Belizeans communicate, interact, learn, do business, healthcare, socialize and care for each other are all influenced by ICT. To help realize an important national policy of deploying internet broadband fiber to the home (FTTH) service throughout Belize, the Taiwan ICDF, provided a loan to the Belize Telemedia Limited (BTL) to finance its National Broadband Plan for replacing its fixed internet infrastructure with a fiber optic network to increase the quality of and access to fixed internet service in the country.

Currently, the largest existing fiber optic network can serve over 90,000 households with the fastest internet service in the country. Over 35,000 households throughout the country have internet access via the Fiber to the Home network. Although this network has significantly increased the fixed broadband coverage, internet speeds and stability, its coverage exists mainly in urban town, cities, and nearby villages.

In this Covid Era, it is even more necessary to increase access to internet particularly to rural areas to enhance education, health, and business needs. Internet service is no longer a luxury and should be made accessible and affordable to everyone. Internet

service is needed to improve education using attractive, multimedia-based curricula and pedagogy and through the development of distance education modalities.

Presently, the Belize's Government is fully committed to establish brand-new strategies to allow continuity at the level of operations and to increase universal access to services through digitalization. The current government has a strong commitment to accelerate digital transformation by focusing on connectivity, e-government, digital talent, and innovation.

1.2 Statement of the problem

The problem is that the existing fiber-optic network covers most urban areas, including major towns, cities, and nearby villages, but there are still several rural and remote communities without access to internet. The Covid pandemic has increased the need for expanding broadband connectivity countrywide, which is a basic condition necessary for accessing public services, remote learning and fostering the digital economy. especially in rural areas.

The ICT Development Index by the International Telecommunication Union (ITU) shows that Belize performs well in areas such as amount of international internet bandwidth per internet users and the number of broadband subscriptions or households with internet. However, the index also revealed the historically low level of connectivity throughout the territory.

The project management plan seeks to establish a national plan for Belize to expand internet access to rural areas of the country. This plan will assist in closing the

connectivity gap between rural and urban areas, as well as facilitate the digital agenda for the country.

1.3 Purpose

The purpose of this project is to develop a Project Management Plan that integrates project management principles in order to develop a National Plan for expanding internet connectivity to remote and rural areas in Belize. The plan will be used by the Project Management Team during the executing, monitoring and controlling, and closing processes.

The benefits of having the Project Management Plan is that it will bring together a collection of outputs that will assist with seeking funding for expanding internet access to rural and remote areas. To this end, the project management plan will define how the project will be executed, monitored and controlled. Another benefit is that the plan will also provide high-level costing for deploying fixed and wireless solutions.

1.4 General objective

To develop a Project Management Plan, as per the standards of the PMBOK® Guide 6th Edition, that integrates sustainable principles and effectively carries out a project to develop a National Plan to expand internet connectivity to remote and rural areas in Belize.

1.5 Specific objectives

1. To produce a project charter to outline the project purpose, objectives and milestones in order to develop the project management plan

2. To create a scope management plan that includes all work necessary to successfully implement the project
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the given time frame.
4. To create a cost management plan clearly defining the project budget required to complete the project
5. To develop a quality management plan that outlines the quality requirements for the project to ensure that results meet expectations for aproval within the time, cost and scope constraints.
6. To create a resource management plan to identify the human resources needed to complete the project.
7. To develop a communication plan to ensure timely and effective communication of the project status.
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.
9. To develop a stakeholder management plan to identify the stakeholders needed to ensure effective stakeholder engagement

2 THEORETICAL FRAMEWORKS

This chapter provides more insight into the executing company's background, its mission and vision, organizational structure and other related facts related to the project. In addition, it includes definitions of project management concepts as it relates to the project.

2.1 Company/Enterprise framework

Company/Enterprise background

Belize Telemedia Ltd. (BTL) operates a telecommunication network in Belize offering fixed and mobile voice and internet services. BTL is the largest business, telecommunications and multimedia company operating in the country of Belize. BTL operates many legacy networks for Fixed Wireless broadband and telephony services. In early 2015, BTL started the Network Evolution Plan which included replacing the mobile network with a Huawei single RAN for all technologies, GSM/UMTS/LTE, a single mobile packet core and a single IMS based core for mobile and fixed telephony services. In 2011, BTL requested support to replace the existing copper network with ultra-modern fiber optic technology. The project was built upon the Network Evolution Plan to provide broadband services to most of the people and businesses in Belize. The project proposed the way forward in the development of BTL's fixed and mobile broadband infrastructure and the investments needed to do so. The plan proposed the way forward in the development of BTL's broadband, especially fixed broadband, and for a small number of rural customers also in the development of fixed wireless, infrastructure from technological, commercial, and financial perspectives.

After being provided a loan from Taiwan ICF, BTL rolled out its Fiber to the Home Network that covered all major towns and cities and surrounding villages. The map below shows the existing fiber distribution network that can serve close to 90,000 households and businesses across the country of Belize.

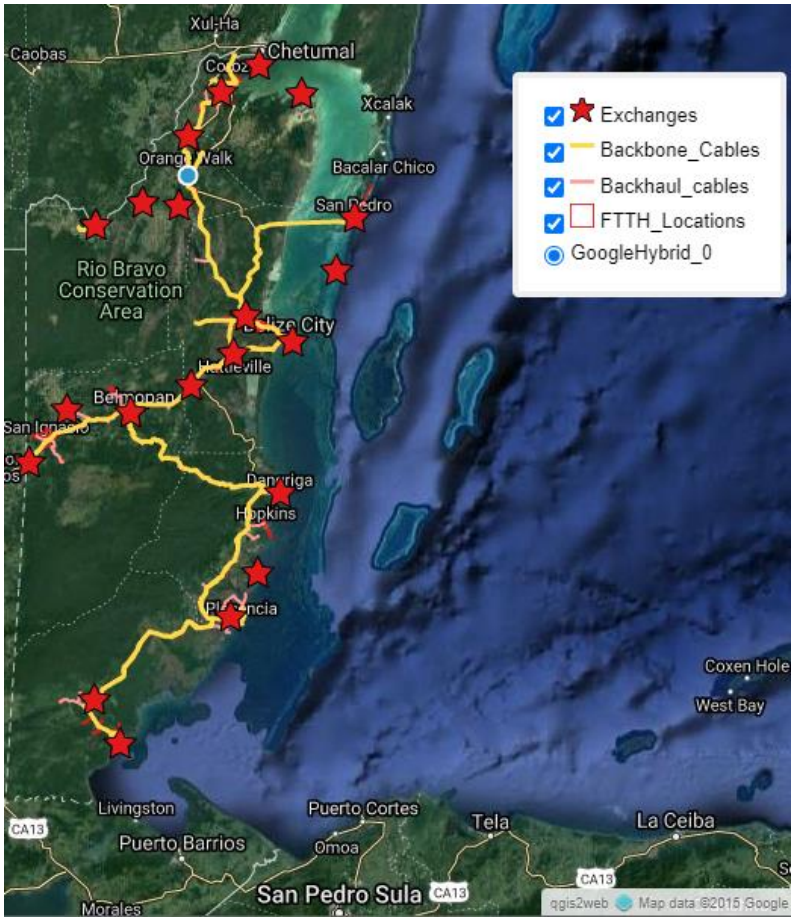


Figure 1 Fiber to the Home Network 2021 (® Belize Telemedia Limited)

Mission and vision statements

In September 2021, BTL rebranded its name to Digi, the National Telecom of Belize conveying the concept that BTL is not just a telecom solutions provider but also leads Belize's technological development. According to the history of Digi, "Digi is a significant step forward in the company's evolution, redefining its national company identity, driving change, and shaping the future of communications. The new brand signals the

company's revitalized aim to continue delivering on the promise of the digital world in a manner that is simple, reliable, and affordable." (Belize Telemedia Limited, 2019) This strategy reflects the company's mission and vision statements:

Mission: "Be fast and efficient in providing communications solutions, enriching the quality of life of customers, keeping them connected anytime, anywhere."

Vision: "A highly proficient, customer driven, strategy focused, best-in-class, solutions provider, outstanding in everything we do."

Organizational structure

Belize Telemedia Limited (BTL) currently employs over 400 Belizeans throughout the country. To improve the experience of their customers, the company reorganized in 2020 to include more technical resources in network operations and service delivery.

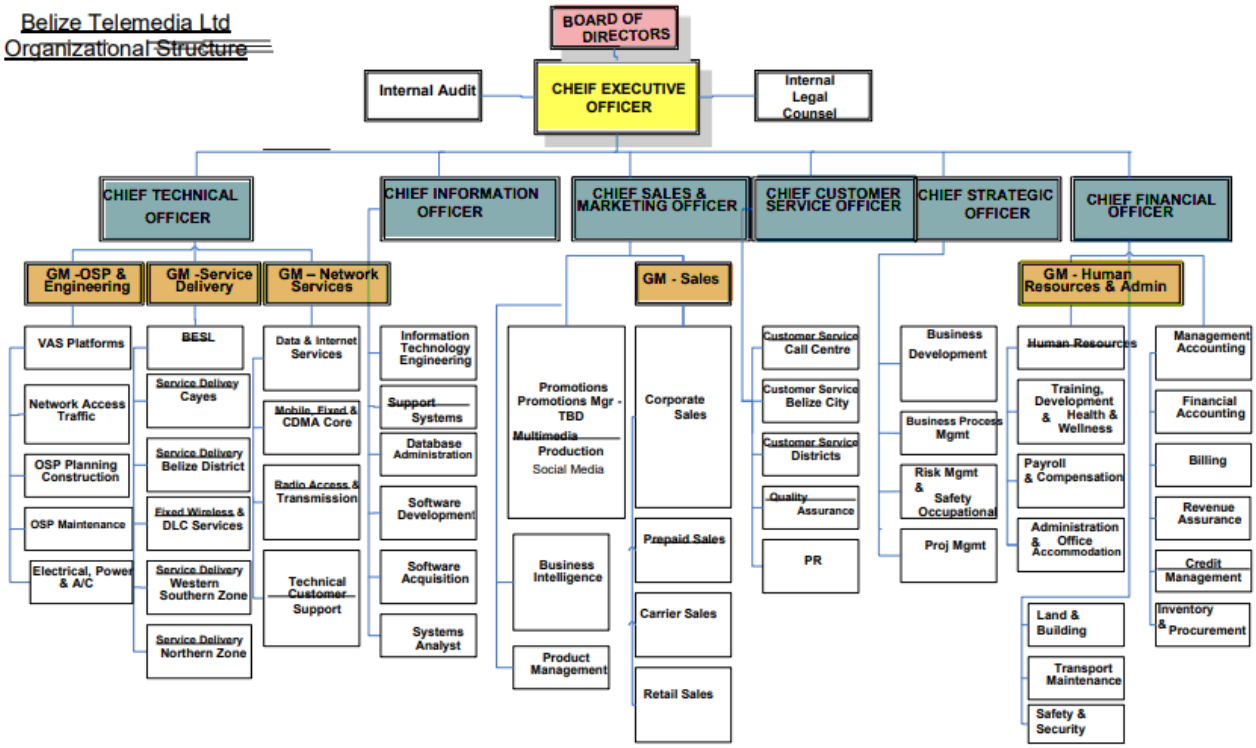


Figure 2 Organizational Structure (® Belize Telemedia Limited)

Products offered

The services and products provided by Digi are vast, varied and distinguished by efficiency, quality, and advanced technology. The company has expanded its mission to go beyond just providing telephone service to providing telecommunications solutions for its residential, business and government customers.

“Digi operates an extensive network of telecommunication services in wireline, mobile, data, Internet and value-added features. Each offers a full range of products and services that include fixed line telephone service, fixed wireless, national and international mobile services, high speed data services, national and international data networks, and innovative new business solutions.” (Belize Telemedia Limited, 2019)

2.2 Project Management concepts

Project

According to the PMBOK® Guide Sixth Edition, a project is defined as “A temporary endeavour undertaken to create a unique product, service, or result” (Project Management Institute, 2013, p.31). To expand internet access to rural and remote areas of Belize is considered a temporary project since it will produce a set of deliverables within clearly specified time, cost, and quality constraints.

Project management

Project Management includes the skills, tools and management processes required to undertake a project successfully. It incorporates a set of skills, a suite of tools and a series of processes. Specialist knowledge, skills and experience are required to reduce the level of risk within a project and thereby enhance its likelihood of success. Various types of tools are used by project managers to improve their chances of success.

Additionally, various processes and techniques are required to monitor and control time, cost, quality, and scope on projects which include schedule management, cost management, quality management, change management, risk management and issue management.

Project life cycle

According to the Project Management Institute, the project life cycle is critical for any manager hoping to deliver projects to clients successfully. According to the Project Management Institute, the project life cycle is critical for any manager hoping to deliver projects to clients successfully. A project' life cycle is the series of phases that the project passes through as it goes from its start to its completion. A standard project usually follows four major phases: initiation, planning, execution, and project closure. The relationship between each phase is unique with each one contributing to the development of the other. A phase is a collection of logically related project activities that culminates in the completion of one or more project deliverables. Project Management Institute, A Guide to the Project Management Body of Knowledge, PMBOK® Guide 6th Edition, Project Management Institute Inc., 2017.

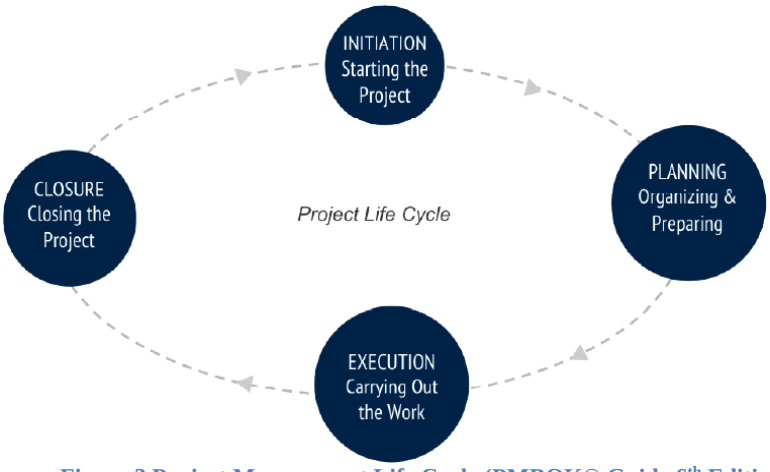


Figure 3 Project Management Life Cycle (PMBOK® Guide 6th Edition)

Project management processes

Project management consists of five sets of process groups that help support the project through the four phases of the life cycle. These process groups include initiation, planning, executing, monitoring, and controlling, and closing.

Initiation supports the work to be done by clarifying the business need, defining the high-level expectations, resources, budgets, and stakeholders. The planning process supports the organizing and preparing phase which include the project scope, time, resources, and risks, as well as communication, quality, and management of purchases of goods and services. The executing process guide the project tasks performed when carrying out the project. This process also establishes how the project team and will communicate when implementing the plan. In the monitoring and controlling processes the team tracks performance and takes actions necessary to ensure that project plans are successfully implemented.

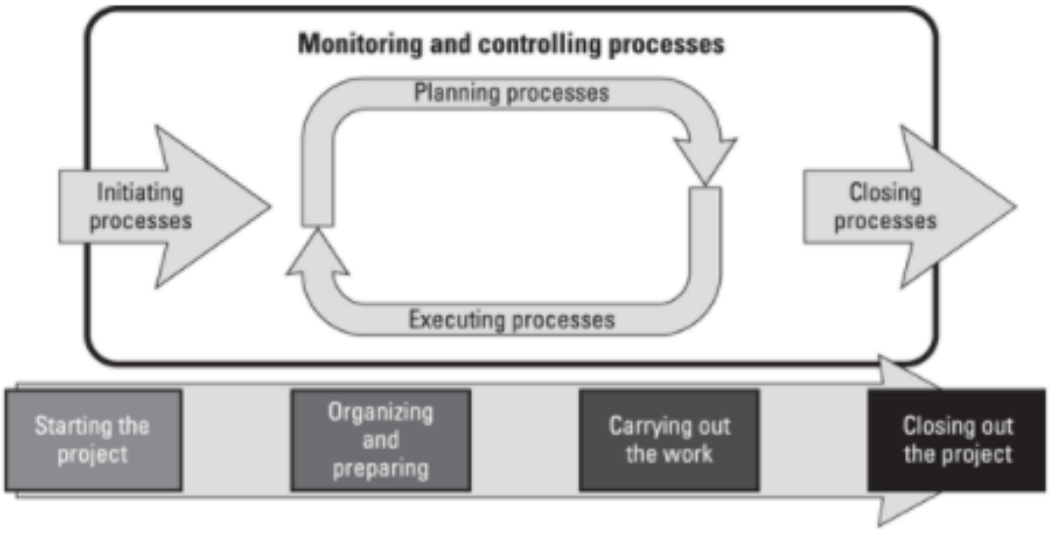


Figure 4 Project Management Processes (©John Wiley & Sons, Inc.)

Project management knowledge areas

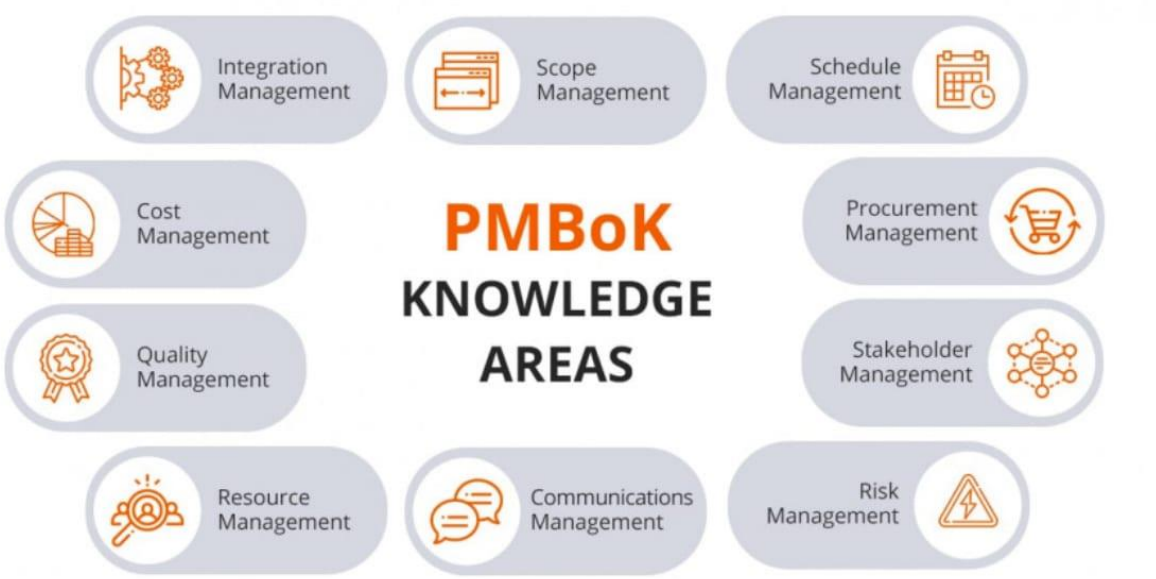


Figure 5 Project Management Knowledge Areas (PMBOK® Guide 6th Edition)

The Project Management Institute framework of project management consists of 49 processes which are categorized in 10 knowledge areas as set out in the Project Management Body of Knowledge (PMBOK®, 6th edition). The PMBoK knowledge areas describe what should be done throughout the lifecycle of the project. They include key documentation that should be completed and explain which tools and techniques will be developed. The table below contains the 10 knowledge areas and the 49 processes, and its relationship to the project to develop a national plan to expand internet access to rural and remote areas of Belize.

Chart 1: Project Management Knowledge Areas (PMBOK® Guide 6th Edition)

Knowledge Area	Processes	Application to the project
1) Project Integration Management	Develop Project Charter	Authorizes the project and links it with the strategic objectives of the organization.
	Develop Project Management Plan	Defines, prepares, and coordinates all plan components.
	Direct and Manage Project Work	Leads and performs the work as defined in the PMP as well as implements approved changes.
	Manage Project Knowledge	Uses existing and guides creation of new pieces of knowledge to achieve the project objectives and support organizational learning.
	Monitor and Control Project Work	The overall progress is tracked, reviewed, and reported to meet the performance objectives defined in the PMP.
	Perform Integrated Change Control	Reviews all change requests, gets approval for changes, and manages changes to deliverables, documents, and plans.
	Close Project or Phase	All activities, phases or contracts are finalized.
2) Project Scope Management	Plan Scope Management	Creates a scope management plan that sets out the framework of the definition, validation and controlling of the project and product scope.
	Collect Requirements	Determines, documents, and manages stakeholder needs and requirements to meet the project objectives.
	Define Scope	Develops a detailed description of the project and product including the result boundaries and acceptance criteria.
	Create WBS	Creates the work breakdown structure by breaking down the project deliverables into small manageable components.
	Validate Scope	Formalizes the acceptance of the completed project deliverables.
	Control Scope	Monitors the project status and product scope and manages changes to the scope baseline.

Knowledge Area	Processes	Application to the project
3) Project Schedule Management	Plan Schedule management Define Activities Sequence Activities Estimate Activity Durations Develop Schedule Control Schedule	Establishes policies, procedures, and documentation of the project schedule management. Identifies and defines the actions needed to produce the project deliverables. Identifies and document the relationships among the project activities. Estimates durations needed to perform each activity. Develops project schedule taking into consideration activity sequences, durations, resource requirements and schedule constraints. Monitors the project status to update the project schedule and manages changes to the baseline.
4) Project Cost Management	Plan Cost Management Estimate Costs Determine Budget Control Costs	Defines the approaches and procedures to estimate, budget, manage, monitor, and control project costs. Estimates an approximation of the cost of required resources. Aggregates the estimated cost and work packages which are the foundation of the authorized cost baseline. Monitors, manages and updates actual and planned project costs as well as the cost baseline.
5) Project Quality Management	Plan Quality Management Manage Quality Control Quality	Identifies quality requirements and standards. Transforms the quality management plan into individual activities that incorporate the quality requirements and standards into the project. Monitors and controls the results of the quality management activities. Also includes verifying that project deliverables are in line with the requirements for final acceptance.

Knowledge Area	Processes	Application to the project
6) Project Resource Management	Plan Resource Management	Defines how the team and physical resources will be estimated, acquired, managed, and used during the project.
	Estimate Activity Resources	Estimates the team headcount and physical resources that will be needed to perform the project work.
	Acquire Resources	Hires team members and acquire physical resources which includes the selection of sources as well as assignment of resources to specific activities.
	Develop Team	Improves skills and competencies, interactions, and the environment of the project team to enhance the overall project performance.
	Manage Team	Tracks performance, feedback and management of changes and adjustments.
	Control Resources.	Ensures that the physical resources are available and utilized as planned. Also includes corrective actions if required.
7) Project Communications Management	Plan Communications Management	Develops the approach and plan for project communications. Stakeholders' information and available organizational assets are considered.
	Manage Communications	Ensures timely and appropriate communication is done in order to facilitate an efficient and effective information flow between project team and stakeholders.
	Monitor Communications.	Ensures that the information needs of the project and stakeholders are met properly and timely
8) Project Risk Management	Plan Risk Management	Plans risk management activities which include tailoring of risk management considerations.
	Identify Risks	Identifies and documents individual risks as well as sources of overall project risks.
	Perform Qualitative Risk Analysis	Assesses the probability and the potential impact of individual project risks.
	Perform Quantitative Risk	Identifies individual project risks of ambiguity or uncertainty by conducting statistical analyses

Knowledge Area	Processes	Application to the project
	Analysis Plan Risk Responses Implement Risk Responses Monitor Risks	(e.g., Monte Carlo Simulation). Identifies and assess the ways to address overall and individual project risks. Responds to risk by implementing a response Monitors and track risk responses and identified risks as well as assess new risks.
9) Project Procurement Management	Plan Procurement Management Conduct Procurements Control Procurements.	If the project requires external purchases of goods and services, documents the way project procurement decisions will be made, by specifying the approach and identifying potential sellers. Selects a seller and implement the agreements and contracts for delivery. Manages procurement relationships and monitor contract performance.
10) Project Stakeholder Management	Identify Stakeholders Plan Stakeholder Engagement Manage Stakeholder Engagement Monitor Stakeholder Engagement	Identifies stakeholders and their interests, involvement, power, and impact on the project. Develops plan for involving stakeholders and interacting effectively during the project. Communicates and works with stakeholders to meet their needs and expectations. Highlight their support and reduces resistance from stakeholders. Monitors relationships and the adjustment of strategies to engage stakeholders.

3 METHODOLOGICAL FRAMEWORK

This chapter includes a definition of information sources type and the ones selected for this project. Chart 2 explains each objective and the information type used for the research for this document.

3.1 Information sources

The various types of information sources can be divided into two broad categories.

1. Documentary Sources- generally published or recorded documents of knowledge.
2. Non-Documentary Sources-form a substantial part of communication especially in science and technology

Primary sources

Primary sources of information are the first published records of original research and development of description of new application or new interpretation of an old theme or ideas. “A primary source is information taken directly from a person, event, location, or material at the point of the occurrence” (Schmidt, 2013, p. 62). For this project, several primary approaches will be used such as meetings, interviews, surveys, and statistical data,

Secondary sources

According to Scribbr, a secondary source is “anything that describes, interprets, evaluates, or analyses information from primary sources.” (Streefkerk, 2021)
In this project, the secondary sources used primarily include the PMBOK® Guide 6th Edition and the Project Management Institute (PMI) online database.

Chart 2: Information sources (Source: Compiled by author)

Objectives	Information sources	
	Primary	**Secondary**
1. To produce a project charter to outline the project purpose, objectives, and milestones to produce the project management plan	BTL's PMO project management templates. Digital Agenda Belize document,	PMBOK® Guide and the Project Management Institute (PMI) online database. Plan Belize Portfolio, and personal interviews with CEO of E-governance in Belize
2. To create a scope management plan that includes all work necessary to successfully implement the project	Digi's Work Breakdown Structure, interviews with Project Managers and technical lead at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.	Digi's Work Breakdown Structure, interviews with Project Managers and technical lead at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
4. To create a cost management plan clearly defining the project budget required to complete the project	Digi's High-level costing for FTTH Expansions, interviews with Project Managers at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database

Objectives	Information sources	
	Primary	**Secondary**
5. To develop a quality management plan to outline the quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints.	Digi's Work Breakdown Structure, interviews with Project Managers and Quality Manager and technical lead at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
6. To create a resource management plan to identify the human resources needed to complete the project.	Digi's Work Breakdown Structure, interviews with Project Managers and Human Resource Manager at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
7. To develop a communication plan to ensure timely and effective communication of the project status.	Digi Communication Plan, interviews with Project Managers at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.	Digi Risk Management Plan, interviews with Project Managers at Digi	PMBOK® Guide and the Project Management Institute (PMI) online database
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.	Interviews with Project Managers, Work Breakdown Structure and E-Governance team at Ministry.	PMBOK® Guide and the Project Management Institute (PMI) online database

3.2 Research methods

In this Final Graduation Project, the research methods that will be used are both descriptive and the analytical method.

3.2.1 Descriptive Research Method

The descriptive research method “describes a population, situation, or phenomenon that is being studied and focuses on answering the how, what, when and where” (University of Udaipur, 2011). In short, the descriptive research classifies, describes, compares, and measures data. Chart 3 below details how the descriptive research method is used for this project.

3.2.2 Analytical method

The analytical research method sometimes referred to as the explanatory method “involves critical thinking skills and the evaluation of facts and information relative to the research being conducted” (University of Udaipur, 2011). There are different types of analytical techniques used to forecast potential outcomes based on possible variations of project or environmental variables and their relationships with other variables. Analytical research focuses on cause and effect. Chart 3 below details how the analytical research method is used for this project.

Chart 3: Research methods (Source University of Udaipur, 2011)

Objectives	Descriptive Research	Analytical Research
1. To produce a project charter to outline the project	This method was used to identify and	

Objectives	Descriptive Research	Analytical Research
purpose, objectives, and milestones to produce the project management plan	describe all existing data that can be helpful in developing the components of the charter	
2. To create a scope management plan that includes all work necessary to successfully implement the project	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate the gathering of facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable scope management plan
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable schedule management plan
4. To create a cost management plan clearly defining the project budget required to complete the project	This method will provide a thorough explanation of the components involved with the	This method will facilitate facts and information from the sources identified in Chart 1 above, that will

Objectives	Descriptive Research	Analytical Research
	project topic, as they already exist.	assist in creating a more sustainable cost management plan
5. To develop a quality management plan to outline the quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable quality management plan
6. To create a resource management plan to identify the human resources needed to complete the project.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable resource management plan
7. To develop a communication plan to ensure timely and effective communication of the project status.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable communication

Objectives	Descriptive Research	Analytical Research
		management plan
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable risk management plan
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.	This method will provide a thorough explanation of the components involved with the project topic, as they already exist.	This method will facilitate facts and information from the sources identified in Chart 1 above, that will assist in creating a more sustainable stakeholder management plan

3.3 Tools

The PMBOK® Guide 6th Edition defines a tool as “something tangible, such as a template or software program, used in performing an activity to produce a product or result” (Project Management Institute, 2013, p. 565). This project will use several tools under each of the three research methods being proposed in Chart 2 above.

The tools that will be used for this Final Graduation Project include having meetings and interviews with experts in network expansions, senior management of Digi, data gathering of existing data, expert judgment and consultations, scheduling tools, cost-benefit analysis, information management, decision making, observations as recommended by PMBOK Guide (PMI, 2017).

Chart 4: Tools (Source: PMBOK® Guide 6th Edition)

Objectives	Tools
1. To produce a project charter to outline the project purpose, objectives, and milestones to produce the project management plan	Project Charter Template
2. To create a scope management plan that includes all work necessary to successfully implement the project	Interviews, consultations and Facilitated workshop: Brainstorming Observations
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.	Gantt Chart (Ms Project), PERT, Critical Path Method
4. To create a cost management plan clearly defining the project budget required to complete the project	Expert Judgment, Analogous Estimation, Parametric Estimation, Bottom-Up Estimation Three-Point Estimation
5. To develop a quality management plan to outline the	Cost-Benefit Analysis, Cost of quality, Benchmarking, Quality Control, Flow charts

Objectives	Tools
quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints.	Check Sheets, Process Decision Program Charts
6. To create a resource management plan to identify the human resources needed to complete the project.	Organizational Charts Responsibility Matrix
7. To develop a communication plan to ensure timely and effective communication of the project status.	Communication Requirement Analysis Communication Methods Expert Judgement
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.	Risk Identification Qualitative and Quantitative Risk Analysis Risk Monitoring and Control Checklist Analysis, Assumptions Analysis
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.	Stakeholder Analysis Expert Judgement Meetings Analytical Techniques

3.4 Assumptions and constraints

According to PM Study Guide (2021), “an assumption is what you believe is to be true. The anticipated events that are expected during the project Lifecyle. A constraint is a limitation imposed on the project that budget, schedule, or

resources." Chart 5 below shows the assumptions and constraints considered for each specific objective of the Final Graduation Project.

Chart 5 Assumptions and constraints (Source: Compiled by author**)**

Objectives	**Assumptions**	**Constraints**
1. To produce a project charter to outline the project purpose, objectives, and milestones to produce the project management plan	The charter will be created prior to any other document	Time allocated to develop the charter is limited. (1week)
2. To create a scope management plan that includes all work necessary to successfully implement the project	It is assumed that stakeholders are adequately identified for this plan. It is assumed that Digi will be supportive in the development of scope management plan.	Time allocated to develop the plan is limited.
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.	It is assumed that a realistic schedule management plan will be developed	Not enough expert judgement available to provide guidance.
4. To create a cost management plan clearly defining the project budget required to complete the project	It is assumed that the budget created during the planning process will be accurate.	Time allocated to develop a complete and detailed budget.

Objectives	Assumptions	Constraints
5. To develop a quality management plan to outline the quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints.	It is assumed that the quality management plan will identify all quality requirements	Limited budget that will sacrifice quality
6. To create a resource management plan to identify the human resources needed to complete the project.	It is assumed that all roles and responsibilities will be identified in the resource management plan	Unable to determine if overtime will be needed to include man hours in the budget
7. To develop a communication plan to ensure timely and effective communication of the project status.	It is assumed that required technology is available to communicate efficiently	Technology and platforms used does not cover the target audience
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.	It is assumed that all potential risks are identified in the risk management plan	All potential risks identified at the planning stage
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.	It is assumed that the stakeholder management plan will identify all stakeholders and plan how to manage them properly	Availability of stakeholders during the proposed timelines

3.5 Deliverables

A deliverable is defined as “any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project.” (PMI, 2013, p. 537) Chart 6 below outlines the deliverables foe each specific objective.

Chart 6 Deliverables (Source: Compiled by author)

Objectives	Deliverables
1. To produce a project charter to outline the project purpose, objectives, and milestones to produce the project management plan	The Project Charter
2. To create a scope management plan that includes all work necessary to successfully implement the project	The Scope Management Plan
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.	The Schedule Management Plan
4. To create a cost management plan clearly defining the project budget required to complete the project	The Cost Management Plan
5. To develop a quality management plan to outline the quality requirements for the project to ensure results meet expectations for approval within the time, cost, and scope constraints.	The Quality Management Plan
6. To create a resource management plan to identify the human resources needed to complete the project.	The Resource Management Plan
7. To develop a communication plan to ensure timely and effective communication of the project status.	The Communication Plan
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.	The Risk Management Plan
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.	The Stakeholder Management Plan

4 RESULTS

The results chapter is a compilation of the research conducted for this project. It includes the project charter and all eight management plans as outlined in the specific objectives.

4.1. Project Charter

This project was developed using Belize Telemedia Limited (BTL)/Digi's existing template format with a few recommended improvements. The main source of information used to create this charter was a review of past FTTH expansion project charters, interviews with BTL's internal Project Managers and members of Fixed and Transport Network Engineering Passive Department. Other sources include Ministry of Education Internet for Schools Program, National Broadband Plan (NBP), and Fixed and Mobile Evolution Project document.

Belize Telemedia Limited-Digi

Project Charter

Purpose

This Project Charter defines the scope, objectives, deliverables, and overall approach for the work to be completed. It is the critical element for initiating, planning, executing, controlling, monitoring, and closing the project. It is the master document for the project and a point of reference on the project for goals and objectives, scope, deliverables, and budget.

Document ID:	BTLPC00001
Document Owner:	Jessamyn Ramos, FTNE Passive
Issue Date:	March 7, 2022
Project Name:	A Project Management Plan to Develop a National Plan to Expand Internet Access to Rural and Remote Areas of Belize.
Location of Project:	Belize, Central America

Department Executing Project:	(PMO - Project Management Office) in conjunction with Fixed and Transport Network Engineering-Passive Department
PMO Overseeing Project:	(PMO - Project Management Office) in conjunction with Fixed and Transport Network Engineering-Passive Department
Product/Service/Result Created:	Expansion of broadband services via FTTH & Wireless Network
Project Sponsor (Program Sponsor if applicable):	
Commercial Project Manager:	**Technical Project Manager: Jessamyn Ramos**

Project Summary

Problem Statement:
The Rural Significant Connectivity Index (ICSr) and Significant Urban Connectivity (ICSu) index developed by IDB, IICA and Microsoft in 2020, categorized Belize in the cluster with low significant connectivity. This means that there is a huge gap between urban connectivity and rural connectivity. (IDB, IICCA, 2020).
Despite the efforts of the government in 2018 to increase connectivity throughout the country, the Covid-19 pandemic highlighted the need for expanding the levels of broadband connectivity, especially in rural areas of Belize. Therefore, this project seeks to establish a proposal to expand internet access allowing full coverage via the National Telecom provider, Belize Telemedia Limited (BTL), to close the connectivity gap between rural and urban areas.

Project Goals (what will project accomplish – project purpose/justification) & Objectives: Include business case where required
The project includes the creation of a Project Management Plan (PMP) that will be used by the Project Management Team during the executing, monitoring, and controlling, and closing processes. The PMP will include Scope Management Plan, Schedule Management Plan, Cost Management Plan, Quality Management Plan, Resource Management Plan, Communication Management Plan, Risk Management Plan, and Stakeholder Management Plan.

Project Purpose:
The purpose of this project is to develop a Project Management Plan that integrates project management principles to expand internet connectivity to remote and rural areas in Belize. The plan will be used by the Project Management Team during the executing, monitoring, and controlling, and closing processes. The benefit of having the Project Management Plan is that it will bring together a collection of outputs that will assist to seek funding for a proposed phased-out approach. It will also provide a high-level costing for deploying fixed and wireless solution for each phase.

Project Objectives:

General Objectives:
To develop a proposal for a phased approach to expand internet access to rural and remote areas of Belize. This proposal will be used to seek funding and execution of the plan by Belize Telemedia Limited (BTL).

Specific Objectives:
1. To conduct an analysis of BTL's existing fixed fiber network and its coverage to determine the rural and remote areas in need of internet access. Statistics from the Ministry of Education's (MoE) Internet for School Program should be used for this analysis.
2. To develop a study of the best possible and cost-efficient solution (fixed or wireless) for expanding internet to the areas by providing a high-level costing and recommendation for proposed solutions.

3. To develop a phased action plan to deploy internet to the identified rural and remote areas based on demand, accessibility, and costing.

Project Scope – includes:

Identifying the existing coverage area for the largest fiber-based network owned by BTL will allow clear visibility of rural communities with no internet access. Since the covid pandemic, limitations to students living in rural and remote areas has been highlighted. This plan will student population statistics to determine the short-, medium- and long-term phases required to reach the goal of providing internet access

Project Scope – does NOT include:
Sources of Funding as this will be determined by the Board of Directors and in negotiations with the Government of Belize

Project Milestones (significant points for tracking):

Milestone	Start Date	End Date
Data Gathering	**May 2022**	**June 2022**
Conduct Analysis of existing network	**June 2022**	**July 2022**
Cost-benefit Analysis	**July 2022**	**August 2022**
Phased Action Plan	**August 2022**	**September 2022**

Assigned Budget Amount: $	**Estimated Project Cost: $17,120**
Charge Project To:	
Main Company Pillar Project Supports	Drive Broadband Connectivity across the country
Assigned Human Resource:	Project Management Office- Program Manager Fixed and Transport Network Engineering- Senior Designer Chief Financial Officer
Assigned Non-Human Resource:	
Assumptions:	1. Human Resources- Adequate BTL's resources will be assigned to the project as needed 2. Commitment- All human resources assigned to the project will be fully committed to achieving the deliverables set out. 3. Funding- BTL is prepared to negotiate the action plan with the Government of Belize to seek funding to expand FTTH network.
Constraints	1. Availability of statistical data to be used for analysis
Major Opportunities:	In keeping with the roll out of the National Broadband Plan, the FTTH network is needed to provide Broadband services in line with the

	company's strategic direction.
Major Risk:	1. High-level costings are unrealistic 2. Capacity of existing network to adhere to expansion demands 3. Source of funding are not secured within 3 years 4. In availability of resources for executing the plan
Other Requirements:	1. Track Project Schedule 2. Provide weekly project updates on activities, issues & risk & project schedule 3. Provide weekly updates for schedule, cost & milestone progress

Commercial Project Manager Signature
Signature

Technical Project Manager

_____

Project Sponsor Signature
Signature

_____

Program Sponsor (if applicable)

SECTION – II:

OFFICIAL USE BY PROJECT MANAGEMENT STEERING COMMITTEE (PMSC)					
Date Received at PMO:					
Date Reviewed (PMO):		**Decision:**	**GO** **NO-GO**	**Decision Date:**	
Comments (if necessary):					
Approval Signature:		**Approval Signature:**			
Approval Signature:		**Approval Signature:**			

SECTION – III:

OFFICIAL USE BY ACCOUNTING DEPARTMENT			
Date Received:		**Processed By:**	
Project Number:		**Approved Amount:**	
Charged To:			
Certified By:		**Approved By:**	

4.2. Project Scope Management Plan

The second objective of the Final Graduation Project is the development of the Project Scope Management plan. This plan includes the processes that need to be in place to define how the scope is explained, developed, structured, and verified. This phase includes planning the processes to define the work that must be done throughout the project, controlling, and monitoring of these processes, as well as documenting, and tracking to avoid scope creep when approving or disapproving changes and closing of the project.

Figure below depicts the Inputs, Tools & Techniques and Outputs of the Plan Scope Management process.

Figure 6: Plan Scope Management: Input, Tools & Techniques and Outputs. Reprinted from A Guide to the Project Management Body of Knowledge (p.134), Project Management Institute, 2017. Copyright 2017 by Project Management Institute Inc.

The inputs used to develop the Scope Management Plan were the project charter, historical information from the Network Evolution Program, Digi's policies and procedures, Digi's organizational chart, and lessons learnt from past projects. The tools used include meetings with Project Management Office and expert judgement by the technical lead of the project. The outputs produced include the definition of scope and the Work Breakdown Structure (WBS).

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

SCOPE MANAGEMENT PLAN

VERSION 0.1

MARCH 27, 2022

Version History

Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

Scope Management Approach

The Scope Management Plan for this project provides the framework that will guide the development of the National Plan to expand internet access to rural and remote areas of Belize. The aim is to ensure that only the work required is outlined for the successful completion of the project. This plan therefore documents the scope management approach; roles and responsibilities; scope definition, verification and control measures, scope change control; and the project's overall Work Breakdown Structure (WBS). Subsequently, any work that is outside of and does not support the objectives of this project should not be performed.

Introduction

Belize Telemedia Limited is proposing a plan to deploy internet access to rural and remote areas of Belize through expansion of its current fixed fiber network. This document provides a description of scope of the solution.

Background

Through the National Broadband Plan (NBP), Belize Telemedia Limited has expanded Fiber to the Home (FTTH) to all urban communities and surrounding villages. The phased-out approach NBP 1, 2,3, and 4 has extended the fiber network to serve over 90,000 households with the fastest internet service in the country. Currently, over 35,000 households throughout the country already have internet access via the Fiber to the Home network. Although it has significantly increased the fixed broadband coverage, internet speeds and stability, until recently, the network's coverage was mainly on urban town, cities, and nearby villages. The pandemic exacerbated the need for internet access in rural and remote areas specifically for continued learning and business from home.

Goals and Project Closure Criteria

The section outlines the high-level goals and closing criteria of the project.

Deliverables

The deliverables of the project are subdivided into three main areas and the respective closing criteria as follows:

Chart 7: Deliverables (Source: Compiled by author**)**

Description	Closing Criteria
1. **Data Gathering** a. All FTTH as built-in shapefiles (points, lines, and polygons) including NBP coverage areas, cables routes, Point of Presence (PoP), pole locations, building footprints, district and location boundaries, Student population and location etc. b. Capacity report of BTL's existing network elements c. BTL's expansion plan	All the data gathered
2. **Analysis of existing network** a. Overlay of MoE's Student population cluster points over BTL's fixed coverage areas b. List of rural and remote areas and their geographic location in need of internet c. Analysis in table format of all areas and recommended solutions (Fixed or Wireless). Capacity report must be used to identify viability of solution	Complete analysis in table format along with Stakeholder's Approval
3. **Cost-benefit Analysis** a. High-level costing using BTL's costing template for each area b. Cost-benefit Analysis based on BTL's Return of Investment (RoI) template	One cost-benefit analysis for each area along with Stakeholder's Approval
4. **Phased Action Plan** a. Phased Action Plan based on the Cost-Benefit Analysis conducted,	A Phased Action Plan along with Stakeholder's Approval

Work Breakdown Structure (WBS)

This section outlines the WBS which is a visual, hierarchical, and deliverable-oriented decomposition of work that is to be done by the project team to accomplish the project goals and objectives. This essential planning tool will allow the Project Manager to outline the steps of the project work and in finding the critical path. It will also be used in the planning, scheduling, and budgeting phases.

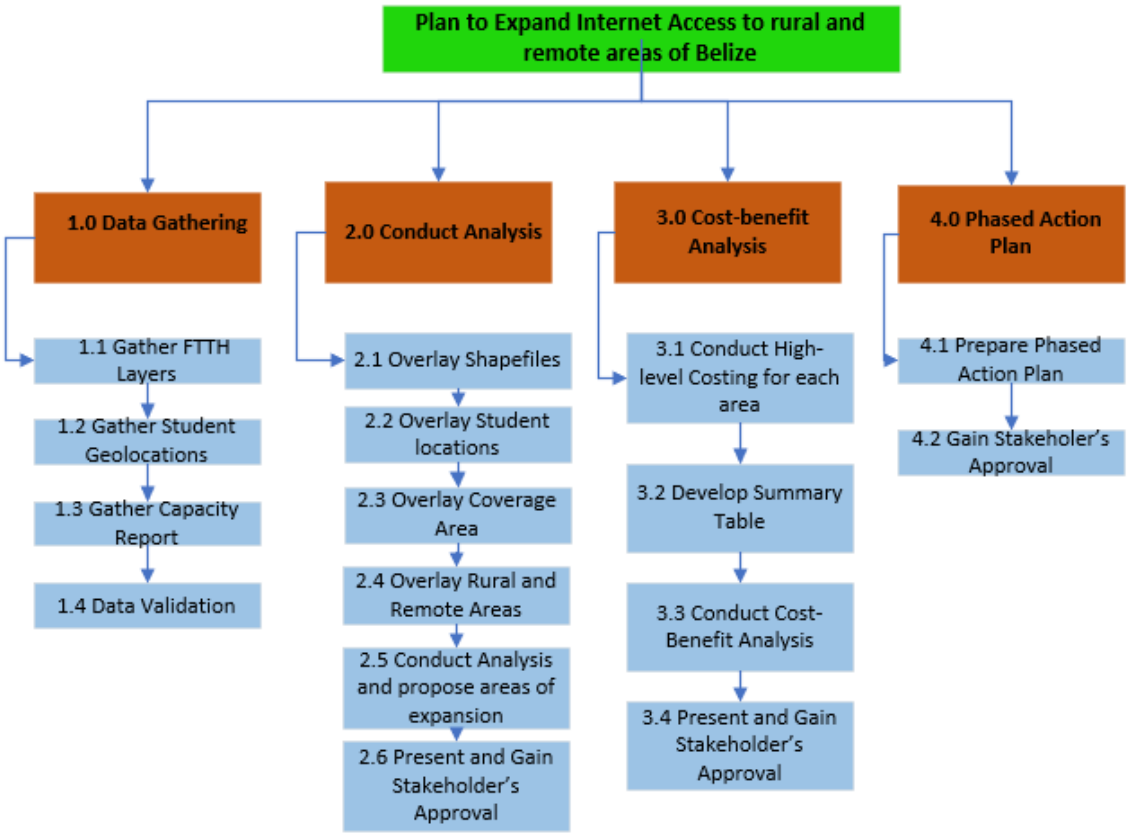


Figure 7: Work Breakdown Structure (Source: Compiled by author)

Scope

This section provides information about the scope of the project. It is broken down into various subsections.

Solution

This subsection outlines the requirements for the expansion of Belize Telemedia Limited existing fiber and mobile Network at a high level from a technical perspective.

The requirement for the proposed solution must be compliant with the following terms:

1. The solution must include an analysis of capacity on the existing fiber network.

2. The solution must have a Return on Investment within 5 years based on the internal business case analysis.

Business Processes

This subsection outlines the main internal business processes that will form a part of the initiation, planning, execution, controlling and closing of this project. These processes also form a part of the lifecycle of the proposed solution.

Processes Included	Processes Excluded
1. Project Management Process	1. Capacity Management Process
2. Data Center Management Process	2. Engineering E2E Design Process
3. Change Management Process	3. Technical Pre-Sales Process
4. Incident Management Process	4. Order-to-Install Process
5. Problem Management Process	

Organizational Units

This subsection lists the main departments or units of the organization that will be involved in the proposed project:

- Network Engineering
- Corporate Sales
- PMO
- Audit
- Finance

Other areas for deployment may include the customer premises in the case of a distributed solution, as well as other BTL sites. This deployment plan is dependent on the selected solution and is therefore subject to change.

Resources

The subsection outlines the resources required for the project that are not otherwise stated in this document.

General Resource Requirements

For the initiation of the project, most general resources will be obtained from existing Business as usual resources. However, as the solution becomes defined and more detailed technical requirements are finalized, resources will be allocated directly from project budget.

Human Resource Requirements

The core implementation team that will carry out this project will consist of the project manager as well as the technical lead with close support from other members from Network Engineering, Mobile and Construction, especially those who are familiar with the existing or related solutions.
A more in-depth description of human resource requirements will be dependent on the final solution chosen.

Data

This subsection lists at a high level the data requirements of this project. These data requirements are listed as follows:

Existing Data	Capacity Data
1. Cable Layer (Backbone, Backhaul, Primary and Secondary) in .shp	1. Required capacity for MSANs
2. Points of Presence in .shp	2. Required capacity for Mobile (TDD.FDD)
3. MDT Boundaries in .shp	3. Required capacity on existing backbone and backhaul cables
4. Splice Closures in .shp	

5. Addresses in .shp	
6. Student locations in .shp	
7. Mobile Coverage in .shp	

The capacity information may be extrapolated from existing usage data (for example growth over time) or from other sources such as the marketing potential of the system. Alternatively, expert consensus can be sought to determine capacity of new solution.

Assumption, Constraints and Dependencies

This section registers the first approximation of the assumptions, constraints and dependencies for this project. The assumptions, constraints and dependencies may change throughout the course of the project.

The main assumptions, constraints and dependencies include:

1. It will be possible to deliver the project within scope, schedule and budget.
2. BTL's staff has the necessary expertise to carry out the project
3. BTL has the infrastructure to carry out the project.
4. BTL's existing technologies and processes can be integrated with the new solution.
5. The new solutions will provide benefits to BTL in terms of profits and can maintain or increase the existing customer base.

Critical Success Factors

This section defines the high-level requirement that can determine whether the project has been successful.

At the strategic level, the four critical success factors include:

1. The project is completed within cost limits and on time.

2. The sponsors are satisfied with the phased action plan.
3. The new solution meets and/or exceeds the scope of the project.
4. The solution has potential to attract new customers and attract revenue.

Risk Register

This section describes some of the key project risks and their potential impact on the success of the project. This list of risks should be regarded as provisional rather than complete because risks are identified and must be dealt with continuously during the project. Risks can relate to operating principles, conflicts of interest or priority, choosing between alternatives, the use of resources or unfulfilled responsibilities.

Risk	Possible Mitigation Strategy
1. High-level costings produced are unrealistic	Ensure that as much data is gathered from previous projects to be used when generating costings
2. Insufficient capacity of the existing network is needed to adhere to expansion demands	Ensure that sufficient time is allocated for capacity analysis
3. Funding is not secured within 3 years	Ensure validity dates are stated in costings estimates
4. Project Proposal is shared with the competitors	Ensure that data is kept confidential

Scope Change Management Process

The Change Management Plan documents and tracks the necessary information required to effectively manage project change from project inception to delivery.

The Change Management Plan is created during the Planning Phase of the project. Its intended audience includes the project manager, project team, project sponsor and any senior leaders whose support is needed to carry out the plan. Any change in the scope of the project will be managed via the Change Request Form to be submitted with relevant information for the request of change to be presented to the Change Control Board for approval.

Change Request Form

SUBMITTER - GENERAL INFORMATION				
CR#				
Submitter Name				
Brief Description of Request				
Date Submitted				
Date Required				
Priority	☐ Low	☐ Medium	☐ High	☐ Mandatory
Reason for Change				
Other Artifacts Impacted				
Assumptions and Notes				
Attachments or References	☐ Yes	☐ No		
	Link:			

INITIAL ANALYSIS		
Hour Impact		
Duration Impact		
Schedule Impact		
Comments		
Recommendations		

CHANGE CONTROL BOARD - DECISION				
Decision	☐ Approved	☐ Approved w/Conditions	☐ Rejected	☐ More Info
Decision Date				
Decision Explanation				
Conditions				

Acceptance

The following table lists the personnel, roles and sign-off required for the approval of this document:

Name	Role	Signature	Date
Senior Designer, Fixed and Transport Layer Network Engineering	Technical Lead		

Manager, Active and Transport Layer Network Engineering	Receipt and Acceptance		
Project Manager, Project Management Office	Project Manager		
Manager, Project Management Office	Receipt and Acceptance		
General Manager, Network Operations, CTO Division	Receipt and Acceptance		
Chief Technical Officer, CTO Division	Sponsor		

4.3. Project Schedule Management Plan

The Project Schedule Management Plan is the precise organization of project activities and tasks by time factors that outline the start and end dates of tasks and milestones.

As stated in the PMBOK® Guide 6th Edition, the Project Schedule Management knowledge area contains six processes: plan schedule management, define activities, sequence activities, estimate activity durations, develop schedule, and control schedule. The schedule is an important part of this project as it will provide the project team, sponsor, and all stakeholders an insight into the project status at any given time throughout the project lifecycle. The purpose of this plan is to define the approach that will be used to create, execute, monitor, and control the project schedule.

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

SCHEDULE MANAGEMENT PLAN

VERSION 0.1

MARCH 27, 2022

Version History

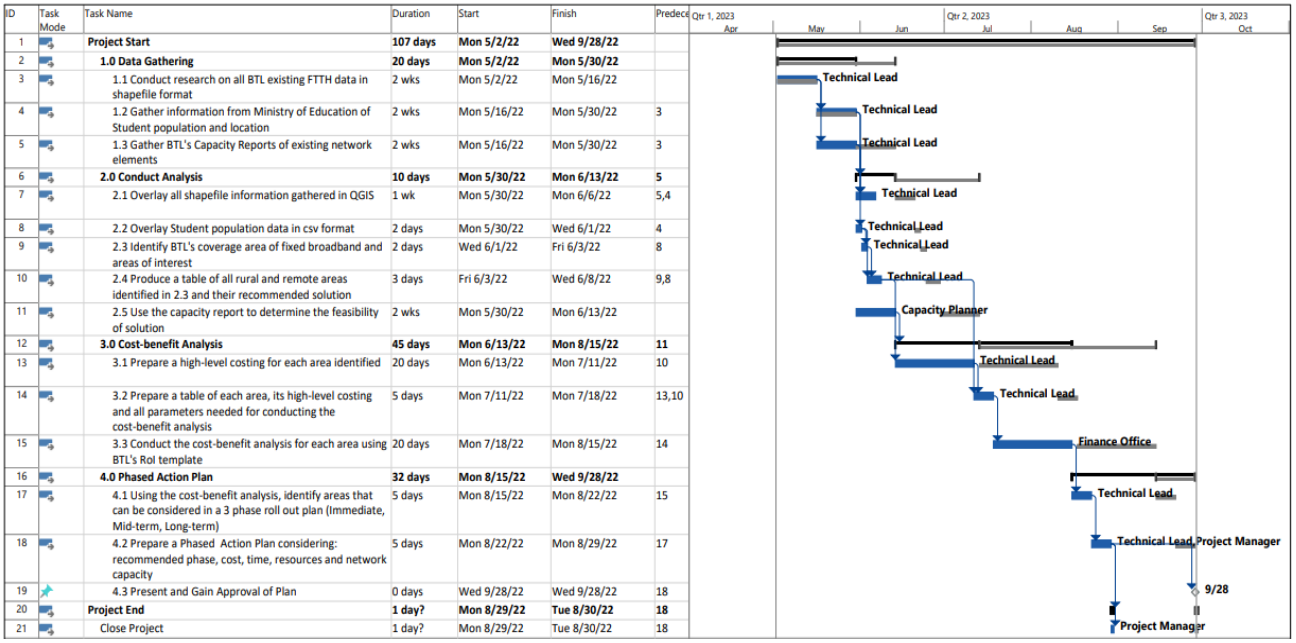
Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

1. Schedule management and development

The schedule for this project will be created using Microsoft (MS) Project 2016. The inputs will include those identified in the WBS, and the milestones include those identified in the project charter. The Precedence Diagramming Method (PDM) will be used to map out the project development by creating a visual representation of the critical paths and dependencies. As stated in the PMBOK® Guide 6th Edition, the PDM model can reflect four types of sequencing

relationships which include finish-to-start, finish-to-finish, start-to-start and start-to-finish. For this project, the relationship method used is the finish-to-start where a successor activity starts until a predecessor activity is completed.

The Project Manager and project team will use the Project Schedule model shown in Figure 8 with milestones start/finish dates for all activities in the project to measure, monitor and report the progress of the project.



ID	Task Mode	Task Name	Duration	Start	Finish	Predece
1		**Project Start**	**107 days**	**Mon 5/2/22**	**Wed 9/28/22**	
2		**1.0 Data Gathering**	**20 days**	**Mon 5/2/22**	**Mon 5/30/22**	
3		1.1 Conduct research on all BTL existing FTTH data in shapefile format	2 wks	Mon 5/2/22	Mon 5/16/22	
4		1.2 Gather information from Ministry of Education of Student population and location	2 wks	Mon 5/16/22	Mon 5/30/22	3
5		1.3 Gather BTL's Capacity Reports of existing network elements	2 wks	Mon 5/16/22	Mon 5/30/22	3
6		**2.0 Conduct Analysis**	**10 days**	**Mon 5/30/22**	**Mon 6/13/22**	**5**
7		2.1 Overlay all shapefile information gathered in QGIS	1 wk	Mon 5/30/22	Mon 6/6/22	5,4
8		2.2 Overlay Student population data in csv format	2 days	Mon 5/30/22	Wed 6/1/22	4
9		2.3 Identify BTL's coverage area of fixed broadband and areas of interest	2 days	Wed 6/1/22	Fri 6/3/22	8
10		2.4 Produce a table of all rural and remote areas identified in 2.3 and their recommended solution	3 days	Fri 6/3/22	Wed 6/8/22	9,8
11		2.5 Use the capacity report to determine the feasibility of solution	2 wks	Mon 5/30/22	Mon 6/13/22	
12		**3.0 Cost-benefit Analysis**	**45 days**	**Mon 6/13/22**	**Mon 8/15/22**	**11**
13		3.1 Prepare a high-level costing for each area identified	20 days	Mon 6/13/22	Mon 7/11/22	10
14		3.2 Prepare a table of each area, its high-level costing and all parameters needed for conducting the cost-benefit analysis	5 days	Mon 7/11/22	Mon 7/18/22	13,10
15		3.3 Conduct the cost-benefit analysis for each area using BTL's RoI template	20 days	Mon 7/18/22	Mon 8/15/22	14
16		**4.0 Phased Action Plan**	**32 days**	**Mon 8/15/22**	**Wed 9/28/22**	
17		4.1 Using the cost-benefit analysis, identify areas that can be considered in a 3 phase roll out plan (Immediate, Mid-term, Long-term)	5 days	Mon 8/15/22	Mon 8/22/22	15
18		4.2 Prepare a Phased Action Plan considering: recommended phase, cost, time, resources and network capacity	5 days	Mon 8/22/22	Mon 8/29/22	17
19		4.3 Present and Gain Approval of Plan	0 days	Wed 9/28/22	Wed 9/28/22	18
20		**Project End**	**1 day?**	**Mon 8/29/22**	**Tue 8/30/22**	**18**
21		Close Project	1 day?	Mon 8/29/22	Tue 8/30/22	18

Figure 8: Project Schedule illustrating all project activities (MS Project)

The Project Manager will schedule a meeting with the project team and relevant resource managers to review the schedule and resources assigned to each project task. The project team and resource managers must agree to the proposed work package assignments, durations, and schedule. The Project Manager will present the agreed schedule to the project sponsor for approval. Once approved this

schedule will become the baseline against which the progress of the project will be tracked.

2. Critical Path Method

As stated in the PMBOK® Guide 6th Edition, the critical path is defined as the "sequence of activities that represent the longest path through a project, which determines the shortest possible duration." The critical path method will be used to identify tasks necessary for project completion. For this project MS Project was used to calculate the critical path of the project which comprises the longest sequence of activities that must be finished on time to complete the project. Figure 9 below show the activities in red that are part of the critical path.

ID	Task Mode	Task Name	Duration	Start	Finish	Predece
1		**Project Start**	**107 days**	**Mon 5/2/22**	**Wed 9/28/22**	
2		**1.0 Data Gathering**	**20 days**	**Mon 5/2/22**	**Mon 5/30/22**	
3		1.1 Conduct research on all BTL existing FTTH data in shapefile format	2 wks	Mon 5/2/22	Mon 5/16/22	
4		1.2 Gather information from Ministry of Education of Student population and location	2 wks	Mon 5/16/22	Mon 5/30/22	3
5		1.3 Gather BTL's Capacity Reports of existing network elements	2 wks	Mon 5/16/22	Mon 5/30/22	3
6		**2.0 Conduct Analysis**	**10 days**	**Mon 5/30/22**	**Mon 6/13/22**	**5**
7		2.1 Overlay all shapefile information gathered in QGIS	1 wk	Mon 5/30/22	Mon 6/6/22	5,4
8		2.2 Overlay Student population data in csv format	2 days	Mon 5/30/22	Wed 6/1/22	4
9		2.3 Identify BTL's coverage area of fixed broadband and areas of interest	2 days	Wed 6/1/22	Fri 6/3/22	8
10		2.4 Produce a table of all rural and remote areas identified in 2.3 and their recommended solution	3 days	Fri 6/3/22	Wed 6/8/22	9,8
11		2.5 Use the capacity report to determine the feasibility of solution	2 wks	Mon 5/30/22	Mon 6/13/22	
12		**3.0 Cost-benefit Analysis**	**45 days**	**Mon 6/13/22**	**Mon 8/15/22**	**11**
13		3.1 Prepare a high-level costing for each area identified	20 days	Mon 6/13/22	Mon 7/11/22	10
14		3.2 Prepare a table of each area, its high-level costing and all parameters needed for conducting the cost-benefit analysis	5 days	Mon 7/11/22	Mon 7/18/22	13,10
15		3.3 Conduct the cost-benefit analysis for each area using BTL's RoI template	20 days	Mon 7/18/22	Mon 8/15/22	14
16		**4.0 Phased Action Plan**	**32 days**	**Mon 8/15/22**	**Wed 9/28/22**	
17		4.1 Using the cost-benefit analysis, identify areas that can be considered in a 3 phase roll out plan (Immediate, Mid-term, Long-term)	5 days	Mon 8/15/22	Mon 8/22/22	15
18		4.2 Prepare a Phased Action Plan considering: recommended phase, cost, time, resources and network capacity	5 days	Mon 8/22/22	Mon 8/29/22	17
19		4.3 Present and Gain Approval of Plan	0 days	Wed 9/28/22	Wed 9/28/22	18
20		**Project End**	**1 day?**	**Mon 8/29/22**	**Tue 8/30/22**	**18**
21		Close Project	1 day?	Mon 8/29/22	Tue 8/30/22	18

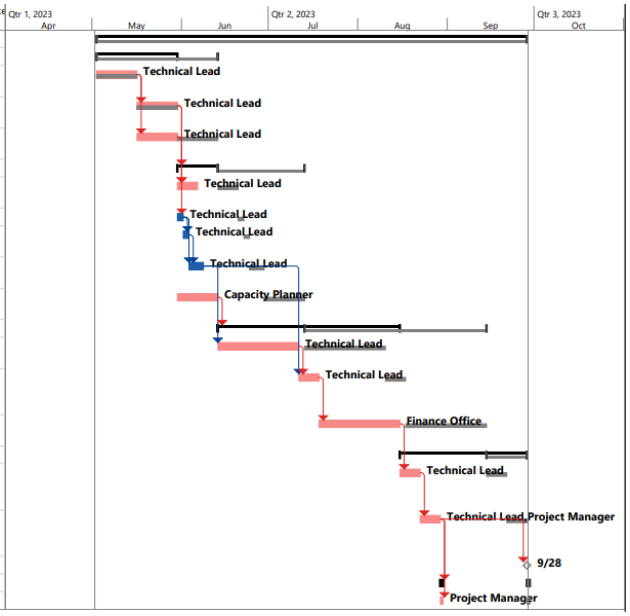


Figure 9: Critical Path for the project (MS Project)

3. Schedule Control

The PMBOK® Guide 6th Edition states that the key benefit of Control Schedule is that it provides the means to recognize deviation from the plan and take timely corrective and preventive action, thus minimizing risks.

The Project Manager will be responsible for scheduling a weekly reoccurring meeting with the project team members to review and update the actual start, actual finish, and completion percentages as presented by the task owners. During this meeting any variation to the schedule and the impact it will have on the project will be highlighted. The Project Manager will be responsible for submitting schedule change requests and for reporting the status to stakeholders in accordance with the project's communication plan.

4.4. Project Cost Management Plan

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

COST MANAGEMENT PLAN

VERSION 0.1

Version History

Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

1. Introduction

The Project Cost Management Plan includes the processes that are required to maintain financial control of the project and will be one of the primary functions of the Project Manager. This plan includes the processes involved in planning, estimating, budgeting, financing, managing, and controlling costs so the project can be completed withing the approved budget. It is particularly concerned with the cost of resources that are required to complete the project activities. Also, it will help the project manager to foresee the project expenses and take precautionary actions to mitigate the chances of over-expenditure.

On a monthly basis, the Project Manager will be responsible for tracking the expenses and ensure the Cost Management Plan is being honoured. This tracking will consist of carrying out a comparison analysis for the predictive costs vs actual costs to provide benchmarks for future expenses.

2. Cost Management Approach

The PMBOK® Guide 6th Edition details plan cost management as it concerns the cost of the resources needed to complete the project activities. Consequently, this

project will use the Earned Value Analysis (EVA) to measure the performance of the project. EVA combines scope, schedule, and resource management to access the performance of the project, therefore, the dimensions that will be used are planned value, earned value and actual cost.

The EVA metrics that will be used are:

- Schedule Variance (SV) – indicating whether the project is ahead or behind
- Cost Variance (CV) – difference between project earned value and actual costs
- Schedule Performance Index (SPI) – measure of the project's schedule efficiency
- Cost Performance Index (CPI) – measure of the project's cost efficiency

Chart 8 below shows the performance measurement for each metric. A SPI or CPI that is equal to 1.0 is indicative of the estimated schedule and budget are going as per the plan. If the result is less than 1.0, then it means that the project is either behind schedule or over budget and if the variance is greater than 1.0 then the project is ahead of schedule or under budget. Any variance greater than 0.2 will require the Project Manager to report the reason for the exception and provide a detailed corrective plan to get the project back to acceptable levels.

Chart 8: Cost Performance Indicators

Performance Measure	Score	Status
Schedule Performance Index	Less than 1.0	Project is behind schedule
	Greater than 1.0	Project is ahead of schedule
Cost Performance Index	Less than 1.0	Project is over budget
	Greater than 1.0	Project is under budget

3. Cost Change Control Process

The Cost Change Control process will be triggered when there are any changes that will cost budget overruns and it will follow the established change control process. The Project Manager will ensure that any change be approved by the project sponsor.

3.0.1 Cost Breakdown

Chart 9: Project Budget

Task Name	Duration	Costs Involved	Unit Cost	Total Cost
1.0 Data Gathering	**30 days**			**$4,800**
1.1 Conduct research on all BTL existing FTTH data in shapefile format	2 wks	Staff Time	$20 per hour (80)	$1,600
1.2 Gather information from Ministry of Education of Student population and location	2 wks	Staff Time	$20 per hour (80)	$1,600
1.3 Gather BTL's Capacity Reports of existing network elements	2 wks	Staff Time	$20 per hour (80)	$1,600
2.0 Conduct Analysis	**22 days**			**$3,520**
2.1 Overlay all shapefile information gathered	1 wk	Staff	$20 per hour (40)	$800
2.2 Overlay Student population data in csv format	2 days	Staff Time	$20 per hour (16)	$320
2.3 Identify BTL's coverage area of fixed broadband and areas of interest	2 days	Staff Time	$20 per hour (16)	$320

Task Name	Duration	Costs Involved	Unit Cost	Total Cost
2.4 Produce a table of all rural and remote areas identified in 2.3 and their recommended solution	3 days	Staff Time	$20 per hour (24)	4480
2.5 Use the capacity report to determine the feasibility of solution	2 wks	Staff Time	$20 per hour (80)	$1,600
2.6 Present and Gain Stakeholder's Approval	1wk	Time	$50 per hour (10)	$500
3.0 Cost-benefit Analysis	**45 days**			**$7,700**
3.1 Prepare a high-level costing for each area identified	20 days	Staff Time	$20 per hour (160)	$3,200
3.2 Prepare a table of each area, its high-level costing and all parameters needed for conducting the cost-benefit analysis	5 days	Staff Time	$20 per hour (40)	$800
3.3 Conduct the cost-benefit analysis for each area using BTL's RoI template	20 days	Staff Time	$20 per hour (160)	$3,200
3.4 Present and Gain Approval	1wk	Time	$50 per hour (10)	$500
4.0 Phased Action Plan	**10 days**			**$2,100**
4.1 Using the cost-benefit analysis, identify areas that can be considered in a 3 phase roll out plan (Immediate, Mid-term, Long-term)	5 days	Staff Time	$20 per hour (40)	$800
4.2 Prepare a Phased Action Plan considering: recommended phase, cost, time, resources, and network capacity	5 days	Staff Time	$20 per hour (40)	$800
4.3 Present and Gain Approval of Plan	2 days	Time	$50 per hour (10)	$500
Total				**$18,620**

4.5. Project Quality Management Plan

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

QUALITY MANAGEMENT PLAN

VERSION 0.1

Version History

Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

1. Introduction

to ensure the highest quality products and deliverables produced by this project, there are two main goals for the Quality Management Plan which are ensuring a quality end-product and ensuring that all the processes involved during the project lifecycle are carried out efficiently. This plan is broken down into three main processes: Quality Planning, Quality Assurance, and Quality Control.

2. Quality Management Plan

The Quality Management Plan for this project will include quality standards that are applicable to the project and can be validated by the projects processes and deliverables. The quality of the project will be assured during the project by satisfactory complying with the standards and requirements agreed upon. During the project lifespan, any non-conformances found will be identified and addressed immediately. An integrated quality approach will be used to define, measure, and improve quality.

i. Quality Planning

Project quality planning is the process of relating quality requirements or standards for the project to its deliverables and documenting how the project will comply with the requirements outlined. The quality requirements list will be created by the project manager with considerable input from stakeholders and members of the project team. The quality requirements log shown in Chart 10 below will be used to document the requirements list.

Chart 10: Project Requirements Log (Source: Compiled by Author)

Project Name		Date	
Project Number		Document Number	
Project Manager		Project Owner/Client	

ID #	Received From	Received On	Detailed Description of Attribute	Measurement Method	Acceptable Variance

ii. Quality Management

The project manager will be responsible to conduct day-to-day quality assurance checks and report any identified discrepancy. Chart 10 below will be used as a guide for Quality Assurance.

Chart 11: Quality Management Metrics for the Project (Compiled by Author)

ID #	Process Action	Acceptable Standards	Quality Assurance Activity	Frequency/Interval
QA#1	Data Gathering	100% Geospatial data gathered to be used for analysis (FTTH Existing layers, poles, Student Location)	Data is compatible with QGIS or .csv file format	Once per phase
QA#2	Conduct Analysis	A clear and concise Analysis Report with Stakeholder's Approval	Analysis is sufficient to conduct cost-benefit analysis	Once per phase
QA#3	Cost-Benefit Analysis	A Cost-benefit Analysis for each area along with Stakeholder's Approval	Cost-benefit Analysis is sufficient to be used to prepare Action Plan	Once per phase
QA#4	Action Plan	A clear and concise phased action plan approved by Stakeholders.	Action plan can be used to seek budget approval	Once per phase

iii. Quality Control

Quality control involves the monitoring and controlling of quality activities to assess performance and recommend changes. All stakeholders must be fully engaged in improving processes, products, and service of the project.

4.6. Project Resource Management Plan

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

RESOURCE MANAGEMENT PLAN

VERSION 0.1

Version History

Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

1. Introduction

“Project Resource Management includes the processes to identify, acquire and manage the resources needed for the successful completion of the project,” (PMI, 2017, p.307). The processes in this knowledge area will help to ensure that the Project Manager and Project Team have the right resources available, and the quantity needed for a successful project. The Resource Management Plan includes the resources allocated, detailed resource requirements and roles and responsibilities of team members.

In addition, to facilitate managing, organizing, and leading a project team made up of people with specific skills and responsibilities, the Project Resource Management Plan establishes guidelines on how the resources will be defined, in terms of staffing, managing, controlling, and releasing. The purpose of the plan is to ensure that the project has human resources with relevant skill sets and experience to complete the project.

As stated in the PMBOK® Guide 6th Edition, this knowledge area is composed of plan resource management, acquire project team, develop project team, and manage project team. The human resources for this project will be comprised of internal BTL staff. The Project Manager will be responsible for identifying the adequate human resources within the existing staff to make up the project team. However, this plan will need to align with the existing human resource management plan of BTL.

2. Resource Planning Process

To plan the resource requirements for the project, it is important for the Project Manager along with the Project Team to prioritize the required resources and manage them to ensure they are utilized as assigned. The following chart shows the resources that will be necessary for the completion of the project.

Chart 122: High-level WBS and Resources Required (Compiled by Author)

Project Phase	Effort (days)	Resource Type	Resource
Data Gathering	20 days	Human Resource, Material Resource	• Project Manager, Technical Lead, Senior Designer, • Computer System equipped with Microsoft Office Suite and QGIS
Conduct Analysis	10 days	Human Resource, Material Resource	• Project Manager, Technical Lead, Senior Designer, General Manager, C-level manager • Computer System equipped with Microsoft Office Suite and QGIS
Cost Benefit Analysis	45 days	Human Resource, Material Resource	• Project Manager, Technical Lead, Senior Designer, Finance Department, • Computer System equipped with Microsoft Office Suite and QGIS
Phased Action Plan	32 days	Human Resource, Material Resource	• Project Manager, C-Level Manager, Technical Lead, Senior Designer, BoD • Computer System equipped with Microsoft Office Suite and QGIS

3. Roles and Responsibilities

The following roles and responsibilities with guide the project team:

- Board of Directors- Project Sponsor, responsible to approve the budget before start and provide the final approval when the project has concluded.

- Chief Operations Officer- Project Sponsor, will be responsible for reviewing and approving the project management plan, detailed budget, and human resource allocation.
- General Manager, Network Operations- will be responsible for ensuring that the project has no obstacles impeding it from completing. He will provide project updates on scope, time, and budget to the C-level.
- Project Manager- will be responsible for managing the project using the principles outlined in the PMBOK® Guide 6th Edition. The Project Manager will also be responsible for ensuring that project activities are being implements in accordance with scope, time, and budget. In addition, the project manager will be responsible for overall supervision of the project team and reporting on project activities to the Project Management Office Manager.
- Senior Network Designer- will be the technical lead for the project. He will be responsible for providing any technical guidance to the Project manager when developing the plan. He will also be part of the project executing team.

4. Organizational Chart

The RACI (Responsible, Accountable, Consult and Inform) chart below illustrates the project tasks and their relationships with identified team members.

Chart 13: RACI Matrix (Compiled by Author)

	Board of Directors	Chief Operations	General Manag	Project Manager	Senior Network
1.0 Data Gathering					
1.1 Conduct research on all BTL existing FTTH data in shapefile format	I	I	I	A	R
1.2 Gather information from Ministry of Education of Student population and location	I	I	I	A	R
1.3 Gather BTL's Capacity Reports of existing network elements	I	I	I	A	R
2.0 Conduct Analysis					
2.1 Overlay all shapefile information gathered	I	I	I	A	R
2.2 Overlay Student population data in csv format	I	I	I	A	R
2.3 Identify BTL's coverage area of fixed broadband and areas of interest	I	I	I	R	R
2.4 Produce a table of all rural and remote areas identified in 2.3 and their recommended solution	I	I	I	R	A
2.5 Use the capacity report to determine the feasibility of solution	I	I	I	A	R
3.0 Cost-benefit Analysis					
3.1 Prepare a high-level costing for each area identified	I	I	I	A	R
3.2 Prepare a table of each area, its high-level costing and all parameters needed for conducting the cost-benefit analysis	I	I	I	A	R
3.3 Conduct the cost-benefit analysis for each area using BTL's RoI template	I	I	I	R	A
4.0 Phased Action Plan					
4.1 Using the cost-benefit analysis, identify areas that can be considered in a 3 phase roll out plan (Immediate, Mid-term, Long-term)	I	I	I	R	A
4.2 Prepare a Phased Action Plan considering: recommended phase, cost, time, resources, and network capacity	I	I	I	R	A
4.3 Present and Gain Approval of Plan	I	I	R	A	A

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

4. Staffing Management

For this project the staffing management plan includes how resources will be acquired; the timeline for resources/skill sets; training required to develop skills; how performance reviews will be conducted; and recognition and rewards systems. Due to the nature of the project, the human resources required will be identified from within the organization. The Project Manager will be responsible for ensuring the key team players are identified and communicate with the respective managers. There will be no new recruits for this project.

5. Change Management Process

Any change in the resource management of the project will be managed via the Change Request Form to be submitted with relevant information for the request of change to be presented to the Change Control Board for approval.

Change Request Form

SUBMITTER - GENERAL INFORMATION				
CR#				
Submitter Name				
Brief Description of Request				
Date Submitted				
Date Required				
Priority	☐ Low	☐ Medium	☐ High	☐ Mandatory
Reason for Change				
Other Artifacts Impacted				
Assumptions and Notes				
Attachments or References	☐ Yes	☐ No		
	Link:			

INITIAL ANALYSIS		
Hour Impact		
Duration Impact		

Schedule Impact		
Comments		
Recommendations		

CHANGE CONTROL BOARD - DECISION				
Decision	☐ Approved	☐ Approved w/Conditions	☐ Rejected	☐ More Info
Decision Date				
Decision Explanation				
Conditions				

Acceptance

The following table lists the personnel, roles and sign-off required for the approval of this document:

Name	Role	Signature	Date
Senior Designer, Fixed and Transport Layer Network Engineering	Technical Lead		
Manager, Active and Transport Layer Network Engineering	Receipt and Acceptance		
Project Manager, Project Management Office	Project Manager		
Manager, Project Management Office	Receipt and Acceptance		
General Manager, Network Operations, CTO Division	Receipt and Acceptance		
Chief Technical Officer, CTO Division	Sponsor		

4.7. Project Communication Management Plan

Project Communications Management includes the processes necessary to ensure that the information needs of the project and its stakeholders are met through development of artifacts and implementation of activities designed to achieve effective information exchange. (PMBOK® Guide 6th Edition, 2017)

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

COMMUNICATION MANAGEMENT PLAN

VERSION 0.1

1. Communication Management Approach

This Project Communications Plan outlines the information to be provided to all project stakeholders to keep them informed of the progress of the project. A clear Communications Plan is vital to the success of the project to ensure that all project

resources are working towards the stated project objectives and that any hurdles are overcome in a well-planned and informed manner.

The Communications Plan contains the following information:

- The communication requirements for each project stakeholder
- A schedule of the communication events, methods, and releases
- A matrix of the resource involved in each communication event
- A clear process for undertaking each communication event within the project.

2. Stakeholders and Communication Requirements

A 'communications stakeholder' is a person or entity within or outside the project requiring regular information about the project. For instance, a Project Sponsor will be interested in the overall progress of the project, whereas an External Body may be concerned with legislative or regulatory compliance. The chart below provides a list of all communications stakeholder groups who require information during the project. The information required to keep them appropriately informed of the progress of the project is listed next to each stakeholder.

Chart 14: Stakeholder requirements (Compiled by Author)

Stakeholder	Requirement
Project Sponsor	• Project status information (schedule, budget, and scope) • Understanding of critical project risks and issues • Information required to approve each project phase
Project Review Group	• Project status information (schedule, budget, and scope) • Detailed knowledge of important risks and issues • Information regarding proposed project changes (for approval)

Project Manager	• Detailed project status information (schedule, budget, and scope) • Understanding of current project deliverables' quality • Detailed knowledge of all risks, issues and change requests
Project Leader	• Status of project activities and task status information • Day-to-day knowledge of issues and risks identified
Project Members	• Status of the activities and tasks they have been asked to perform • Awareness of events which may affect their ability to undertake their role
Quality Manager	• Progress of each deliverable against quality standards and criteria set • Detailed understanding of all quality issues for resolution

3. Communication Delivery Methods

The primary means of communication for this project will be face-to-face meetings, teams' meetings, telephone calls, presentations, and reports. To remain effective, the communication matrix must be accessible to all stakeholders and updated throughout the project.

Chart 15: Communication Matrix (Compiled by Author)

Event	Objective	Method	Frequency	Audience	Owner	Deliverable
Kick-off meeting	To open the project, introduce the project team players and their roles	Presence	Once	Sponsor, Project team, Main stakeholders	Project manager	Agenda, Minutes of the meeting
Project team meetings	Update meetings to discuss challenges and risks	Presence, Conference	Weekly	Project team	Project manager	Agenda, Minutes of the meeting
Technical design meetings	To discuss the design phases and the way forward	Presence	On demand	Technical project team	Technical lead	Agenda, Minutes of the meeting
Project status meetings	Update meetings to discuss accomplishments and challenges	Presence, Conference	Monthly	Sponsor, Project team, Main stakeholders	Project manager	Agenda, Minutes of the meeting
Project status reports	Report about the status of the Project including the activity progress, costs and risks.	Email	Weekly	All stakeholders	Project manager	Project status report

4. Scope Change Management Process

Any change in the communication management of the project will be managed via the Change Request Form to be submitted with relevant information for the request of change to be presented to the Change Control Board for approval.

Change Request Form

SUBMITTER - GENERAL INFORMATION				
CR#				
Submitter Name				
Brief Description of Request				
Date Submitted				
Date Required				
Priority	☐ Low	☐ Medium	☐ High	☐ Mandatory
Reason for Change				
Other Artifacts Impacted				
Assumptions and Notes				
Attachments or References	☐ Yes	☐ No		
	Link:			

INITIAL ANALYSIS		
Hour Impact		
Duration Impact		
Schedule Impact		
Comments		
Recommendations		

CHANGE CONTROL BOARD - DECISION				
Decision	☐ Approved	☐ Approved w/Conditions	☐ Rejected	☐ More Info
Decision Date				
Decision Explanation				
Conditions				

Acceptance

The following table lists the personnel, roles and sign-off required for the approval of this document:

Name	Role	Signature	Date
Senior Designer, Fixed and Transport Layer Network Engineering	Technical Lead		
Manager, Active and Transport Layer Network Engineering	Receipt and Acceptance		
Project Manager, Project Management Office	Project Manager		
Manager, Project Management Office	Receipt and Acceptance		
General Manager, Network Operations, CTO Division	Receipt and Acceptance		
Chief Technical Officer, CTO Division	Sponsor		

4.8. Project Risk Management Plan

Risk management is the practise of identifying, evaluating, preventing, and mitigating risks that can have potential impact to the outcomes of a project. These risks need to be properly managed otherwise it can cause deviations and other adverse effects to the project management plan. On the other hand, some risks can also have a positive effect to the project and can be seen as opportunities and beneficial to the project outcomes.

As stated in the PMBOK® Guide 6th Edition, there are seven processes in project risk management which include plan risk management, identify risks, perform qualitative risk analysis, perform quantitative risk analysis, plan risk response, implement risk responses and monitor risks.

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

RISK MANAGEMENT PLAN

VERSION 0.1

Version History

Date	Version	Authors	Summary of Changes	Revised by
27 March 2022	0.1	Jessamyn Ramos	Creation of first draft.	

1. Risk Management Approach

For this project, a qualitative risk analysis will be used to identify, score and rank all the possible risks that might have the greatest impact on the success of the

project. The Project Manager will also act as Risk Manager for this project responsible for conducting periodic assessment and updates to this plan including other risks that may arise during the project lifecycle.

To ensure that all potential risks are identified, techniques such as brainstorming, interviewing and root cause analysis will be used. Additionally, a risk register will be created to capture all identified risks and quantified to determine the likelihood of occurrence and the impact each risk will have on project objectives.

2. Risk Identification

Risk identification is, “the process of identifying individual project risks as well as sources of overall project risk, and documenting their characteristics,” (Project Management Institute, 2017). The Risk Breakdown Structure (RBS) is a hierarchical display of potential risks grouped and represented in descending order detailing the definition of sources of risks.

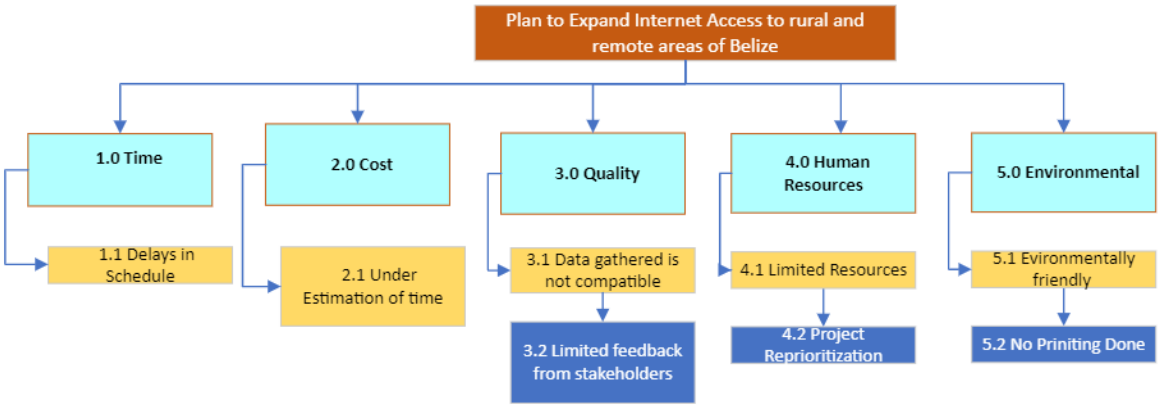


Figure 10 Risk Breakdown Structure (Compiled by Author)

3. Risk Prioritization

As part of this process, a probability-impact factor assessment was done for each identified risk. The Project Manager will be able to prioritize risks based on their effect on the project. The probability-impact matrix shown below was created to capture the identified risk and its probability of occurrence relative to its impact on the project's objectives if a specific risk occurs. The identified risks will be further detailed in a risk register which will include, but are not limited to identified risk, cause, risk owner and strategy.

Chart 16: Probability-Impact Matrix (Compiled by Author)

	Impact				
Probability	Very Low (1)	Low (2)	Medium (3)	High (4)	Very High (5)
Most likely to occur (5)	5	10	15	20	25
Likely to occure (4)	4	8	12	16	20
Moderate chance to occur (3)	3	6	9	12	15
Ulikely to occur (2)	2	4	6	8	10
Very unlikely to occur (1)	1	2	3	4	5

Category	Scores
Low Risks	1 to 5
Moderage Risks	6 to 15
High Risks	15 to 20
Very High Risk	20 to 25

Chart 17: Risk Register (Compiled by Author)

RBS Code	Cause	Risk Description	Consequence	Owner	Probability	Impact	Pxl	Risk Response	Strategy
1.1	Delays in Schedule	Schedule delays	Delay of project	**Project Manager**	4	5	20	Mitigate	Weekly monitoring of deliverable. Allow only 3 days delay.
2.1	Under	Estimating	Delay of	**Project**	4	5	20	Mitigate	Weekly

	estimation of time	Error	Project/ Lack of support by project team	**Manager**					monitoring of proposed time.
3.1	Data gathered is incompatible	Incompatibility	Delay of Project	**Technical Lead**	3	4	12	Mitigate	Conduct proper research before executing
3.2	Limited feedback from stakeholders	Schedule Delays	Delay in Decision Making	**Project Manager**	2	4	8	Mitigate	Ensure to share documents atleast3 days prior to scheduled meetings
4.1	Limited Resources	Overburdened team members	Poor Performance	**Project Manager**	2	4	8	Mitigate	Ensure to have managers commitment to provide team members required
4.2	Project Reprioritization	Schedule Delays	Delay of project	**Project Manager**	3	5	15	Mitigate	Ensure to have C-level managers well informed of impact that reprioritization can cause.
5.1	Environmentally Friendly	Dissemination of Information	Communication gaps	**Project Manager**	2	1	2	Avoid	Avoid printing of reports, send only electronic copies

4. Risk Response Planning

Risk response planning is the process of developing options and actions to enhance opportunities or reduce threats to the project's objectives. From the risk identification, there are three risks rated as high or very high, the Project Manager should take action to lower it. This can be done by using the schedule reserve, which is a pre-planned time reserve, also referred to as "buffer time", that can be incorporated in the project plan, either at critical points in the schedule plan or at the end of the project. Any buffer time needed within work packages will

correspond to the time that an activity may be delayed, without having any impact on the overall project duration.

5. Risk Monitoring and Control

Identified risks will need to be monitored continuously during the project life cycle. In this process any new, changed or no longer existing risk will be identified and logged in the Risk Register.

Risk monitoring and control starts at the risk identification stage when risks are identified before they happen. Risk monitoring is continuously checking whether the identified risks are still there of it is probability or impact has changed during the execution of the project.

6. Contingency and Management Reserve

Given that the project will be executed using internal resources and the budget includes paid time and salaries only, there is no contingency reserve and management reserve included. Therefore, the project will need to be closely monitored to avoid cost and schedule overruns that will require additional funding.

4.9. Project Stakeholder Management Plan

DEVELOP A PLAN TO EXPAND INTERNET ACCESS TO RURAL AND REMOTE AREAS OF BELIZE

STAKEHOLDER MANAGEMENT PLAN

VERSION 0.1

1. Introduction

PMBOK® Guide 6th Edition describes Stakeholder Management as the process required to identify the people, groups or organizations that could impact or be impacted by the project. This term also refers to the plan to analyse stakeholder expectations and their impact on the project and to develop an appropriate management strategy to effectively engage stakeholders in project decision and execution.

2. Identify Stakeholders

The process of identifying project stakeholders regularly includes analysing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success. (PMBOK® Guide 6th Edition, 2017)

The most important benefit of this process is that it will allow the project team to identify the necessary focus for each stakeholder. The Stakeholder risk matrix below outlines the stakeholders and their influence/impact on the project.

Chart 18: Stakeholder Risk Matrix (Compiled by Author)

ID	Stakeholders	Functional Area	Roles - Responsibilities	Main Expectation	Major Requirements	Influence /Impact (Low-Medium-High)
1	Corporate Solutions Manager	Sponsor	Funding of project, facilitation of resources	A successful project	Compliance with company strategic objectives	high/ high
2	General Manager for Engineering	Beneficiary	Oversee project manager	A successful project	Compliance with company strategic objectives	high/ high
3	Senior Network Designer	Administrative	Technical Lead	Conduct Analysis and Action Plan	Quality deliverables and successful implementation	high/ high
4	Board of Directors	Operational	Funding of project, Acceptance of action plan	A successful project	Financial viability	high/ high
5	Project Manager	Project Management Office	Successful Project	A successful project	Successful implementation of project within scope, cost, and schedule	high/ high
6	Government of Belize	Regulatory Body	Receive action plan	Seek funding to execute action plan	To be informed	high/ high
7	Residence of Rural Belize	Beneficiary	Potential Customers			med/low

High	BoD General manager **KEEP SATISFIED**	Senior Network Designer Corporate Solutions Manager **MANAGE CLOSELY**
POWER	 **MONITOR**	GoB Residents **KEEP INFORMED**
Low	**INTEREST**	High

Figure 11: Stakeholder Power/Interest Grid (Compiled by author)

3. Manage Stakeholder Engagement

Managing Stakeholder Engagement is the process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle. (PMBOK® Guide 6th Edition, 2017).

The project manager will benefit from this process since it will encourage her to increase support and minimize resistance from stakeholders, significantly increasing the chances to achieve project success.

4. Monitor Stakeholder Engagement

To increase the efficiency and effectiveness of stakeholder engagement activities, the monitor stakeholder engagement will allow stakeholders to be more engaged through modification of engagement strategies. Stakeholder Engagement will be an ongoing, iterative process that continues throughout the project lifecycle. Identifying, documenting, analysing, planning, and implementing engagement will be done from the start of the project through closure. Figure 12 below depicts the Stakeholder Management Process and Methods that will be used for this project.

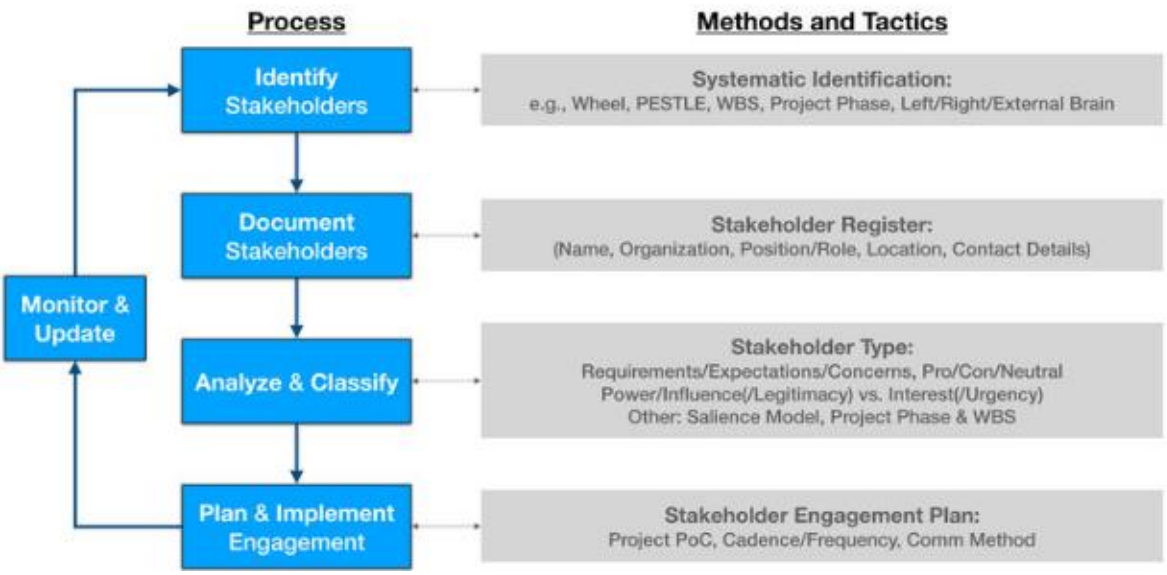


Figure 12:Stakeholder Management Process and Methods (Copyright 2017-2019 Mark Warner, TheProject ManagementBlueprint.com)

5 CONCLUSIONS

After completing the Project Management Plan for Developing a National Plan to Expand Internet Access to Rural and Remote Areas in Belize, the following can be concluded:

1. The successful implementation of the project will create a road map for the country of Belize to accomplish its goal of expanding internet to all rural areas of the country.
2. The Project Management Plan was created using both the descriptive and the analytical research method guided by the 6th Edition of the PMBOK® Guide.
3. The first specific objective was completed using a revised template for the Project Charter. The executing organization, Digi, already had an existing template which was modified to include components as guided by the 6th Edition of the PMBOK® Guide. Components of the project including the problem statement, project goals, project purpose and its general and specific objectives were outlined. The project charter also included the project milestones and assumptions, constraints, and risks. The Project Charter also included identification of the project manager and the sponsor's authorization for the project to commence.
4. The second specific objective brought forth the Scope Management Plan. This included the WBS, general resource and human resource requirements as well as data requirements. One of the important forms elaborated was

the Change Request Form that will be needed to make or request any change of project scope.

5. The third specific objective was addressed by presenting the Schedule Management Plan. This included the project schedule created in Project Gantt chart using Microsoft Project which outlined the start and end time of each activity to ensure the project is completed within time constraints.
6. The fourth specific objective produced the Cost Management Plan. Using the project activities, the cost for each was estimated and included in a Microsoft Excel template which was used to develop the project budget.
7. The fifth specific objective was met by developing the Quality Management Plan. This included quality planning, quality assurance and quality control measures. The requirements Log as well as quality assurance metrics were established as part of this plan.
8. To address the sixth specific objective, the Resource Management Plan was outlined. It included a list of roles and responsibilities for the parties involved and an RACI Matrix to illustrate the project tasks and their relationships with team members.
9. The seventh specific objective, the Communications Plan, was done by listing the stakeholder and their communication requirements. A communication matrix was used to list the events, objectives, method and frequency of communication, its owner and expected deliverable.
10. The deliverable for the eight specific objective was the creation of the Risk Management Plan. The qualitative risk analysis, using the risk register, was used to identify, score, and rank all possible risks that can most likely occur

during the execution of the project. Additionally, to capture and classify project risks, so that effective risk responses could be planned, a probability -impact matrix was established.

11. The ninth specific objective was to produce a Stakeholder Management Plan. This was done by using a Stakeholder Risk Matrix that listed all stakeholders and their functions, roles and responsibilities, main expectations, and requirements. The plan also identified the stakeholders' influence and impact on the project. The plan also included the how stakeholder engagement was to be managed and monitored.
12. In conclusion, all plans created will contribute to the effective project management and success of the project. Given that this project will not require services other than internal resources time, there is no need for a procurement plan.

6 RECOMMENDATIONS

In developing the Project Management Plan for the project, “Develop a National Plan for Expanding Internet Access to Rural and Remote Areas in Belize”, the following recommendations were made:

1. The output of the project which includes the Phased Action Plan also referred to the National Plan should be presented to the Government of Belize-E-Governance Department to seek funding for the expansion of internet to rural areas since it was highlighted in the ICT National Strategy of Belize.
2. Digi should be considered the service provider for all expansions since they currently host the largest network in the country.
3. Digi should also seek funding from other sources such as grants and loans to accomplish the proposed plan.
4. Digi should use the project plan template as a guide when developing future project management plans.
5. Digi should implement proper project management practises such as initiation and planning documents before executing projects.
6. All plans should be reviewed and signed by the Project Sponsor before executing.
7. All projects executed by Digi should be done with a proper project team and assigned to a Project Manager
8. Since Resource Management is a challenge at Digi, a proper Resource Management Plan must be developed and synced with other ongoing projects that utilize the same project team.

9. The Project Management Office at Digi should be more engaged in the project management best practises and tailor documents to the specific projects.
10. Digi should incorporate proper documentation of all projects and templates for easy succession planning.

7 BIBLIOGRAPHIES

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8 APPENDICES

Appendix 1: FGP Charter

<table>
<tr><th colspan="3">PROJECT CHARTER</th></tr>
<tr><td>Date</td><td colspan="2">Name of Project</td></tr>
<tr><td>November 14, 2021</td><td colspan="2">Project Management Plan to develop a national plan to expand internet access to rural and remote areas in Belize.</td></tr>
<tr><td>Type of project:</td><td colspan="2">Hybrid</td></tr>
<tr><td>Knowledge areas / process groups</td><td colspan="2">Application area (Sector / Activity)</td></tr>
<tr><td>Processes: Intitate, Plan, Execute, Monitor and Control, Close

Knowledge areas: Integration, Scope, Time, Cost, Quality, Human Resource, Communication, Stakeholder</td><td colspan="2">Infrastructure/Information Technology</td></tr>
<tr><td>Tentative start date</td><td>Tentative completion date</td><td>Duration (months)</td></tr>
<tr><td>November 14, 2021</td><td>March 14, 2022</td><td>4months</td></tr>
<tr><td colspan="3">Project objectives (general and specific)</td></tr>
<tr><td colspan="3">General objective
To develop a Project Management Plan to expand internet access to rural and remote areas in Belize

Specific objectives:
1. To produce a project charter to outline the project purpose, objectives and milestones in order to produce the project management plan
2. To create a scope management plan that includes all work necessary to successfully implement the project
3. To develop a schedule management plan that includes a project schedule that will ensure the project is completed within the time frame.
4. To create a cost management plan clearly defining the project budget required to complete the project
5. To develop a quality management plan to outline the quality requirements for the project to ensure results meet expectations for aproval within the time, cost and scope constraints.
6. To create a resource management plan to identify the human resources needed to complete the project.
7. To develop a communication plan to ensure timely and effective communication of</td></tr>
</table>

the project status.
8. To produce a risk management plan to identify the risks involved in the successful completion of the project and the plan to minimize them.
9. To develop a stakeholder management plan to identify the stakeholders necessary to ensure effective stakeholder engagement.

Justification or purpose of the project (Contribution and expected results)

The project to develop the Project Management Plan to expand internet access to rural and remote areas in Belize, will require the creation of document that will be used by the Project Management Team during the executing, monitoring and controlling, and closing processes.

In 2018, the Government of Belize through the Taiwan International Cooperation and Development Funds, made efforts to increase connectivity throughout the country by implementing a National Broadband Project via the largest telecommunications company in the country, Belize Telemedia Limited. The project aimed at deploying fiber-optic network to most urban areas including major towns, cities and nearby villages. Nevertheless, there are still several rural and remote communities without access to internet. The recent pandemic has increased the need for expanding broadband connectivity countrywide, especially in rural areas, which is a basic condition necessary for accessing public services, remote learning and fostering the digital economy.

Therefore, this project seeks to develop a project management plan to expand internet connectivity to remote and rural areas in Belize.

Description of the product or service that the project will generate - Final project deliverables

This project will generate the Project Management Plan for expanding internet connectivity to remote and rural areas in Belize. It will include the necessary documents needed to execute the project effectively.

Assumptions

1. The project can be completed in 4 months
2. The acquired knowledge during the Master's course for Project Management is sufficient enough for one person to execute the project
3. Authorization and permission is granted by the telecommunications company

Restrictions

1. Time frame: 4 months
2. Resources to plan: 1 Project Manager

Preliminary identification of risks

- If the requirements are underestimated, incomplete project deliverables will impact project scope, time, and cost.

- If deliverables are not submitted or delayed, project management plan will impact project time.

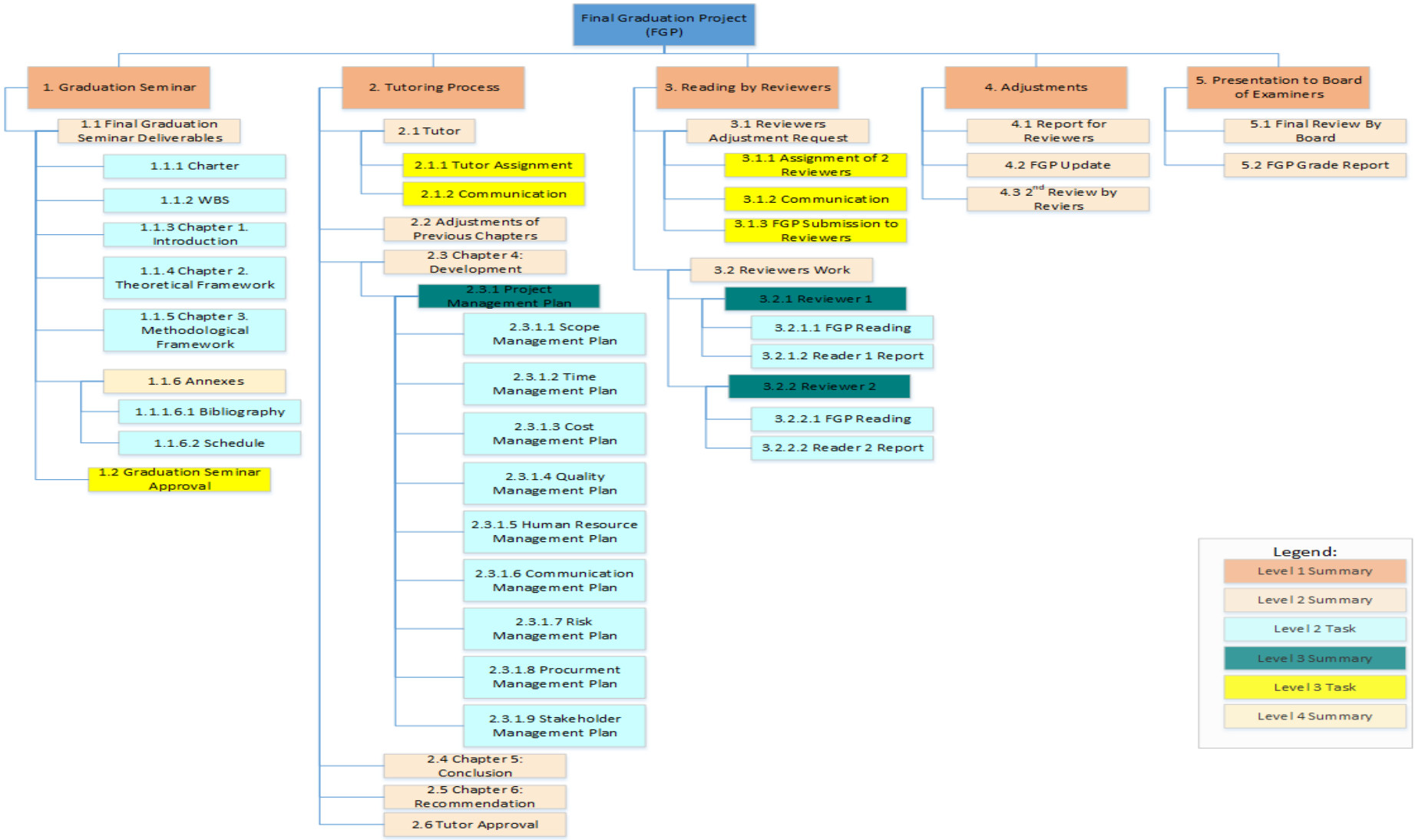
General resources and budget
Budget will include expenses for printing of document and shipping to Costa Rica.

Milestones schedule		
Milestone name	**Start Date**	**End Date**
Final Graduation Seminar	Nov 8, 2021	Dec 10, 2021
Tutoring	Dec 13, 2021	Mar 11, 2022
Reading by Reviewers	Mar 14, 2022	Apr 1, 2022
Adjustments	Apr 4, 2022	Apr 29, 2022
Presentation to the Board of Examiners	May 2, 2022	May 6, 2022

Relevant historical information
The National Information and Communications Technology (ICT) Strategy presented by the Government of Belize (GOB) in 2011 outlined the vision of accelerating development and improving quality of life for all Belizeans through universal access and widespread usage of ICT. To help realize an important national policy of deploying internet broadband fiber to the home (FTTH) service throughout Belize, the TaiwanICDF, provided a loan to the Belize Telemedia Limited (BTL) to finance its National Broadband Plan for replacing its fixed internet infrastructure with fiber optic network, so as to increase the quality of and access to fixed internet service of BTL. Currently, the existing network can serve over 90,000 households with the fastest interent service in the country. Over 35,000 households throughout the country have internet access via the Fiber to the Home network. Although it has significantly increased the fixed broadband coverage, internet speeds and stability, its coverage was mainly on urban town, cities and nearby villages.
Identification of groups of interest (stakeholders)
Direct Stakeholders: Project Manager(Jessamyn Ramos), Belize Telemedia Limited, Government of Belize Indirect Stakeholders: Public Utilities Commission, Students and residents of rural and remote areas

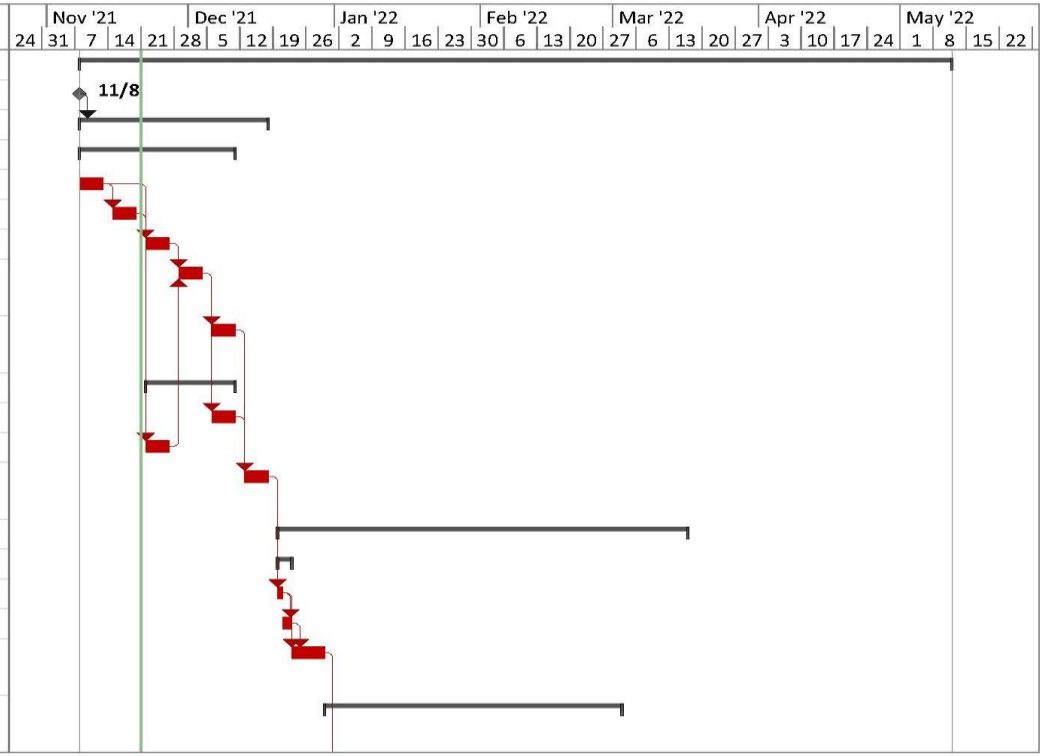
Student's name (project manager): Jessamyn Ramos	**Signature:** 
Name and title of the authorizing person (facilitator):	**Signature:**

Appendix 2: FGP WBS



FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Final Graduation Project**	**133 days**	**Mon 11/8/21**	**Wed 5/11/22**	
2		FGP Start	0 days	Mon 11/8/21	Mon 11/8/21	
3		**1,Graduation Seminar**	**30 days**	**Mon 11/8/21**	**Fri 12/17/21**	**2**
4		**1.1,FGP Deliverables**	**25 days**	**Mon 11/8/21**	**Fri 12/10/21**	
5		1.1.1,Charter	5 days	Mon 11/8/21	Fri 11/12/21	
6		1.1.2,WBS	5 days	Mon 11/15/2	Fri 11/19/21	5
7		1.1.3,Chapter I. Introductior	5 days	Mon 11/22/2	Fri 11/26/21	5,6
8		1.1.4,Chapter II. Theoretical framework	5 days	Mon 11/29/21	Fri 12/3/21	7,12
9		1.1.5,Chapter III. Methodological framework	5 days	Mon 12/6/21	Fri 12/10/21	8
10		**1.1.6,Annexes**	**15 days**	**Mon 11/22/2**	**Fri 12/10/21**	
11		1.1.6.1,Bibliography	5 days	Mon 12/6/21	Fri 12/10/21	8
12		1.1.6.2,Schedule	5 days	Mon 11/22/2	Fri 11/26/21	6,5
13		1.2,Graduation Seminar approval,	5 days	Mon 12/13/21	Fri 12/17/21	9,11
14		**2,Tutoring process**	**63 days**	**Mon 12/20/2**	**Wed 3/16/22**	
15		**2.1,Tutor**	**3 days**	**Mon 12/20/2**	**Wed 12/22/2**	
16		2.1.1,Tutor assigment	1 day	Mon 12/20/2	Mon 12/20/2	13
17		2.1.2,Communication	2 days	Tue 12/21/21	Wed 12/22/2	16
18		2.2,Adjustments of previous chapters (If needed)	5 days	Thu 12/23/21	Wed 12/29/21	16,17
19		**2.3,Charter IV. Development (Results)**	**45 days**	**Thu 12/30/21**	**Wed 3/2/22**	



Project: Final_FGP_Schedule
Date: Sun 11/21/21

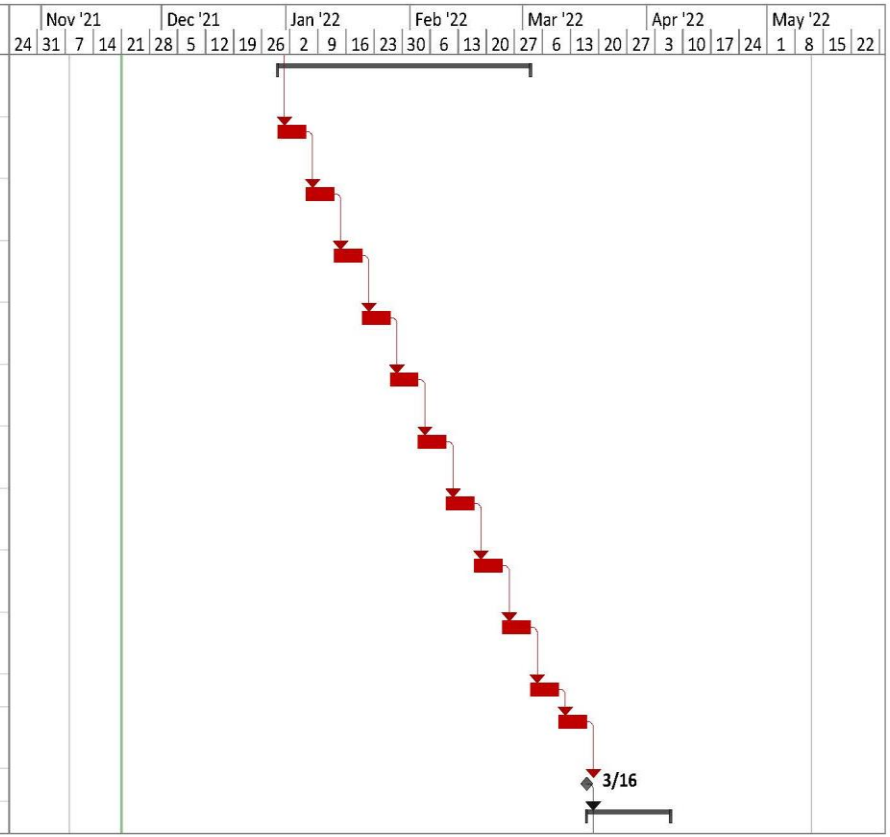
Task	External Tasks	Manual Task	Finish-only		
Split	External Milestone	Duration-only	Deadline		
Milestone	Inactive Task	Manual Summary Rollup	Critical		
Summary	Inactive Milestone	Manual Summary	Critical Split		
Project Summary	Inactive Summary	Start-only	Progress		

Page 1

Appendix 3: FGP Schedule

FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
20		**2.3.1,Project Management Plan**	**45 days**	**Thu 12/30/21**	**Wed 3/2/22**	
21		2.3.1.1,Scope Management Plan	5 days	Thu 12/30/21	Wed 1/5/22	18
22		2.3.1.2,Time Management Plan	5 days	Thu 1/6/22	Wed 1/12/22	21
23		2.3.1.3,Cost Management Plan	5 days	Thu 1/13/22	Wed 1/19/22	22
24		2.3.1.4,Quality Management Plan	5 days	Thu 1/20/22	Wed 1/26/22	23
25		2.3.1.5,Human Resoure Management Plan	5 days	Thu 1/27/22	Wed 2/2/22	24
26		2.3.1.6,Communication Management Plan	5 days	Thu 2/3/22	Wed 2/9/22	25
27		2.3.1.7,Risk Management Plan	5 days	Thu 2/10/22	Wed 2/16/22	26
28		2.3.1.8,Procurement Management Plan	5 days	Thu 2/17/22	Wed 2/23/22	27
29		2.3.1.9,Stakeholder Management Plan	5 days	Thu 2/24/22	Wed 3/2/22	28
30		2.4,Chapter V. Conclusions	5 days	Thu 3/3/22	Wed 3/9/22	29
31		2.5,Chapter VI. Recommendations	5 days	Thu 3/10/22	Wed 3/16/22	30
32		Tutor approval	0 days	Wed 3/16/22	Wed 3/16/22	31
33		**3,Reading by reviewers**	**15 days**	**Thu 3/17/22**	**Wed 4/6/22**	**32**



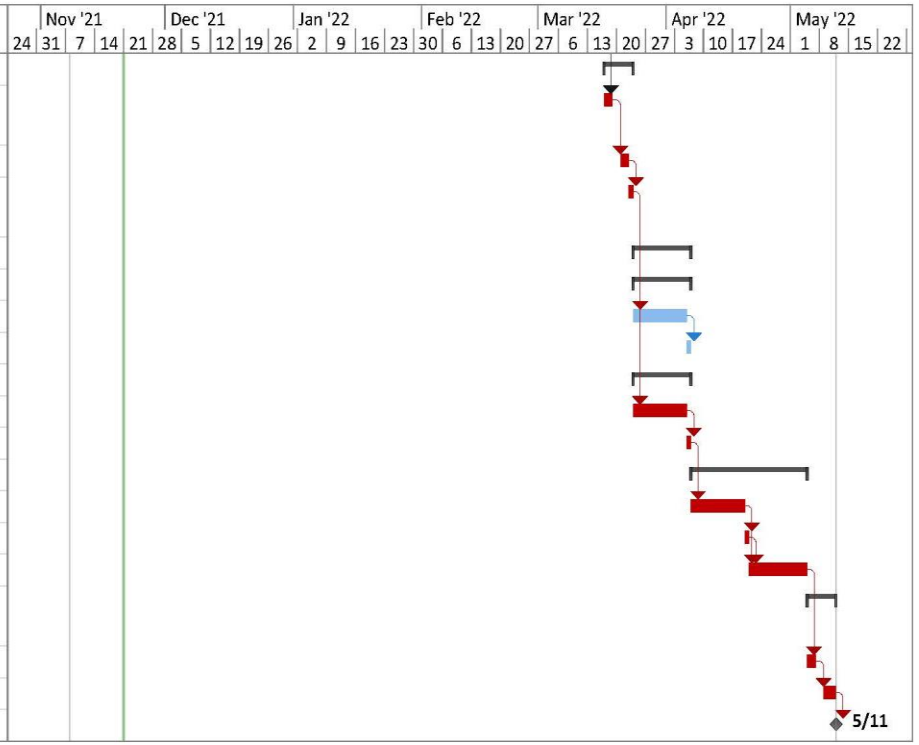
Project: Final_FGP_Schedule
Date: Sun 11/21/21

Task	External Tasks	Manual Task	Finish-only
Split	External Milestone	Duration-only	Deadline
Milestone	Inactive Task	Manual Summary Rollup	Critical
Summary	Inactive Milestone	Manual Summary	Critical Split
Project Summary	Inactive Summary	Start-only	Progress

Page 2

FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
34		**3.1,Reviewers assigment requ**	**5 days**	**Thu 3/17/22**	**Wed 3/23/22**	
35		3.1.1,Assigment of two reviewers	2 days	Thu 3/17/22	Fri 3/18/22	32
36		3.1.2,Communication	2 days	Mon 3/21/22	Tue 3/22/22	35
37		3.1.3,FGP submission to reviewers	1 day	Wed 3/23/22	Wed 3/23/22	36
38		**3.2,Reviewers work**	**10 days**	**Thu 3/24/22**	**Wed 4/6/22**	
39		**3.2.1,Reviewer**	**10 days**	**Thu 3/24/22**	**Wed 4/6/22**	
40		3.2.1.1,FGP reading	9 days	Thu 3/24/22	Tue 4/5/22	37
41		3.2.1.2,Reader 1 report	1 day	Wed 4/6/22	Wed 4/6/22	40
42		**3.2.2,Reviewer**	**10 days**	**Thu 3/24/22**	**Wed 4/6/22**	
43		3.2.2.1,FGP reading	9 days	Thu 3/24/22	Tue 4/5/22	37
44		3.2.2.2,Reader 2 report	1 day	Wed 4/6/22	Wed 4/6/22	43
45		**4,Adjustments**	**20 days**	**Thu 4/7/22**	**Wed 5/4/22**	
46		4.1,Report for reviewers	9 days	Thu 4/7/22	Tue 4/19/22	44
47		4.2,FGP update	1 day	Wed 4/20/22	Wed 4/20/22	46
48		4.3,Second review by reviewer	10 days	Thu 4/21/22	Wed 5/4/22	46,47
49		**5,Presentation to Board of Examiners**	**5 days**	**Thu 5/5/22**	**Wed 5/11/22**	
50		5.1,Final review by board	2 days	Thu 5/5/22	Fri 5/6/22	48
51		5.2,FGP grade report	3 days	Mon 5/9/22	Wed 5/11/22	50
52		FGP End	0 days	Wed 5/11/22	Wed 5/11/22	51



Project: Final_FGP_Schedule
Date: Sun 11/21/21

Task	External Tasks	Manual Task	Finish-only		
Split	External Milestone	Duration-only	Deadline		
Milestone	Inactive Task	Manual Summary Rollup	Critical		
Summary	Inactive Milestone	Manual Summary	Critical Split		
Project Summary	Inactive Summary	Start-only	Progress		

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Appendix 4: Linguist Certification

Virginia L. Hampton, Ph.D.
920 Maren Lane SW
Albuquerque, NM 87105

9 May 2022

To Whom It May Concern:

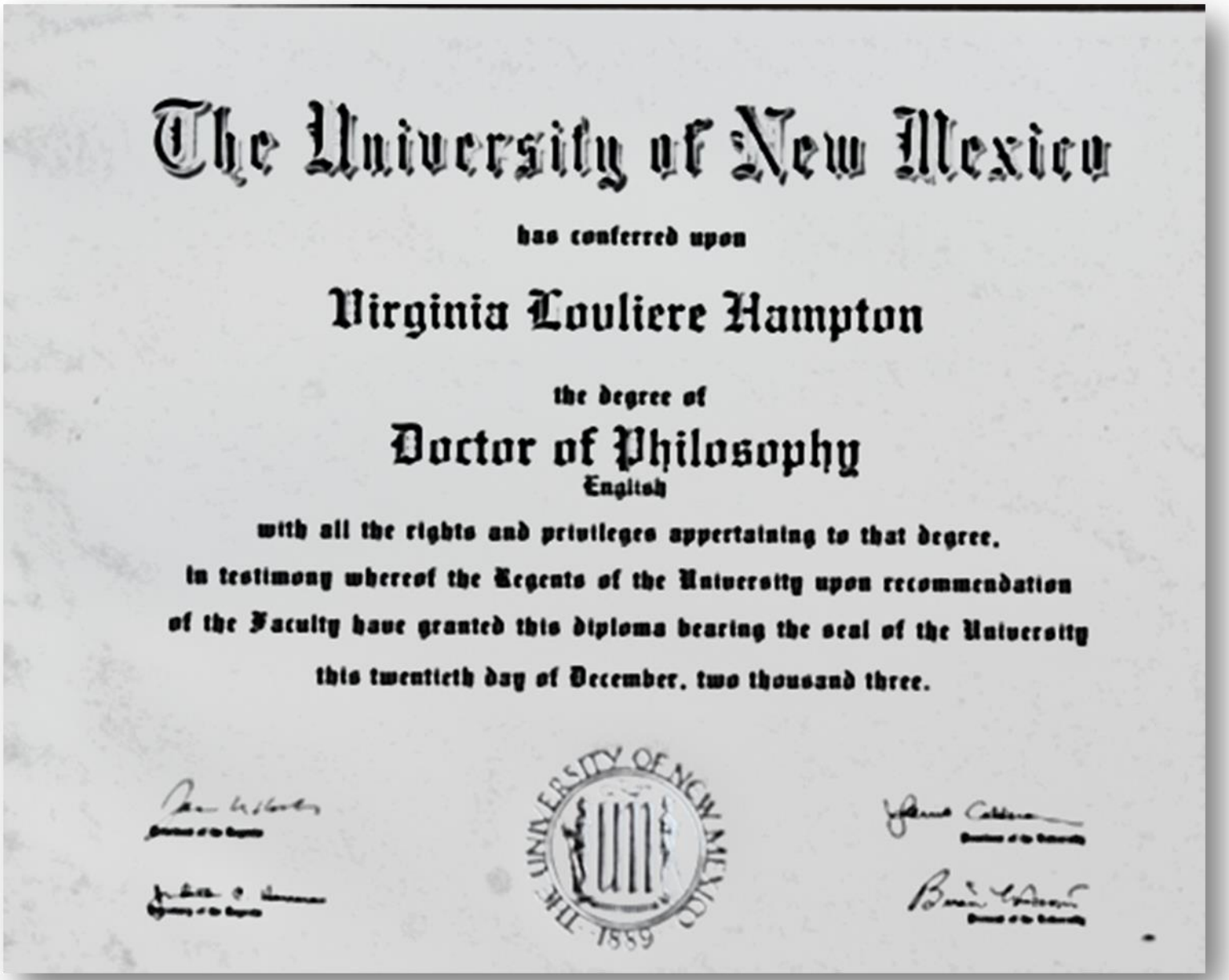
This is to certify that I have made suggestions to the master's degree candidate, Jessamyn Ramos, for corrections regarding her Final Graduation Project, including but not limited to:

- Spelling, grammar, and usage appropriate for candidates at the master's level
- Sentence structure, syntax, and development appropriate to Standard American English
- Repetition and sentence awkwardness
- Format issues

It is my opinion that once the recommended guidelines and suggestions are followed, this candidate will have completed her project in accordance with the standard for proficiency in written English for the Master's in Project Management (MPM) Degree offered by the Universidad Para la Cooperación Internaciónal.

Respectfully,

Virginia L. Hampton



The University of New Mexico

has conferred upon

Virginia Louliere Hampton

the degree of

Doctor of Philosophy

English

with all the rights and privileges appertaining to that degree.

In testimony whereof the Regents of the University upon recommendation of the Faculty have granted this diploma bearing the seal of the University this twentieth day of December, two thousand three.

THE UNIVERSITY OF NEW MEXICO 1889