UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PROCESS METHODOLOGY FOR THE UNIVERSAL SERVICE FUND PROGRAM IN GRENADA

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DEDICATION

This Project is dedicated to my mom, Roslyn Burke, who has always been my inspiration throughout my life. She has always encouraged me to push beyond the borders so I can accomplish the best in life. Because of her life's lessons and her dedication and support as a mother, I am always motivated to strive to excellence and to never be perturbed by my circumstances because these are only temporary. Thank you Mom.

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All things are possible with God who gives me strength (Philippians 4:13, The New King James Version); Firstly, I thank God for His favour in allowing me to be granted this opportunity.

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ABBREVIATIONS AND ACRONYMS

- A guide to project management body of knowledge - PMBOK
- Final Graduation Project – FGP
- Gross Domestic Product – GDP
- Information and Communication Technology - ICT
- National Telecommunications Regulatory Commission – NTRC
- Project Management Information System - PMIS
- Project Management Institute - PMI
- Project Management Methodology - PMM
- Universal Service Fund – USF

EXECUTIVE SUMMARY (ABSTRACT)

The Universal Service Fund (USF) Program is governed and managed by the National Telecommunications Regulatory Commission (NTRC). This program was established to facilitate the expansion of telecommunications services to locations, groups and villages which are not adequately served by the commercial market. The Telecommunications sector in Grenada is a vital one, with a total gross domestic product (GDP) in Eastern Caribbean (EC) dollars of $74.09M recorded in 2016 and a 3.08 contribution to GDP (Eastern Caribbean Central Bank, 2017). In addition to its contribution to GDP, it is a critical lever for the economy, specifically commerce and trade. Further, telecommunications is recognized by the Government as an important catalyst transcending the sectors of the economy. In recognition of this, the Government has outlined strategies to create an enabling environment to expand access to telecommunications. With many recent initiatives such as e-Government, access to telecommunications services, specifically among the outer communities, is critical.

As a result, the Government has looked to the USF as essential to aiding in the achievement of its strategy by implementing projects which expand access to telecommunication services to villages and institutions serving the public needs; the importance of these projects to the national agenda has hastened the need for methodologies which will guide the selection, implementation and management of the USF. These have been necessitated to ensure proper use of public funds in the interest of prudent spending. While the USF Regulations and Guidelines exist to guide project implementation, the limitations of these Regulations call for methodologies which will bridge the gap and enable an efficient USF program. Moreover, the past rate of implementation and setbacks with USF projects has increased the need for project management methodology. USF has a recorded implementation rate of 82% and approximately 27% of the projects are plagued with issues including delayed timeline and over budget. These statistics can be attributed to the lack of recorded procedures, limitations in current policies which exist and the absence of process maps to guide project implementation.

The general objective of this project was to develop a project management methodology according to PMI standards to guide the management and implementation of universal service fund projects. To guide the achievement of this general objective, the specific objectives of the project were to identify gaps in the current USF operations in order to recommend areas for improvement; to develop project management procedures according to Project Management Institute (PMI) good practices that would increase operating efficiency of the USF; to develop process maps and templates that would streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds; and to apply the methodology to a typical project case that would ensure understanding of the proposed process methodology.

This project utilized analytical technique to undertake an in depth review of the current operations of the USF in comparison with industry standards. This analysis will enable the development of procedures to guide the implementation of USF projects as well as the development of process maps and templates which will serve to standardize the USF program.

Based on the assessment conducted, one of the major problems identified in the USF project management practices is that the planning process is not undertaken in depth; as a result, the projects during the execution phase encounter problems which could have been avoided with proper planning. In addition, planning is limited to scope, schedule, stakeholders and procurement. Key areas such as risk, communications, and quality are not addressed during the planning phase. Despite these gaps identified, it was noted that stakeholder management was one of the strong points of the USF. Stakeholders were identified from the beginning, during the concept phase, and the stakeholder engagement continued in the planning phase where they were an integral part of the project development. Early stakeholder communication can prevent future problems with projects such as project delay and changing scope due to lack of understanding of the stakeholder requirements (PMI, 2013). Stakeholder engagement continued throughout the process to the project close. Despite this obvious strength, it was noted that this knowledge area also required additional work, such as conducing a detail stakeholder analysis, developing a stakeholder interest matrix, and updating these throughout the process. This addition to the USF project management process will serve to strengthen their stakeholder engagement and further improve on the rate of implementation.

To improve the USF project management, a project management methodology was recommended; this methodology proposed process maps which will guide USF through the project cycle. In addition, templates were proposed to standardize the USF and to ensure that some procedures, such as risk management, which are not being undertaken, to be part of the project management process. In addition, a step by step guide was provided to assist the USF department with the activities required at each step of the project management process and who should oversee these activities. Further, it was recommended that more time be allocated to the planning process and a detailed project management plan should be developed to cover all knowledge areas, this plan should not only exist in theory, but should be used as a reference and benchmark to guide the project cycle. Because of the importance of USF as part of national development, it was also recommended that a benefits realization be conducted as part of the process. The purpose of the benefits realization was to ensure that the projects executed met their intended objective of national development. It was recommended that an impact assessment be conducted as part of the benefits realization to determine the value added by the project to the users.

1 INTRODUCTION

1.1. Background

In 2000, the Telecommunications Act 31 of 2000 was promulgated ending the monopoly in the telecommunications sector and establishing the National Telecommunications Regulatory Commission (NTRC) with the mandate to regulate the liberalized telecommunications sector in Grenada and establish and manage a Universal Service Fund (USF) Program.

The Universal Service Fund (USF) Program is geared at expanding telecommunications and Information and Communication Technology (ICT) infrastructure and services to underserved and un-served areas, user groups with limited access to telecommunications services such as the elderly, persons with disabilities, indigent as well as institutions serving the public needs (Eastern Caribbean Telecommunications Authority, 2008). These areas and user groups were, prior to the liberalization, overlooked by the telecommunications sector. Hence, to ensure the equitable development of telecommunications in Grenada, the USF was used to promote and support the advancement of the telecommunications and ICT sector where the commercial markets were unable to do so in a finically viable manner. The Telecommunications USF Regulations was passed in 2009 outlining the guidelines for the management and operation of the USF. The objective of this regulation was to ensure prudent management and good governance of the fund.

ICT was named an important pillar of the economy which could transcend all sectors in Grenada and improve the overall efficiency of the other sectors namely tourism, health, education and agriculture (Government of Grenada, 2015). With the strategic thrust by the Government to make Information and Communication Technology (ICT) a focal point and pillar of the economy, USF became paramount to assist with the pursuit of this objective. This vision has guided the selection of USF projects. As a result, the project activities of the USF expanded with an increase in funds allocated to projects to support the development of telecommunications and ICT in Grenada in line with the

Government's strategic thrust. This increase activity has sharpened into focus the need to streamline processes of the USF for proper planning and management of projects, given their strategic focus.

Projects are funded by contributions collected from the Telecommunications Providers as part of their licence obligations. These contributions are then used to execute projects which promote the objective of the fund to compensate telecommunication providers who are required to support the promotion of universal service in the telecommunications sector. The goal is to promote the social, economic and educational development of the country.

At present, the process of the USF programme is guided by Act and Regulations which provides for the management and operation of the USF. These guidelines however are limited to the scope of the USF and do not provide the depth necessary to ensure standardize process to improve the efficiency of administrating the projects. Projects are identified based on a Call for Projects which is advertised to institutions, both public and private, Non-Government agencies, community groups and users of technology. Projects received are then reviewed by an evaluation committee and recommendations are made for short listing of projects (Eastern Caribbean Telecommunications Authority, 2008). Committee recommendations are then presented to the Board for approval. Once approved, the list of project ideas is developed internally in preparation for public tender.

The steps involved in the development of the projects are not detailed by the USF Regulations and Guidelines, but leaves the procedures to the discretion of the NTRC. While the evaluation process considers the strategic objective of the project and the high level risks involved, a detailed plan, such as a project management plan, which details the components of the projects such as human resource, risk, stakeholders etc. are not properly documented. This has resulted in oversight in the development process of the RFP and has in some cases delayed the implementation phase of the projects, and in some cases, resulted in the cancellation of some projects.

1.2. Statement of the problem

The current limitation of the USF regulations and guidelines which act as a framework for the management and administration of the USF projects has heightened the need to review current procedures utilized in implementing projects. In addition, the strategic importance of the USF projects has called for procedures which are in keeping with international standards to increase the success of USF projects.

While the USF has 82 % project implementation rate, the implementation process for approximately 27 % of its projects were plagued with setbacks such as delayed timeline and over budget (National Telecommunications Regulatory Commission, 2016). As a result of these statistics, there is a need to implement sound processes to transfer projects into sound, concrete and successful products and services which can meet the strategic focus envisioned by Government and add value to the population.

According to the National Telecommunications Regulatory Commission (2016), the lack of detailed procedures for the management and implementation of fund projects has constrained the operating efficiency of the USF program and has increased the resources expended on projects due to issues such as project delays, cost overruns. To increase the operating efficiency of the USF and realize the benefits in terms of efficient management and implementation of projects, a project management process methodology needs to be developed and implemented to guide the USF.

The project management methodology will create the opportunity to implement detailed procedures which will increase transparency of funds channeled to projects through detailed and standardized procedures. It is intended to improve the project selection process by mandating the development of project management plans which assesses each knowledge area of the project, thereby resulting in a proper management structure and more viable projects which can add value to the target audience.

1.3. Purpose

According to Farhadi, Ismail & Fooladi (2012), there is a .17% increase in GDP for every 1% increase in access to Information and Communication Technology (ICT). This is guided by the notion that access to technology breaks barriers, provides access to information and aids in commerce through e-commerce and e-business. As a result of the correlation between access to ICT and the GDP, Government has placed more emphasis on the development of ICT. The USF program utilizes public funds to implement projects in the telecommunications sector that will improve access to telecommunications services and ICT as part of the national policy. These projects will enable Government to meet local agenda and country strategies and enable the population to have access to services which are considered a public good.

As a result of the strategic importance of the USF projects in the national agenda and the millions of dollars expended on each project, it is imperative to have sound processes and procedures to ensure the proper management and implementation of projects. In addition, the amount of money expended on these projects requires the implementation of practices to ensure that projects selected can meet the overall objective and result in value for the targeted communities.

The development of a project management process methodology will enable the USF to achieve its mission of project sustainability. These processes will result in internal operating efficiencies and enable the externality benefit to the telecommunications sector which will benefit from projects that are adequately managed from inception through to handover of the product or services.

This research will investigate the current practices of the USF program; this will include a gap analysis of the current framework, which includes the USF Regulations, USF Guidelines, and internal standard operating procedures. The framework will be compared to the project management standards to identify any deficiencies and will

make recommendations for improvements, including the development of procedures and process maps for implementation.

The new methodology is expected to provide the following benefits to the organization:

- Improvement in the current project management practices and alignment with international best practices

- Detailed procedures which will serve as a guide for the management and implementation of projects; standardizing internal operating procedures with the aim to improve the delivery of projects which both meet their strategic focus and add value to the citizens

- Templates and process maps which will improve the operating efficiency of the program and overall productivity of the USF in terms of resource optimization.

- Outline clearly defined roles and responsibilities within the USF project unit

1.4. General objective

To elaborate and develop a project management methodology framework according to PMI standards by the end of 2018 for a better development of (USF) projects

1.5. Specific objectives

1. To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF

2. To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency

3. To develop process maps and templates to streamline the universal service fund in order to ensure effective selection of projects for prudent spending of public funds

4. To apply the methodology to a typical project case to ensure understanding of the proposed process methodology

2 THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

The telecommunications sector in Grenada is an essential sector task with the responsibility to ensure interconnectivity of network and provision of services that facilitate communications, commerce, and trade. The NTRC, through the implementation of regulations and acts, ensures a conducive environment which facilities a competitive telecommunications sector. Paramount of interconnectivity is the ubiquitous of services to ensure that the population can access ICTs. This is why the USF, which is managed by the NTRC, was established.

2.1.1 Company/Enterprise background

The NTRC is a statutory organization responsible for regulating the telecommunications sector in Grenada. The NTRC was established after the liberalization of the telecommunications sector in order to regulate and monitor the newly liberalized telecommunications sector. The NTRC is part of a regional regulatory framework with oversight by the Eastern Caribbean Telecommunications Authority (ECTEL) (Eastern Caribbean Telecommunications Authority, 2000). The ECTEL member states comprises of Grenada, Dominica, St. Lucia, St. Vincent and St. Kitts, each with its corresponding NTRC to regulate the telecommunications sector in their respective jurisdiction. The major role and responsibility of ECTEL is to act as an advisory body to manage the radio frequency spectrum in collaboration with the NTRC.

The responsibilities of the NTRC include:

- Monitoring the telecommunications sector to prevent anticompetitive practices by licencees

- In collaboration with ECTEL setting regulations that govern the telecommunications sector
- Managing the national numbering plan
- Collecting licence fees
- Managing a radio frequency spectrum in collaborating with ECTEL
- Managing the .gd country code top level domain
- Managing a universal service fund program
- Conducting seminars on telecommunications
- Setting technical standards and advising the Minister on matters relating to telecommunications
- Investigating complaints by persons who may be aggrieved by the actions of telecommunications providers

(Eastern Caribbean Telecommunications Authority, 2000)

The USF is managed by the NTRC to create a universal service regime to ensure the widest possible expansion to telecommunications services to the people of Grenada to increase the availability and affordability of advanced telecommunications services (Eastern Caribbean Telecommunications Authority, 2008). The USF implements projects which are geared towards ubiquitous services to communities in order to increase access to and use of telecommunications services. According to the Eastern Caribbean Telecommunications Authority (2009), USF refers to the provision of voice telephony, the provision of internet access, the provision of telecommunications services to institutions serving the public needs and other telecommunications services by which persons can access an efficient, affordable and modern telecommunications network. This definition is consistent with the term “bridging the digital divide” by narrowing the information gap between the have and have-nots or information rich and information poor. The USF is utilized to channel resources into projects to improve the telecommunications infrastructure where such services are not readily available.

2.1.2 Mission and vision statements

The operations of the NTRC are guided by its Vision and Mission which outlines its purpose and the future direction of the organization.

Mission:

> "To be an exemplary regulatory body which promotes competition with fairness, transparency and the highest quality of service that is beneficial to all stakeholders within the telecommunications sector (National Telecommunications Regulatory Commission, 2015, p. 6)."

Vision:

> "To regulate the liberalized telecommunications sector in Grenada so as to ensure fair competitive practices by telecommunications providers and to promote and maintain high quality telecommunications services at fair and competitive prices for consumers (National Telecommunications Regulatory Commission, 2015, p. 6)."

Principles:

> "To support the promotion of sustainable telecommunications and information and communication technology (ICT) projects which will facilitate the availability and affordability of telecommunications and ICT services in the interest of sustainable social and economic development (National Telecommunications Regulatory Commission, 2012, p. 2)."

2.1.3 Organizational structure

The NTRC consist of the Secretariat and Commissioners who collectively make up the Commission. The Secretariat manages the day to day operations of the NTRC, while

the Commissioners are Board members appointed by the Minister with responsibility for communications and to oversee policy directive of the NTRC. The USF operates within the Secretariat and is headed by a Fund Administrator who is responsible for overseeing the management of the fund and administration of projects. The USF program operates as a matrix organization as other staff members are drawn across the different departments within the organization. These staff members answer both to their respective supervisor and the USF Administrator.

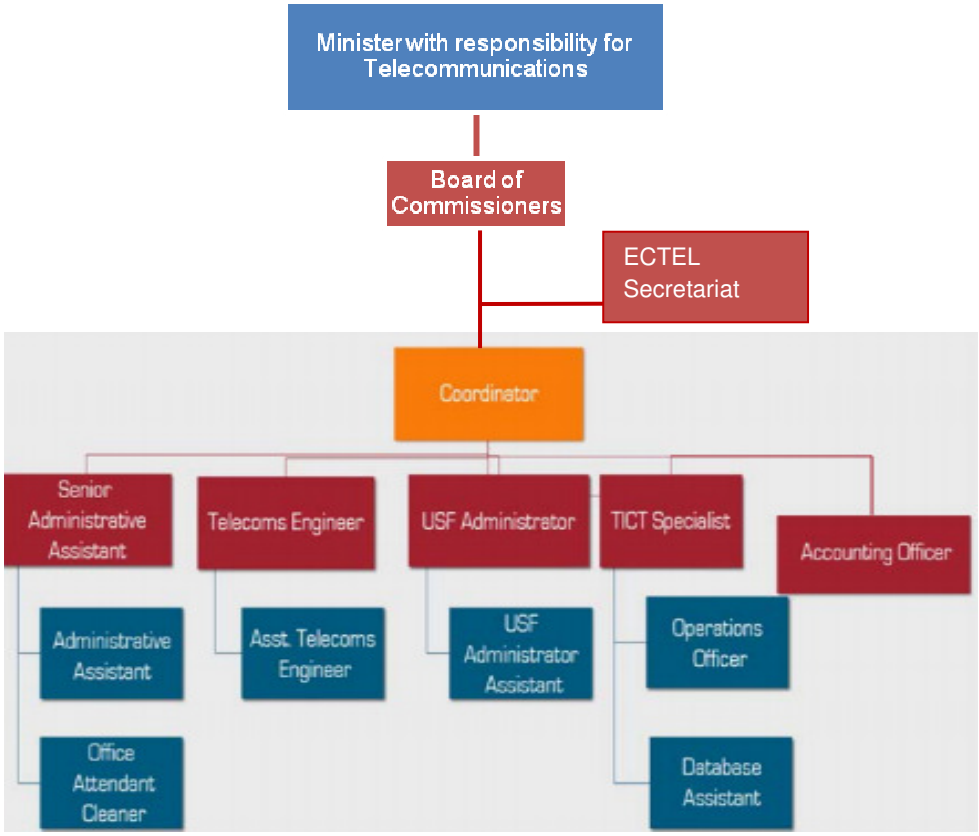


Figure 1 Organizational structure (NTRC, 2015, p. 13)

As a statutory body, the NTRC is responsible to the Minister for Communications. The Minister is responsible for signing and approving licences based on recommendations from the NTRC and ECTEL. The Minister is also responsible for setting policy directives regarding the telecommunications sector. The Board of Commissioners who

is appointed by the Minister reports to the Minister through the Chairman of the Board of Commissioners.

The NTRC comprises of five departments which are headed by the respective department heads as shown in the organization chart in Figure 1. It is overseen by the Coordinator who reports to the Board of Commissioners. Chart 2 illustrates the departments of the NTRC, the department heads who are the responsible officers who head the respective departments (department heads are shown in Figure 1) and the functions of each department.

The major departments are as follows:

Chart 1 Organization Roles and Functions (NTRC, 2015)

Department	**Department Heads**	**Functions**
Administration	Senior Administrative Assistant	responsible for administration and human resource
Licencing and Compliance	Telecommunications Engineer	responsible for numbering, spectrum management, management of licences and maintenance of the respective database
Universal Service Fund (USF)	USF Administrator	responsible for the management and implementation of USF projects
Information Technology	TICT specialist	responsible for ICT initiative, IT related matters and domain management

Accounts	Accounting Officer	manages invoicing of licencees, collection of fees and maintenance of the Company's accounts (USF, payroll)

2.1.4 Products offered

The services offered by the NTRC are in keeping with its mission to regulate the telecommunications sector and to ensure fair competitive practices. The major services include, issuing licences, numbering management, domain management and the Universal Service Fund. (Please refer to Chart 2 for details of the services offered by the NTRC). The USF department, unlike other departments within the NTRC is project oriented; as a result, this project will be related specifically to the USF department, particularly how the project management practices specified by PMI can be implemented to help improve the implementation of projects and ensure effective utilization of USF resources.

Chart 2 Organization Departments (NTRC, 2015)

Services	Details	Department
Licencing	The NTRC issues licences to telecommunications providers to establish telecommunications infrastructure or provide a telecommunications service. A licence is necessary for the provision of telecommunication services. Some of the licences offered by the NTRC	Licencing and Compliance

	include: Individual licence is issued to a person who wish to establish or operate a telecommunications network Class licence is issued to operate a telecommunications network not connected a public network Amateur radio a licence granted for the operation of an amateur radio Type approval is approving of telecommunications equipment for sale in Grenada	
Spectrum Management	Spectrum management is the managing the radio frequency wave, this is done by managing the issuance of frequency to broadcasters who wish to transmit radio frequency for the provision of broadcast services.	Licencing and compliance
Numbering	The NTRC manages a national numbering plan for the assignment of short codes or block codes. The NTRC issues codes to licenced telecommunication providers or any organization who requires short codes for the delivery of telecommunication services	Licencing and compliance
Domain management	The NTRC is responsible for the management of	IT

	the domain name registry, which includes the assignment, registration and management of the country code top level domain	
Universal Service Fund	The NTRC manages a universal service fund which is utilized to expand access to telecommunications services to unserved and underserved communities. Projects implementation is based on consultation, call for projects, or statistics on the availability of telecommunication services in Grenada	USF

2.2 Project Management concepts

2.2.1 Origin of Project Management

According to Weaver (2007), project management dates back to the 15th Century when there was a shifting paradigm in the work culture to increase productivity. Emphasis was placed on reducing unnecessary elements of work and focusing on breaking down task into small manageable units. This philosophy including Taylor's scientific management, led to the development of the critical path method scheduling which today is associated and widely used in project management. However, according to Passenheim (2009), it was not until the 1950s that modern project management was recognized as a separate field of study and career.

Project Management has gained popularity within recent years owning to the high rate of failure recorded among projects. It is estimated that approximately 21 percent of projects are meeting their objectives and adding value to their beneficiaries (KPMG, 2017). This means that an alarming 79 percent of projects are not successful or not adding value to organizations. This has sharpened into focus the need for more detailed planning and standards governing project management. Today, the Project Management Institute is recognized as one of the major standards for project management practices and methodology. Hence, the genesis of this project will focus on the application of the PMI tools and techniques to the USF program to improve the application of the projects.

2.2.2 Project

The Project Management Institute ([PMI], 2013) defines a project as "a temporary endeavor undertaken to create a unique product, service or result (p. 3)." This implies that a project has a definitive start and finish, must achieve a specified purpose or objective and it is unique or one of a kind. This is important in USF as the definition of project helps guide the selection of projects to be funded by the program. Projects must be distinguished from operations which are ongoing day to day activities that provide supports to the projects. These include accounting, marketing, and human resource.

2.2.3 Project management

According to the Project Management Institute (PMI, 2013, p.5), project management is defined as the "application of knowledge, skills, tools and techniques to project activities to meet the project requirements." Project management involves the balancing of stakeholder interests, managing competing constraints such as time, cost, and scope in order to meet the requirements of the project as set by the stakeholders. Project Management Institute further explains that Project Management is accomplished by integrating 47 application areas which are logically grouped and divided into process

groups namely initiation, planning, executing, monitoring and controlling and closing (PMI 2013).

2.2.4 Project life cycle

Projects are executed in phases which follow a form of sequence. These phases may vary by organization or industry and while these phases may occur in sequence, they are by no means discrete and may interact with each other. These phases according to PMI are defined as the project lifecycle (PMI, 2013). This lifecycle provides the framework by which projects are managed. PMI (2013) identifies four generic phases as follows:

- Project commencement – during this stage the project idea is conceptualized
- Organization stage – this stage will include detailed planning which outlines how the project will be managed throughout the project cycle
- Executing the project work – this is where the work occurs to transform the idea and plans from the previous stages into the deliverable/results.
- Closing of the project or phase – at this stage the project will end and the deliverable or result handed over to the client

Please see below a diagram with the project lifecycle.

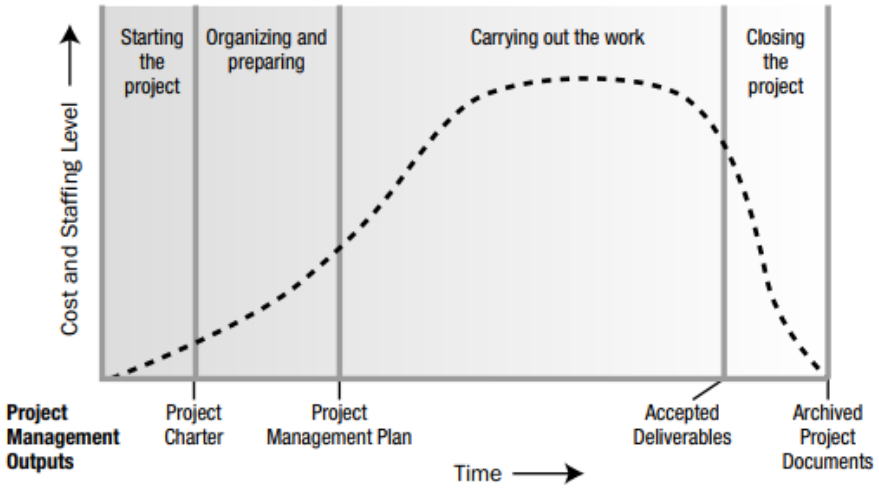


Figure 2 Project Lifecycle (PMI, 2013. P. 30)

Projects managed by the USF go through similar phases, starting with the initiation phase where Call for Projects are requested and an evaluation executed by the USF Committee. Once approved, the projects proceed to the planning stage where the details of the project such as the technical specifications are detailed and the RFP tendered. Once a Contract is awarded, the project proceeds to the execution phase where work is conducted to meet the project objectives. The work will be monitored to ensure that the deliverables meet its target before being handed over to the Client, this is the monitoring and controlling phase. Once the deliverables are accepted by the Client, the project will be closed at the end of the Contract period. The following pictorial representation from the PMI best illustrates the project management lifecycle within the USF which implements projects within the telecommunications sector.

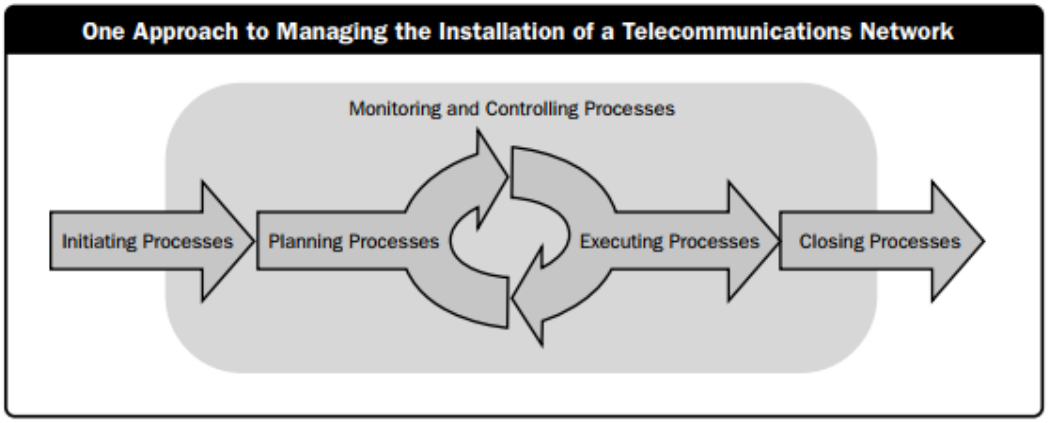


Figure 3 USF Project Lifecycle (PMI, 2013. P. 42)

2.2.5 Project management processes

Projects are executed in a methodological order along inter related processes. These processes interact with each other to produce the specified objective, product, service or result. These processes consist of inputs and outputs which help guide the management of projects through their lifecycle. According to PMI (2013), processes are important to ensure the flow of projects throughout the lifecycle. Since projects exist

within an organization and not within a closed loop, therefore, there is constant relay of information among project constituents. PMI 2013 defines five process groups as initiation, planning, executing, monitoring & controlling and closing. These process groups unlike a project lifecycle exist independent of industry or application area. The following figure represents the process groups' interactions.

Chart 3 Project Management Process Groups (PMI, 2013)

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	**Planning Process Group**	**Executing Process Group**	**Monitoring and Controlling Process Group**	**Closing Process Group**
4. Project Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct and Manage Project Work	4.4 Monitor and Control Project Work 4.5 Perform Integrated Change Control	4.6 Close Project or Phase
5. Project Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	
6. Project Time Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Estimate Activity Resources 6.5 Estimate Activity Durations		6.7 Control Schedule	

Knowledge Areas	Project Management Process Groups				
	Initiating Process Group	**Planning Process Group**	**Executing Process Group**	**Monitoring and Controlling Process Group**	**Closing Process Group**
		6.6 Develop Schedule			
7. Project Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	
8. Project Quality Management		8.1 Plan Quality Management	8.2 Perform Quality Assurance	8.3 Control Quality	
9. Project Human Resource Management		9.1 Plan Human Resource Management	9.2 Acquire Project Team 9.3 Develop Project Team 9.4 Manage Project Team		
10. Project Communications Management		10.1 Plan Communications Management	10.2 Manage Communications	10.3 Control Communications	
11. Project Risk Management		11.1 Plan Risk Management 11.2 Identify Risk 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses		11.6 Control Risks	
12. Project Procurement Management		12.1 Plan Procurement Management	12.2 Conduct Procurement	12.3 Control Procurements	12.4 Close Procurements
13. Project Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Management	13.3 Manage Stakeholder Engagement	13.4 Control Stakeholder Engagement	

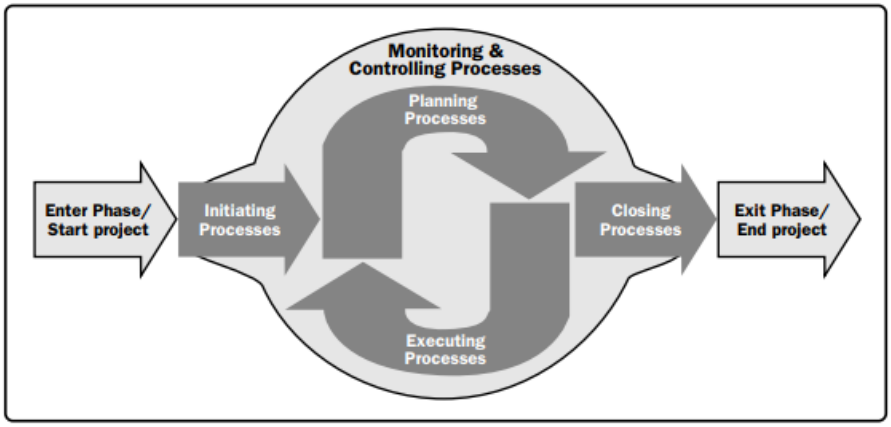


Figure 4 USF Project Management Process Groups (PMI, 2013, P. 50)

Initiating – the activities within the initiation process are primarily to define a new project or the start of a new phase within an ongoing project. The initiation phase of a project includes tethering of project ideas, and preparation of project charters. PMI (2013) states that this process group is important as it validates subsequent decisions made; it can also be seen as the foundation of the project upon which other elements are built.

Planning – this process group include activities to define the project and objectives that will be accomplished by the project (PMI, 2013). This includes confirming the project scope, specifying deliverables and success criteria and outlining the plan which will guide project implementation, collecting requirements from stakeholders and creating the WBS. The planning process may be revisited during other process groups as the project is refined or as new information comes to light, this is referred to as roll wave planning or progressive elaboration (PMI, 2013).

Executing – activities within this process group are geared at executing the work needed to complete the deliverables according to stakeholders' expectations (PMI, 2013). This includes acquiring and managing the project team, interfacing with stakeholders and coordinating the work needed to complete the project. The executing

process groups may account for most of the project budget as the majority of work will be executed in this process group.

Monitoring and Closing – this process group is like the quality control component of the project, it includes monitoring project performance against an established plan and identifying, mitigating or changing the plan required to meet the project objective (PMI, 2013). The activities will regulate the project progress to ensure that variances are identified and addressed.

Closing – the closing process group involves closing of all activities needed to bring the project phase or project to completion (PMI, 2013). This involves obtaining customer approval and sign off on the final deliverable, conducting and recording lessons learnt, updating the PMIS or archive and closing out procurements.

2.2.6 Project management knowledge areas

PMI (2013) defines a knowledge area as follows:

> "A knowledge area represents a complete set of concepts, terms, and activities that make up a professional field, project management field or area of specialization (p. 60)."

In order to ensure proper project management, the project team must consider all knowledge areas of the project; this must include a detailed plan of the respective areas to guide the project team. The knowledge area, like the process groups, is not discrete and interacts with other knowledge areas to help deliver a cohesive project. According to PMI (2013), there are 10 knowledge areas each with its input, tools and techniques and outputs to meet the objective of each knowledge area. The following is a list of the 10 knowledge areas:

- Perform Integration Management

- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management
- Project Risk Management
- Project Procurement Management
- Project Stakeholder Management

2.2.6.1 Perform Integration Management

Performed integration management is the activities undertaken to define, integrate and coordinate project management activities across the process groups. According to PMI (2013), integration management involves managing competing resources and interdependencies among knowledge areas. Integration management is considered to be the key to success of the overall project as this entails essential functions such as keeping track of the overall big picture while managing plans, managing the project team, and managing the work which is important to achieving a successful outcome (Schwalbe, 2007). (Please see fig 5 for a list of the processes necessary to execute the project integration management).

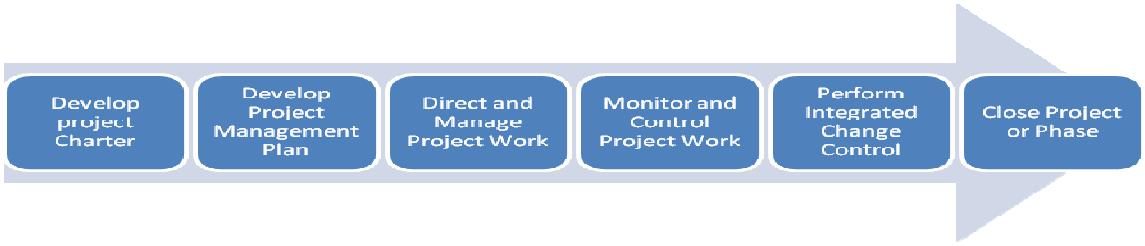


Figure 5 Project initiation management processes (PMI, 2013)

2.2.6.2 Project Scope management

Project scope management - Project Management Institute (2013) defines scope management as the process undertaken to ensure that all work as agreed by the stakeholder and required to successfully execute the project is undertaken. Scope

management also prevents scope creep by ensuring that only agreed work is undertaken. (Please see fig 6 for a list of the processes necessary to execute the project scope management).

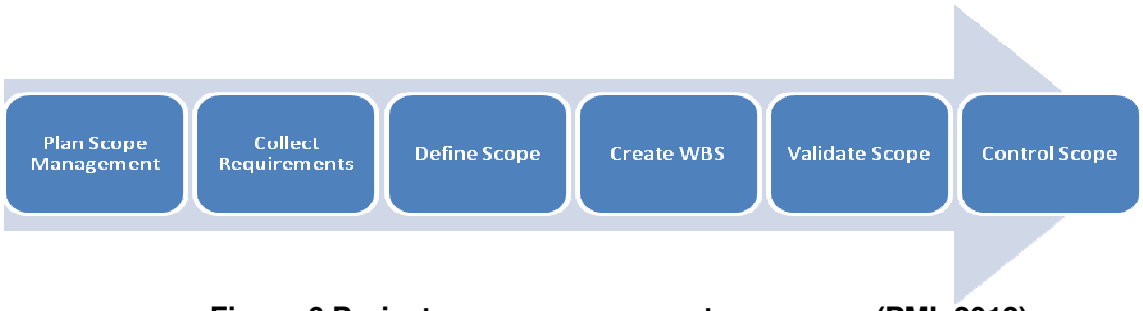


Figure 6 Project scope management processes (PMI, 2013)

2.2.6.3 Project Time management

Project time management manages the project schedule to ensure activities and that the project is delivered on time (PMI, 2013). This includes estimating the schedule, developing a schedule baseline which will be used to monitor the project schedule. As the project proceeds, the level of effort will be dedicated to controlling the schedule. (Please see fig 7 for a list of the processes necessary to execute the project time management).

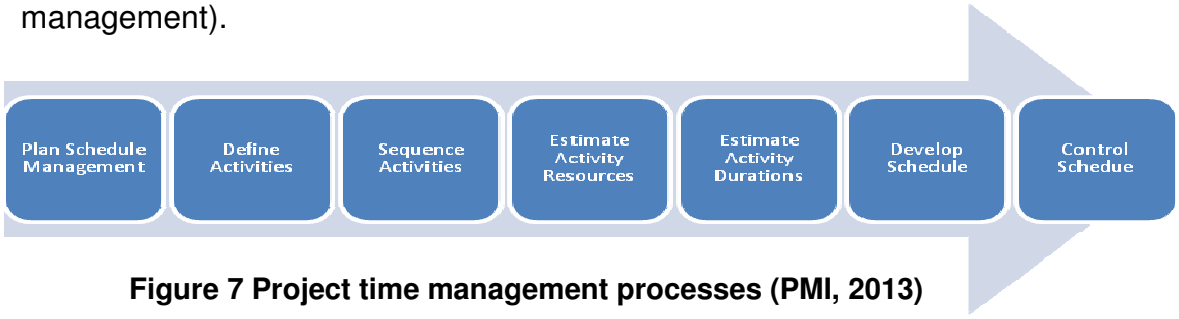


Figure 7 Project time management processes (PMI, 2013)

2.2.6.4 Project Cost management

Project cost management - according to the Project Management Institute (2013), project cost management is the process required to ensure the project is delivered within the specified budget. This includes estimating cost, developing cost baseline,

building in contingencies and monitoring the baseline. Cost as part of the triple constraint, must be carefully monitored to ensure successful delivery of the project. The following is a list of the processes required to complete the project cost management, see fig 8.

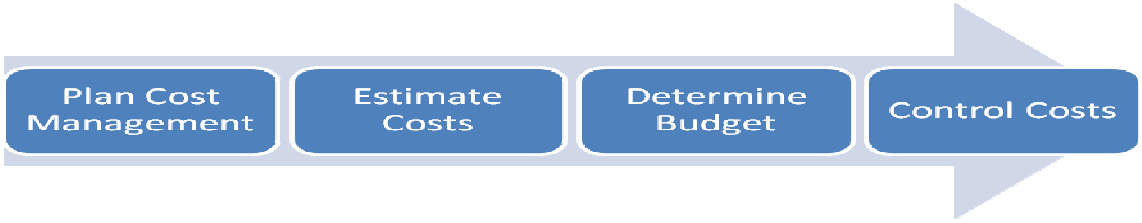


Figure 8 Project cost management processes (PMI, 2013)

2.2.6.5 Project Quality management

According to Rose (as cited in Deming, 1980), quality must be planned into the project; it cannot be inspected into the project. Project Quality management includes the processes and activities required to ensure that the project meets the needs for which it was executed and the stakeholders' objective (PMI, 2013). Project quality management defines the responsibilities, quality policies and quality requirements. These requirements form part of the quality audits, as the project quality is gauged against compliance with the quality requirements. This includes continuous management system which will include quality control procedures to identify and record any non-conformances. (Please refer to fig 9 for the processes required to execute project quality management).

Figure 9 Project quality management processes (PMI, 2013)

2.2.6.6 Project Human Resource Management

Project human resource management is the activities needed to acquire, develop, and manage the project team. This includes assigning roles and responsibilities to the project and team members to execute the project (PMI, 2013). Managing the project team constitutes a large component of the project, as most project activities involve executing the work required to deliver the project deliverables, which occurs in the execution stage. Therefore, this plan must be properly detailed and roles carefully assigned. (Please refer to fig 10 for the processes required to execute project human resource management).

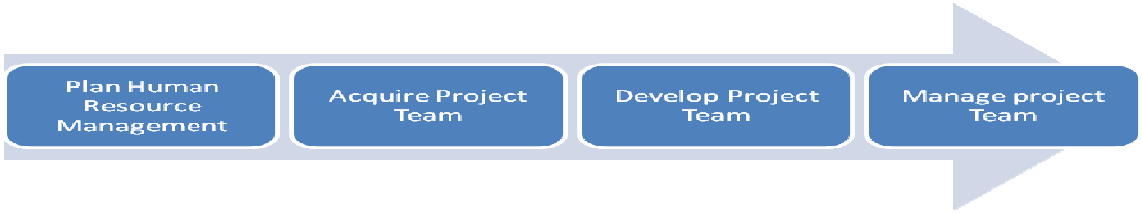


Figure 10 Project human resource management processes (PMI, 2013)

2.2.6.7 Project Communication management

Project communication management involves all activities needed to disseminate information to all stakeholders. This includes the collection, creation, distribution, storage and retrieval and the ultimate disposal of information (PMI, 2013). A properly and clearly constructed communications plan with roles and responsibilities, methods and medium of communication aids in guiding the communication process. It is important to note that communication is also a critical knowledge area, as changes to project must be promptly communicated to the stakeholders to prevent slippage in project schedule or mitigate risks. (Please see fig 11 for a list of the processes necessary to execute the project time management).

Figure 11 Project communications management processes (PMI, 2013)

2.2.6.8 Project Risk Management

Project plans are based on assumptions which may or may not hold true. As a result, this creates uncertainty and introduces risk to the project (PMI, 2013). Project risk management includes the process of identifying risks, developing the appropriate risk response plan, monitoring risk triggers and controlling the project risks. Risks are inherent in projects and must be managed in order to increase the probability of success. (Please refer to fig 12 for a list of the processes entailed in project risk management).

Figure 12 Project risk management processes (PMI, 2013)

2.2.6.9 Project Procurement Management

Project procurement management includes the process necessary to acquire the goods or services required to deliver the project (PMI, 2013). Procurement manages the activities involved in the make or buy decision, vendor relationships, the selection of vendors and contract management just to name a few. (Please see fig 13 for a list of the processes necessary to execute the project procurement management).

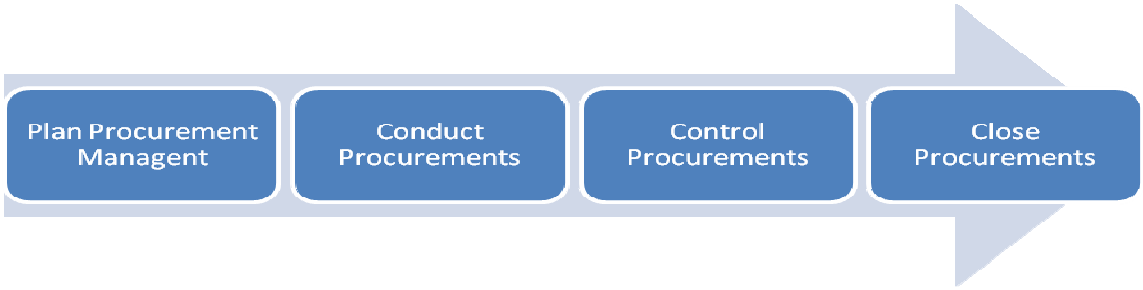


Figure 13 Project procurement management processes (PMI, 2013)

2.2.6.10 Project Stakeholder Management

According to the Project Management Institute (2013), project stakeholder management is defined as the processes required to identify the stakeholders, particularly those who can exert influence on the project, manage their expectations and develop strategies for stakeholder engagement (PMI, 2013). This also implies that communications will be an essential component of stakeholder management as communications is integral to managing stakeholder expectations in order to ensure a successful project completion. PMI (2013) defines a successful project as one which meets stakeholders' expectations and adds value to the stakeholders. (Please see fig 14 for a list of the processes necessary to execute the project stakeholder management).

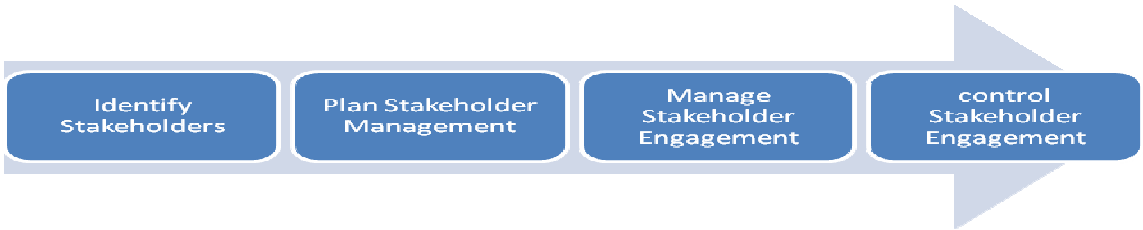


Figure 14 Project stakeholder management processes (PMI, 2013)

2.3 Other concepts related to the project

2.3.1 Program and Portfolio

Some projects, as with the case of the USF, can be managed as a group of projects called a program which consists of interrelated projects that can benefit from sharing of resources and other synergies which will not otherwise be achieved if they were managed independently (Schwalbe, 2007). The projects within the USF are specifically related to telecommunications and are intended to achieve the purpose of development of the telecommunications sector in the interest of social, educational and economic development.

The management of a program is termed program management; Program management is the application of tools, techniques and skills to a program to achieve certain synergies which would not otherwise be achieved to meet the program objective (PMI, 2013). All projects within an organization are intended to achieve an overall organizational strategy, whether it is to remain competitive, to take advantage of emerging markets as part of market expansion strategy or market development, as with the case of the USF. This form of strategic management of projects is termed portfolio management. A portfolio is a group of projects and programs which are grouped together and managed as part of the organizational strategy.

2.3.2 Enterprise environment factors and organization process assets

Projects are executed within the context of the organization. As such, projects can be constrained by factors such as existing cultures, industry standards and or structures which exist within the organization. These factors, which are called enterprise environment factors, are outside of the control of the project staff and can affect how projects are executed (PMI, 2013). The USF Regulations and Guidelines are enterprise

environment factors as these legislations are outside the Control of the USF department and define specifics that USF projects must adhere to.

In addition to enterprise environment factors, policies and procedures which are specific to the organizations also guide their operations. These policies and procedures are called organization process assets. Unlike enterprise environment factors, organization process assets are within the control of the project environment and can be amended on the basis of new information acquired and past project experience such as lessons learnt (PMI, 2013). USF procedures and lessons learnt are examples of organization process assets used by the USF Program.

2.3.3 Stakeholders

A stakeholder is defined as someone who can impact or be impacted by the project or exert influence on the project (PMI, 2013). Given the public importance of USF projects, stakeholder engagement can be a very tedious task, hence, this project can provide guidance on stakeholder engagement as part of the proposed project procedures.

2.3.4 Project Management Methodology

A Project management methodology is used to improve efficiency in managing and implementing projects through the application of repetition to the process to create consistency (Goff, 2013). These typically include templates, process maps, and process description. Project management methodology is used to align projects with international standards, improve efficiency, produce better results, minimize time to implement task, and improve skills set of project staff.

3 METHODOLOGICAL FRAMEWORK

3.1 Information sources

Information source refers to the place for securing or accessing information. It can include books, reference materials, an individual, and technology such as a website, with the intention to increase learning or knowledge about a particular area of study, interest or investigation (McGraw Hill Dictionary, 2013). This research project will utilize information sources to draw inferences about the USF operations and to make recommendations on the premise of these inferences.

3.1.1 Primary sources

Primary sources refers to data generated from an original source such as interviews or surveys (Hox & Boeije, 2015). This research will utilize data from primary sources which will be collected through interviews with management and staff within the USF department.

3.1.2 Secondary sources

Secondary sources are data generated from other persons and comments on, refer to, or build on primary sources (Hox & Boeije, 2015). Data from primary sources will be supported by information collected from secondary sources such as regulations, internal operating procedures, records of USF operations and databases.

Information collected from primary and secondary sources will be compared to the PMI standards to identify gaps which exist within the current USF operations and will outline areas for improvement. This analysis will include a comparison of records, operating procedures or written statements from staff with regards to how USF operates and the

current standards recognized by PMI as tools, techniques and methods of managing and implementing projects.

Chart 4 Information sources (collated by author)

Objectives	Information sources	
	Primary	Secondary
To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF	Interviews/ Surveys with USF Staff	USF Regulations, USF Guidelines, Project Management Guide (PMBOK), other project management studies, USF operating procedures
To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency	Interviews Archives	USF Regulations, USF Guidelines, Project Management Guide (PMBOK)
To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds	Interviews Records of USF	Project Management Guide (PMBOK), project management templates
To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	Interviews Archives	Project records, Project management templates

3.2 Research methods

According to Collins and Hussy (2014), “a research is a systematic or methodological process of inquiry and investigation with a view of increasing knowledge (p 2).” The expansion of knowledge contributes to the general body of knowledge; In the case of this project, the information generated will enable the NTRC to improve its operating procedures through the application of new processes and methodology to the USF. Collins and Hussey (2014) outline several objectives of research including investigation of a problem, providing a solution to an existing problem, evaluating existing knowledge, generating a new idea or explaining a new phenomenon.

The premise of this project is to assess the current operating procedures within the NTRC to identify gaps within the current operations and recommend areas for improvement. This will be followed by the development of procedures and templates to guide the implementation of projects. The purpose of a research project will determine the method of research which should be conducted. This research project will utilize analytical techniques, qualitative methods, quantitative methods and literature research which will allow an in depth review of current operations of the USF and it constituent parts with the goal of trying to understand how the operations functions in comparison to Industry standards, in this case PMI standards.

3.2.1 Analytical method

Analytical method is the process of combining scientific power with the use of formal process to solve problem. The connection with scientific method implies that some form of rigor is utilized in testing a theory or explaining a situation (Kosterec, 2016). This method uses facts and information already existing to apply critical analysis. This methodology helps to explain phenomenon or interpret relationships or data. In this project, analytical methods will be utilized to identify the problems that exist within the USF project management; The application of formal processes such as

gap analysis, and comparative analysis will enable the problems within the USF project management to be identified enabling the development of tools and methodologies which can enhance how projects are managed within the USF Department.

3.2.2 Qualitative method

Qualitative research method is concerned with the “how” and “why” things are done or what people do or act the way they do. These types of methods utilize interviews and focus groups to generate insightful information on how and why things are done a particular way by allowing persons to share their experiences (National Foundation for Education Research, 2018). In this project, qualitative methodology will form an integral role. This methodology will provide insights into how projects are managed and why certain processes which exist within the USF are followed. This insightful information will provide guidance with regards to areas of improvement; this can only be achieved by understanding why and how work flow is undertaken. This will provide added value to the gap analysis allowing for the development of recommendations for improvement in the USF project management.

3.2.3 Quantitative method

Quantitative research method collects data which answers “what”. This type of research can generate large quantity of data over a relatively short period of time and is useful in generating response to personal and confidential information. Quantitative data is typically collected through surveys (National Foundation for Education Research, 2018). In this project, quantitative research methods will be used to provide support to the qualitative information collected from the USF department. Surveys will be conducted with technical staff of the USF to provide additional insights into USF project cycle. This will assist with the gap analysis and identifying gaps within the USF project management process.

3.2.4 Literature research

Literature research is the method of reviewing and analyzing the work of other people undertaken within the field of study. This method will be useful for identifying gaps in the USF to enable the research to be aligned with best practice (National Foundation for Education Research, 2018). This method will be used to analyze the PM BOK guide for best practices in project management to apply to the USF.

Chart 5 Research methods (collated by author)

Objectives	**Research methods**			
	Analytical Method	Qualitative method	Quantitative method	Literature research
To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF	This method will be utilized to analyze the USF operations in order to identify gaps which exist. An in-depth review will also be conducted on the PMI standards to allow for comparison with the practices and processes utilized by USF and that of PMI to	This method will be used to thoroughly understand what is done as it relates to USF project management practices to make comparison with PMI	This method will be used to collect information on the USF project management practices	This method will be used to assess the PMI good practices used in each of the knowledge area to identify gaps in the USF processes

	allow for process improvements to be made by way of recommendations			
To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency	An analysis of the USF operations and comparison with PMI standards will provide insight into areas for improvement. This will enable the development of procedures on the basis of the results from the analysis conducted and the standards utilized by PMI.	Qualitative methods will be used to understand the current project management framework that is utilize by the USF, to enable areas for improvements to be identified	Will not be used for this objective	This will be used to asses project management methodologies and to determine which methodology will be appropriate for USF projects
To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending	The analytical method will enable a review of the current processes in place and allow for the development of process maps and templates to improve the USF	Will not be used for this objective	Will not be used for this objective	Will not be used for this objective

of public funds	operations on the basis of the analysis conducted. The analysis will include the processes for selection and implementation of projects.			
To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	The method will be used to review the types of projects typically conducted by the USF to apply to a practical example.	This method will be used to gather information from the USF department to develop a typical project example	Will not be used for this objective	Will not be used for this objective

3.3 Tools

Tools are part of the project management processes which are utilized to achieve an output. Tools are used in each knowledge area to enable the project manager to complete each knowledge area and collectively achieve the project result, output or product. Tools increase the efficiency of a project as its applications increase the success of the outcome. Collins dictionary (2017) defines a tool as an anything which is used to achieve an end result. In other words, it is the means which is used to accomplish the output. PMI as part of its definition of project management includes the application of tools and techniques as necessary to achieve the result. Hence, this

project will utilize PMI tools in order to produce the deliverables. The following are tools which will be utilized as part of the project.

3.3.1 Expert Judgment

Expert Judgment will be used to acquire knowledge about best practices in projects implementation within the telecommunications industry. Expert Judgment will also include standards according to PMI which are recognized and used for project implementation. These project management standards will be compared to the current operating procedures of the USF to outline recommendations for improvement and develop procedures, processes and templates for application in USF project implementation.

3.3.2 Meetings

Meetings will be utilized are part of the information gathering process to understand the operations and procedures used by the USF department. These meeting will be held with management who are the decision and policy makers as it relates to USF project implementation. This will provide an understanding of the actual practices and will be compared to the written policies and regulations to determine whether they are both parallel.

3.3.3 Project Management Information System

Project Management Information System will provide access to project management archive including past records which were used to execute projects (PMI, 2013). This information system will provide insight into the current operations, processes and template used as part of the project implementation and will allow for comparison with the project management templates as recognized by PMI.

3.3.4 Interviews

Interviews will be conducted with the staff members to understand the current operations and process flow, if any, which are used to administrate and manage the USF projects.

3.3.5 Surveys

Surveys, like interviews will be conducted with members of staff to collect information on the operations of the USF. This will be done with the technical staff to provide an understanding of the USF process.

3.3.6 Document Analysis

Document Analysis will include a review and evaluation of the project documents used by the USF (PMI, 2013). This will include review of bid evaluation reports, procurement document etc which will also provide insight into the current operations of the USF and the tools which are used to implement USF projects; this will help identify current gaps within the USF operations and will allow recommendations to be made for improvement.

3.3.7 Project Templates

Project Management Templates can be described as documents which can be used as a pattern for project management process. These documents are the starting points for developing new documents; they can define the purpose, scope, success criteria and any other areas of project management, to ensure that the project meets a specified standard (University of California Berkeley, 2018). Project management templates will be used as recommendations to the USF to standardize their project management process.

Chart 6 Tools (PMI, 2013)

Objectives	Tools
To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF	Expert Judgment Interviews Surveys Document analysis
To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency	PMIS Document analysis
To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds	Project management templates
To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	Expert Judgment PMIS Project management templates

3.4 Assumptions and constraints

3.4.1 Assumptions

An assumption is a condition that is presumed to be true; they are beliefs or statements about uncertain future events and are used during the initial stages of project management planning (State of Michigan, 2013). Assumptions made during the initial stages of project management may change during the course of project planning and may be subsequently revised as new information comes to hand regarding the projects. Please refer to Charts 7 for assumptions made on the basis of this project.

Chart 7 Assumptions by Stakeholders (Collated by author)

Stakeholders	Assumptions
Technical staff	• Staff will be available to participate in the survey • The department heads will give the ok for their subordinate to participate in the survey
Management	• Management will allow access to project files necessary to conduct research • Management will be receptive to the results and willing to apply the findings to the USF project management process
Government	• Government ICT policy will remain effective for 5 years and thus USF review and Government records/policy used in the research will be

	applicable after the findings from the project • Government will be open to make changes to USF regulations to ensure there is consistency between findings and recommendations and the Legislations which govern the USF
Board members	• Will sanction the research within the organization • Will be open to changing the internal policy to accommodate the findings from the research and surveys
Telecommunication providers	• Will give the OK to use non-confidential documents submitted for projects to be part of the research • Will support the recommendations from this process as improvements will benefit them as potential bidders • Will be available to participate in any survey conducted

3.4.2 Constraints

Constraints are situations or circumstances that limit or prevent the organization or project from executing or achieving certain activities (Kim & Trail, 2010). Constraints are a part of every work environment, including projects. It is important to identify constraints so plans can be put in place to minimize the effects of the constraints on the organizational accomplishments. . Constraints are also called limiting factors because it limits or restricts what can and cannot be done. Constraints relating this project are listed in Chart 8.

Chart 8 Assumptions and constraints (collated by author)

Objectives	Assumptions	Constraints
To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF	Records of the NTRC, including reports on projects are public information and not confidential or restricted Staff will be available to participate in interviews which are required to assess the current USF operations	Lack of detailed records can affect the assessment of the current operations and by extension the results of the gaps analysis. Time may limit the depth of review, including evaluation of records and the information system which is key to assessing the current USF operations
To create and document a Project	Staff will be available	USF Regulations

Objectives	Assumptions	Constraints
Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency	to participate in interviews which are required to assess the current USF operations	which provides the legal framework for USF operations may affect the procedures which can be implemented. All procedures must adhere to USF regulations
To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds	Records of the NTRC, including reports on projects are public information and not confidential or restricted	Process may be constrained by the USF regulations which are the legal framework for the USF operations. Assessment will also be based on staff recount of the operations of USF, which may not be accurate given that some processes are not written, but implied
To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	Records of the NTRC, including reports on projects are public information and not	Any methodology which has to be applied to the USF has to be in

Objectives	Assumptions	Constraints
	confidential or restricted	compliance with USF regulations which are the legal framework for USF operations.

3.5 Deliverables

Deliverables are results or outputs from a process. They are typically used in project management to refer to services, products or results from a project (State of Michigan, 2013). The deliverable is usually tangible and produced to meet a specified objective and within a defined period of time as agreed by the parties to the project. A deliverable can be the final product or output of one phase which will be used as an input for another phase of the project.

In this project, deliverables will be produced for each specific objective. These deliverables will collectively enable the achievement of the general objective of this project which is 'To elaborate and develop a project management methodology framework according to PMI standards by the end of 2018 for a better development of (USF) projects'.

The first specific objective will include three deliverables. The first deliverable **is** intended to describe the characteristics of the projects typically managed within the USF. The characterization of USF projects will provide a background and set the tone for the analysis and application of the project management methodology. The second deliverable will provide an analysis of the USF project management methodologies by using a matrix to provide a comparative analysis with the USF processes compared to the PMI processes according to the PMBOK. The third deliverable will build on the second deliverable by outlining recommendations for improvement on the basis of the comparative analysis conducted in the second deliverable.

The second specific objective will include two deliverables. The first deliverable will describe the current USF project management methodologies in place. This description will enable deficiencies to be outlined and will pave the way for the development of new methodologies. In the second deliverable, a new project management methodology will be proposed. This methodology will govern the USF projects.

The third specific objective will include two deliverables. The first deliverable will propose a flow chart outlining the new project management methodology; this proposed diagram will be based on the deficiencies in the PMM outlined in the second specific objective. The second deliverable will include proposed templates which will be used to improve the USF operations and will form part of the USF PMM.

The final specific objective is intended to be the application area, where a typical USF project will be developed using the proposed PMM developed. This will include the application of some templates developed in the third specific objective. The objective of this deliverable is to provide general guidance to the USF unit in developing an actual USF project which will guide the management of future USF projects.

Chart 9 Deliverables (collated by author)

Objectives	Deliverables
To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF	1. Document with a characterization of projects managed by the USF - this document describes the main characteristics of USF projects to set a basis from which to judge and assess the adequacy of project management methodology. 2. Document with project management methodologies analysis matrix and assessment - this document describes the main characteristics of previously described PMMs to analyze, assess, compare and set the basis for recommendations based on gaps identified 3. Recommendation for improvement - a proposal outlining a list of areas which can be improved and guidance for making the improvement outlined
To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF	1. Project management procedures document – a document with a description of relevant project management methodologies; this defines and set a baseline for the comprehension of already established

projects to increase operating efficiency	PMMs. 2. Document proposing a framework project management methodology for USF projects – outlines a framework which should apply to the PMM
To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds	1. Document with a flow diagram describing proposed project management methodology - this document will provide a general reference guide of the proposed PMM, this shall include process maps outlining USF flow charts 2. Templates for USF project management and implementation – these will include sample templates which can be applied to USF as part of the PMM
To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	1. Sample project management plan using a typical project – a project management plan outlining all knowledge areas applied to a typical USF project, this document will provide guidance for the application of the project management template proposed

4 RESULTS

The FGP project is intended to develop a project management methodology for the universal service fund program. To assist with the development of this methodology, an assessment was conducted on the current operating procedures of the USF. This was undertaken by analyzing the internal documented procedures and legal policies governing the USF and conducting interviews and surveys with the universal service fund unit to assess the operating procedures utilized in the management of the USF. The USF unit consists of one fulltime staff assigned to the USF department and three (3) technical staff drawn from other functional areas namely Licencing and Compliance and Information Technology.

The assessment seeks to undertake the following:

1. To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF

2. To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency

3. To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds

4. To apply the methodology to a typical project case to ensure understanding of the proposed process methodology

4.1 Objective 1: To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF

4.1.1 Deliverable 1:

Please see here under a document with the characterization of projects managed in the company, this document seeks to describe the main characteristics of USF projects to set a basis from which to judge and assess the adequacy of project management methodology.

A survey was conducted with the USF Staff to determine the characteristics of projects executed by the USF. The objective of this survey was to understand the process used by USF to manage projects and to understand the types of projects managed by the organization. In addition to the survey, an analysis was conducted on the USF documents including the regulations and guidelines to provide a thorough knowledge of the USF projects.

The USF Regulations defines a USF project as one which support or promote the expansion of USF (Eastern Caribbean Telecommunications Authority, 2008). The Regulations further defines USF as projects which support the provision of voice telephony, internet access, introduction or expansion of telecommunication services to public institutions, other services by which persons can access an efficient and modern telecommunication services. Please see hereunder a chart showing the USF Project category and the types of project approved under the respective categories.

According to the survey, the USF is primarily project based, with 100% of its activities dedicated to project management. Projects within the USF department are executed by Contractors selected by the USF department. However, the USF department is responsible for developing the project concept, developing project plans, monitoring the project progress during execution by the Contractor and accepting and closing the project.

Chart 10 USF Project Characterizations (Collated by author)

Category	Characteristics
USF Projects	Projects executed by the USF focus on the following: Provision of Voice telephony Provision of internet access to Introduction or expansion of telecommunication services to public institutions Other services by which persons can access an efficient and modern telecommunication services
Concept	Projects during the concept phase were selected based on Call for Projects. The calls were then selected on the premise of the following: Financial analysis – the project should not be financial viable because USF is for development purpose outside of the commercial market, Sustainability – the product/ service should continue to exist without support of the fund after the project terminates, Institutional capacity – the applicant/client should have the resources necessary to support the product/service this includes support services to maintain the deliverable, Technical feasibility – is the solution

	proposed technically feasible? (Eastern Caribbean Telecommunications Authority, 2008)
Planning	During the planning phase, projects are further developed prior to the procurement and execution. The Plans developed here are an extension to the high level plans in the concept stage
Execution	Call for projects which were successful were then subject to procurement on the basis of open competitive bidding. While other procurement options were specified, these had to be justified and subject to strict criteria stipulated in the regulations. Bids received from the procurement process were then evaluated by the Commission and the successful bidder awarded a Contract to execute the project. Project contracts were addressed under project implementation section of the regulations and guidelines.
Monitoring & Control	The Commission, as part of the implementation, was required to receive routine reports from the Contactor on the progress of fund projects. These periodic reports formed the basis for disbursements; funds were based on reimbursements for work executed.

Conclusion:

The survey results further revealed that there is some formal procedure in place governing the execution of the USF projects. While all of these procedures and not written, but implied through lessons learnt, these procedures are understood to be the standard operating procedures for the management of USF projects. A document analysis of the regulations, procedures in place and USF project documents shows that there are gaps within the USF operating procedures. The USF regulations provided a high level guidance on the management of the USF. These regulations, which were supported by guidelines, outlined the processes for project selection, procurement and implementation of fund projects, which guides USF process. Please see below an outline of USF projects according to the project phase.

According to results from the survey, it was noted that there has been problems with USF which has resulted in some failed projects. The major causes cited for this failure are largely due to forces within the external environment such as the stakeholders not properly articulating their requirements and ongoing existing projects within the external environment which has resulted in changing USF project scope. It must be noted that some of these challenges can be avoided with proper documented policies guiding the project management process. It was also noted that these operating procedures were not based on recognized standards such as PMI or ISO but was an extension to the regulations which is mandated by law. The department did agree that changes to the policies and regulations will serve to address of the issues plaguing the fund. Based on the recap of project selection, execution and handover, it was noted that some of the procedures comply with the PMI as outlined in the PMBOK. Please refer to Chat 10 for details of the procedure compliance. However, there are still significant gaps which exist in the management of projects which can be addressed by a formal methodology.

4.1.2 Deliverable 2:

Document with project management methodologies analysis matrix and assessment - describes the main characteristics of previously described PMMs to analyze, assess, compare and set the basis for recommendations based on gaps identified

In order to identify the areas for improvement, a comparative analysis was conducted to compare the current operating procedures of the USF with that of the PMI standards outlined in the PMBOK. This was based on the interview conducted with the USF unit and document analysis. Please see hereunder the gap analysis report detailing the results of the comparative analysis.

Chart 11 Comparative Analysis Matrix (Collated by author)

Knowledge areas	PMI Project management processes	USF processes	Gaps /Recommendations
Project Integration Management			
4.1 Develop Project Charter	Inputs: Project Statement of Works Business Case Agreements Enterprise environment factors Organization process assets Tools & techniques: Facilitation technique Expert judgment Output: Project Charter	Inputs: Application - (Statement of Works) Organization process assets Enterprise environment factors Tools & techniques: Expert judgment Output: Project Charter	**1. Develop Business Case template** According to the PMI (2013), a business case is used to justify the project and establish project parameters. The business case should be submitted by the applicant **2.** Develop SOW – this should be signed by the Client as an agreement to the SOW **3.** Project Charter template does

			not include success criteria, thus this template should be revised **Develop Project Charter Template** **4.** Facilitation techniques such as brainstorming can be used to develop Charter (to identify risk, stakeholders)
4.2 Develop Project Management Plan	Inputs: Project Charter Outputs from other processes Enterprise environment factors Organization process assets Tools & techniques: Facilitation technique Expert judgment Output: Project Management Plan	Inputs: Project Charter Enterprise environment factors Tools & techniques: Expert judgment Output: Project Management Plan	1. Organization process assets: such as past projects should be used as inputs into development of the project management plan 2. Project management plan: should include all knowledge areas, and should not be limited to Scope, schedule and cost **3. Develop PM Plan Template** 4. Expert Judgment: should not be limited to functional staff, but should extend to external specialist according to the nature of the project 5. Facilitation techniques such as brainstorming can be used to develop PM plan
4.3 Direct and	Input:	Input:	1. Project

Manage Project Work	Project Management Plan Approved change request Enterprise environment factors Organization process assets Tools & techniques: Expert judgment PMIS Meetings Outputs: Work performance data Change requests Project management plan & document updates	Contract Approved change request Enterprise environment factors Tools & techniques: Expert judgment Outputs: Work performance data Change requests	Management plan should be used throughout the PM process including direct and manage project work phase 2. Organization process assets should be used Formal PMIS should be developed as a document management system 3. Update project documents and PM plans based on changes/updates to the project
4.4 Monitor and Control Project Work	Input: Project Management Plan Schedule forecasts Cost forecasts Validated changes Work performance Information Enterprise environment factors Organization process assets Tools & techniques: Expert judgment Analytical technique Outputs: Work performance data Change requests Project management plan & document updates	Input: Work performance information Validated changes Tools & Techniques: Meetings Outputs: Work performance data Change requests	1. Project Management plan should be used throughout the process including direct and manage project work phase 2. Analytical techniques such as variance analysis (cost, schedule) should be used to identify variances between planned and actual project components as part of the M & C stage 4. Update PM plans and documents

4.5 Perform Integrated Change Control	Inputs: Project Management Plan Work performance reports Change request Enterprise environment factors Organization process assets Tools & techniques: Expert judgment Meetings Change control tools Output: Approved change requests Change log Project management plan & document updates	Inputs: Work performance report Change request Tools & Techniques: Expert judgment Outputs: Approved change requests Change log	1.Project Management plan should be used to assess change and updated to reflect changes 2. **Develop template for work performance reports** to be used by the Contractors
4.6 Close Project or Phase	Input: Project management plan Accepted deliverables Organization process assets Tools & techniques: Expert judgment Analytical techniques Meetings Output: Final product Organization process assets updates	Input: Agreement/ Contract Tools & techniques: Meetings Output: Deliverable Organization process assets updates	1.Project Management plan should be used as an input to close the project 2.Org process asset (past projects) can be used to close project 3. Use of expert judgment in project close particularly to conduct analysis project performance, this can help with the lessons learnt **4.Develop Lessons learnt template** as part of the Close project
Project Scope Management			
5.1 Plan Scope Management	Input: Project management plan Project charter Enterprise environment	Not undertaken	1. A Scope management plan should be developed as part

	factors Organization process assets Tools & techniques: Expert judgment Meeting Outputs: Scope management plan Requirements management plan		of USF projects **Develop Scope Management Plan template**
5.2 Collect Requirements	Inputs: Scope Management Plan Requirements Management Plan Stakeholder Management Plan Project Charter Stakeholder Register Tools & Techniques: Interview Focus Groups Facilitated Workshops Group Creativity Techniques Group Decision-Making Techniques Questionnaires and Surveys Observations Prototypes Benchmarking Context Diagrams Document Analysis Outputs: Requirements Documentation Requirements Management Plan Requirements Traceability Matrix	Inputs: Project Charter Tools & Techniques: Meetings Outputs: Stakeholder requirements	**1.Develop requirements management plan template** **2.Develop Stakeholder register template** **3.Develop requirements documentation template** 4.Consider use of other methods to collect requirements such as facilitated workshop
5.3 Define Scope	Inputs: Scope Management Plan Project Charter Requirements	Inputs: Project Charter Tools &	1. Scope management plan and requirements documentation

	Documentation Organizational Process Assets Tools & Techniques: Expert Judgment Product Analysis Alternative Generation Facilitated Workshops Outputs: Project Scope Statement Project Document Updates	Techniques: Meetings Outputs: Project Scope statement	should be used to define the project scope 2. Process assets such as past records should be used to help define scope 3. Scope definition should include other tools and not limited to meetings 4. Project documents should be updated as an outcome of the scope definition process
5.4 Create WBS	Inputs: Scope Management Plan Project Scope Statement Requirements Documentation Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Decomposition Expert Judgment Outputs: Scope Baseline Project Documents Updates	Process not undertaken	1. A WBS should be developed as part of the project planning 2. Scope management plan and scope statement should be used to develop WBS
5.5 Validate Scope	Inputs: Project management plan Requirements documentation Requirements traceability matrix Verified deliverables Work performance data Tools & techniques: Inspection	Inputs: Scope statement Agreements Tools & techniques: Meetings Inspection	1. Project management plan should be used to validate the deliverables 2. project requirements documentation template should also be used in

	Group decision making techniques Outputs: Accepted deliverables Change request Work performance information Project document updates	Outputs: Accepted deliverables Change requests Performance reports	this process to validate the project scope
5.6 Control Scope	Inputs: Project management plan Requirements traceability matrix Requirements documentation Work performance data Organization process assets Tools & techniques: Variance analysis Outputs: Work performance information Change requests Project management plan and document updates Organization process assets	Inputs: Scope Statement Agreements Tools & techniques: Inspection Outputs: Change requests Work performance information	1. Project management plan should be used to monitor the project scope 2. Project documents should be updated to reflect changes during this process 3. Variance analysis can be undertaken as a tool to control the project scope
Project Schedule Management			
6.1 Plan Schedule Management	Inputs: Scope management plan Requirements management plan Stakeholder management plan Project Charter Stakeholders register Tools & techniques: Expert judgment Analytical techniques Meetings Outputs: Schedule management plan	Process not undertaken	**1. Develop schedule management plan**

6.2 Define Activities	Inputs: Schedule Management Plan Scope Baseline Enterprise Environmental Factors Organizational Process Assets Tools & techniques : Decomposition Rolling Wave Planning Expert Judgment Outputs: Activity List Activity Attributes Milestone List	Inputs: Scope statement Organization process assets -Past project records Tools & techniques: Meetings Outputs: Activity calendar Milestone	1. An activity attributes specifying the predecessor and successor activity should be used to in the schedule management process 2. An activity list should be prepared and should include codes **3. Develop activity list and attribute template**
6.3 Sequence Activities	Inputs: Schedule Management Plan Activity List Activity Attributes Milestone List Project Scope Statement Enterprise Environmental Factors Organizational Process Assets Tools & Techniques: Precedence Diagramming Method (PDM) Dependency Determination Leads and Lags Outputs: Project Schedule Network Diagram Project Documents Updates	Process not undertaken	1. Project schedule network diagram should be used by the USF as part of project planning and by the Contractors as part of project implementation, this will assist in identifying key activities which must be closely managed to keep the project on schedule
6.4 Estimate Activity Resources	Inputs: Schedule Management Plan Activity List Activity Attributes Resource Calendars Risk Register Activity Cost Estimates	Inputs: Activity calendars Organization process assets – records from past project	1. A resource calendar should be developed to outline the availability of these critical resources

	Enterprise Environmental Factors Organizational Process Assets Tools & Techniques: Expert Judgment Alternative Analysis Published Estimating Data Bottom-up Estimating Project Management Software Outputs: Activity Resource Requirements Resource Breakdown Structure Project Documents Updates	Tools & Techniques: Expert judgment Output: Activity resource estimate	**2.** RBS – Resource Breakdown Structure can be developed to plan for resources needed for each work package
6.5 Estimate Activity Durations	Inputs: Schedule Management Plan Activity List Activity Attributes Activity Resource Requirements Resource Calendars Project Scope Statement Risk Register Resource Breakdown Structure Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Expert Judgment Analogous Estimating Parametric Estimating Three-point Estimating Group Decision-Making Techniques Reserve Analysis Outputs:	Inputs: Activity calendars Organization process assets – records from past project Tools & Techniques: Expert Judgment Output: Milestone duration estimates	1. Activity estimates should not be limited to milestones 2. Estimation techniques such as analogous estimate by using historical data from similar projects can be used to estimate activity durations

	Activity Durations Estimate Project Documents Updates		
6.6 Develop Schedule	Inputs: Schedule Management Plan Activity List Activity Attributes Project Schedule Network Diagram Activity Resource Requirements Resource Calendars Activity Duration Estimates Project Scope Statement Risk Register Project Staff Assignments Resource Breakdown Structure Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Schedule Network Analysis Critical Path Method Critical Chain Method Resource Optimization Techniques Modeling Techniques Leads and Lags Schedule Compression Scheduling Tool Outputs: Schedule Baseline Project Schedule Schedule Data Project Calendars Project Management Plan Updates Project Documents Updates	Process not undertaken	1. Develop project schedule should be developed as part of USF projects to help manage the project schedule and resources 2. Activity attributes, calendars should be used as part of the process to prepare the schedule baseline
6.7 Control Schedule	Inputs: Project management plan Project schedule Performance data Project Calendars	Inputs: Project Milestone Agreement	1.Project management plan and project document should be used to control

	Schedule data Organization process assets Tools & techniques: Performance reviews Performance software Resource optimization techniques Modelling techniques Leads and lags Schedule compression Scheduling tool Outputs: Work performance information Schedule forecasts Change request Project management plan & document updates Organization process assets	Tools & techniques: Performance reviews Outputs: Performance reports	the project schedule and document changes to the project as a result 2. Performance reviews such as trend analysis can be used to monitor the project
Project Cost Management			
7.1 Plan Cost Management	Inputs: Project Management plan Project Charter Organization Process assets Enterprise environment factors Tools & techniques: Expert judgment Analytical technique Meetings Output: Cost management plan	Not undertaken	**1. Develop Cost management plan**
7.2 Estimate Costs	Inputs: Cost Management Plan Human Resource Management Plan Scope Baseline Project Schedule Risk Register Enterprise Environmental	Inputs: Project Charter Organizational Process Assets Tools & techniques: Expert	1. Include the basis of estimates as part of the project cost estimates 2. Project document and plans should be

	Factors Organizational Process Assets Tools & techniques: Expert Judgment Analogous Estimating Parametric Estimating Bottom-up Estimating Three-point Estimating Reserve Analysis Cost of Quality Project Management Software Vendor Bid Analysis Group Decision-Making Techniques Outputs: Activity Cost Estimates Basis of Estimates Project Documents Updates	Judgment Output: Project cost estimates	updated based on outcome from this process 3. Project management plan/subsidiary plans (HRM, cost management plan) should be used to develop cost estimates
7.3 Determine Budget	Inputs: Cost Management Plan Scope Baseline Activity Cost Estimates Basis of Estimates Project Schedule Resource Calendars Risk Register Agreements Organizational Process Assets Tools & techniques: Cost Aggregation Reserve Analysis Expert Judgment Historical Relationships Funding Limit Reconciliation Outputs: Cost Baseline Project Funding Requirements	Inputs: Project Charter Organizational Process Assets Tools & techniques: Expert Judgment Output: Project budget	1. Project documents such as activity estimates, resource calendars and cost management plan should be used to develop the budget 2. Project documents should be updated during this process 3. Tools such as historical analysis and cost analysis (analogous estimate) should be used to determine project budget

	Project Documents Updates		
7.4 Control Costs	Inputs: Project Management Plan Project Funding Requirements Work Performance data Organization process assets Tools & Techniques: Earned value Forecasting To complete performance Performance reviews Performance software Reserved analysis Outputs: Work performance information Costs forecasts Change requests Project management plan & document updates Organization process assets updates	Inputs: Project Budget Tools & Techniques: Outputs: Performance reports Change requests	1. Budgets should be updated throughout this process 2. Project documents should be updated during this process 3. Tool such as to complete (cost remaining to complete the project) should be used to monitor project budget
Project Quality Management			
7.1 Plan Quality Management	Inputs: Project Management Plan Stakeholder Register Risk Register Requirements Documentation Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Cost Benefit Analysis Cost of Quality Seven Basic Quality Tools Benchmarking Design of Experiments Statistical Sampling Additional Quality Planning Tools	Process not undertaken	**1. Develop Quality Management Plan** While the actual process of quality is not dealt with as a separate component of project management some elements of quality are dealt with as part of procurement This should however be specified as part of quality

	Meetings Outputs: Quality Management Plan Process Improvement Plan Quality Metrics Quality Checklist Project Documents Updates		management process
8.2 Perform Quality Assurance	Inputs: Quality management plan Process Improvement Plan Quality Metrics Quality control measurements Project documents Tools & techniques: Quality management and control tools Quality audits Process analysis Outputs: Change requests Project Management plan and project document updates Organization process assets	Process not undertaken	1. Quality metrics should be detailed as part of quality management 2. Quality audits should be conducted as part of quality management
8.3 Control Quality	Inputs: Project Management plan Quality metrics Quality checklists Tools & Techniques: Seven basic quality tools Statistical sampling Inspection Approved change requests review Outputs: Quality control measurements Validated changes Verified deliverables Work performance information Change requests	Process not undertaken	1. Quality management plan and other project documents should be updated based on updates from the quality control process 2. Tools such as inspection and quality tools such as cause and effect can be used to isolate/identify quality issues

	Project management plan and project document updates Organization process assets		
Project Human Resource Management			
9.1 Plan Human Resource Management	Inputs: Project Management Plan Activity Resource Requirements Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Organization Charts and Position Descriptions Networking Organizational Theory Expert Judgment Meetings Outputs: Human Resource Management Plan	Not undertaken	1. This process is not formally undertaken as part of the USF projects **Develop a human resource management plan**
9.2 Acquire Project Team	Inputs: Human resource management plan Enterprise environmental factors Organization process assets Tools & Techniques: Pre-assignment Negotiation Acquisition Virtual teams Multi-criteria decision analysis Outputs: Project staff assignments Resource calendars Project management plan updates	Inputs: Stakeholders Tools & Techniques: Assignments Outputs: Project team assignments	1. HR Management plan should be used as an input in this process 2. Project management plan should be updated during this process 3. Resource calendars should developed as part of the acquire project team to show the days and times each resource is available

9.3 Develop Project Team	Outputs: Project management plan Project staff assignments Resource calendars Tools & techniques: Interpersonal skills Training Team building Ground rules Collocation Recognition and rewards Personal assessment tools Outputs: Team performance assessment Enterprise environment factors	Process not undertaken	1. Performance assessments should be conducted on the team performance
9.4 Manage Project Team	Inputs: Human resource management plan Project staff assignments Team performance assessment Issue log Work performance reports Organization process assets Tools & techniques: Observation and conversation Project performance appraisal Conflict management Interpersonal skills Outputs: Change requests Project management plan updates and project document updates Organization process assets updates Enterprise environmental	Inputs: Project staff assignments Issue logs Outputs: Change requests Feedback	1. Project documents should be updated based on updates from the Project HR management process 2. HRM plan should be used to manage the project team

	factors updates		
Project Communications Management			
10.1 Plan Communications Management	Inputs: Project Management Plan Stakeholder Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Communication Requirements Analysis Communication Technology Communication Models Communication Methods Meetings Outputs: Communication Management Plan Project Documents Updates	Process not undertaken	**1. Develop Communications management plan** Update project documents to reflect updates
10.2 Manage Communications	Inputs: Communications management plan Work performance report Enterprise environmental factors Organization process assets Tools & techniques: Communication technology Communication methods Communication models Information management system Performance reporting Outputs: Project communications Project management plan updates and project document updates Organization process assets	Inputs: Project Information Project reports Tools & Techniques: Communication method Outputs: Project communications	1. Project documents such as project management plan should be updated based on updates in the manage communications 2. Communication management plan should be used to guide the manage communication

	updates		
10.3 Control Communications	Inputs: Project management plan Project communications Issue logs Work performance data Organization process assets Tools and techniques: Information management system Expert judgment Meetings Outputs: Work performance information Change requests Project management plan updates and project document updates Organization process assets updates	Inputs: Project communication Project Information Tools & techniques: Meeting Information system Outputs: Performance Information Change requests	1. Project management plan and documents should be updated during the control communications process 2. organization process asses such as lessons learnt report should be updated as an outcome of the control communications
Project Risk Management			
11.1 Plan Risk Management	Inputs: Project Management Plan Project Charter Stakeholder Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Analytical Techniques Expert Judgment Meetings Outputs: Risk Management Plan	Process not undertaken	**1. Develop risk management plan**
11.2 Identify Risks	Inputs: Risk Management Plan Cost Management Plan Schedule Management Plan	Process not undertaken	**1. Develop risk register template** 2. Information

	Quality Management Plan Human Resource Management Plan Scope Baseline Activity Cost Estimates Activity Duration Estimates 9. Stakeholder Register Project Documents Procurement Documents Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Documentation Reviews Information Gathering Techniques Checklist Analysis Assumption Analysis Diagramming Techniques SWOT Analysis Expert Judgment Outputs: Risk Register		gathering techniques and other tools/techniques can be used to identify risks 3. Project subsidiary plans (risk, cost, schedule, quality management) should be used in the identify risks.
11.3 Perform Qualitative Risk Analysis	Inputs: Risk Management Plan Scope Baseline Risk Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Risk Probability and Impact Assessment Probability and Impact Matrix Risk Data Quality Assessment Risk Categorization Risk Urgency Assessment Expert Judgment	Process not undertaken	1. Update project documents based on outcome from the perform qualitative risk analysis

	Outputs: Project Documents Updates		
11.4 Perform Quantitative Risk Analysis	Inputs: Risk Management Plan Cost Management Plan Schedule Management Plan Risk Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Data Gathering and Representation Techniques Quantitative Risk Analysis and Modeling Techniques Expert Judgment Outputs: Project Documents Updates	Process not undertaken	1. This can be done where the qualitative risk analysis alone is not sufficient
11.5 Plan Risk Responses	Inputs: Risk Management Plan Cost Management Plan Schedule Management Plan Risk Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Data Gathering and Representation Techniques Quantitative Risk Analysis and Modeling Techniques Expert Judgment Outputs: Project Documents Updates	Process not undertaken	1. This process should be undertaken as part of USF projects and should be updated as risks changes throughout the project cycle
11.5 Plan Risk Responses	Inputs: Risk Management Plan Risk Register	Process not undertaken	1. project management plan and risk register

	Tools & techniques: Strategies for Negative Risks or Threats Strategies for Positive Risks or Opportunities Contingent Response Strategies Expert Judgment Outputs: Project Management Plan Updates Project Documents Updates		should be used to plan risk response 2. Update project documents based on outcome from the perform plan risk response
11.6 Monitor and Control Risks	Inputs: Project Management plan Risk register Work performance reports Work performance data Tools & techniques: Risk assessment Risk audits Variance and trend analysis Technical performance measurements Reserve analysis Meeting Outputs: Work performance Information Change requests Project management plan updates & project document updates Organization process assets updates	Process not undertaken	1. Update project documents based on outcome from the monitor and control risks
Procurement Management			
12.1 Plan Procurements	Inputs: Project Management Plan Requirements Documentation Risk Register	Inputs: Project schedule estimates Project cost	**1.** While this process is done, a procurement management plan is not created

	Activity Resource Requirements Project Schedule Activity Cost Estimates Stakeholder Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Make or Buy Analysis Expert Judgment Market Research Meetings Outputs: Procurement Management Plan Procurement Statement of Work Procurement Documents Source Selection Criteria Make or Buy Decisions Change Requests Project Documents Updates	estimates Organization process assets- Past project records Tools & techniques: Meetings Outcome: Procurement document Change requests	**Develop procurement management plan**
12.2 Conduct Procurements	Inputs: Procurement Management Plan Procurement Documents Source Selection Criteria Seller Proposals Project Documents Make or Buy Decisions Procurement Statement of Work Organizational Process Assets Tools & techniques Bidder Conference Proposal Evaluation Techniques Independent Estimates Expert Judgment Advertising	Inputs: Procurement documents Procurement document Seller Proposal Tools & techniques: Bidder conference Proposal evaluation Advertising Analytical techniques Negotiations Independent estimates	1. Update project documents based on outcome from procurements

	Analytical Techniques Procurement Negotiations Outputs: Selected Sellers Agreement Resource Calendars Change Requests Project Management Plan Updates Project Document Updates	Outputs: Selected seller Agreement Implementation plan	
12.3 Control Procurements	Inputs: Project Management Plan Procurement Documents Agreement Approved Change Requests Work Performance Reports Work Performance Data Tools & techniques: Contract Change Control System Procurement Performance Reviews Inspections and Audits Performance Reporting Payment Systems Claims Administration Records Management System Outputs: Work Performance Information Change Requests Project Management Plan Updates Project Documents Updates Organizational Process Assets Updates	Inputs: Agreements Cost estimates Schedule estimates Work performance reports Tools & techniques: Change control system Performance reviews Inspections Payments Outputs: Work performance information Change requests	1. Update project documents based on outcome from control procurements 2. Organization process assets such as lessons learnt, or procurement database can be updated based on outcomes from control procurements
12.4 Close Procurements	Inputs: Project Management Plan Procurement Documents Tools & Techniques: Procurement Audits	Inputs: Agreements Tools & techniques: Inspections	1. Update project documents based on outcome from close procurements 2. Procurement

	Procurement Negotiations Records Management System Outputs: Closed Procurements Organizational Process Assets Updates	Outputs: Organization process assets-project records Close procurements	audits should be conducted as part of process improvement 3. An online PMIS should be developed for ease for records management 4. Organization process assets should be used in this process
Stakeholder Management			
13.1 Identify Stakeholders	Inputs: Project charter Procurement documents Organization process assets Enterprise environmental factors Tools & techniques: Stakeholder analysis Expert Judgment Meetings Outputs: Stakeholder register	Inputs: Project Charter Tools & techniques: Meetings Outputs: List of stakeholders	**1. Develop stakeholder register**
13.2 Plan Stakeholder Management	Inputs: Project Management Plan Stakeholder Register Enterprise Environmental Factors Organizational Process Assets Tools & techniques: Expert Judgment Meetings Analytical Techniques Outputs: Stakeholder Management Plan Project Documents Updates	Inputs: Stakeholder register Tools & techniques: Meetings Outputs: Stakeholder summary	**1. Develop stakeholder management plan** 2. Project documents should be updated

13.3 Manage Stakeholder Engagement	Inputs: Stakeholder Management Plan Communication Management Plan Change Log Organizational Process Assets Tools & Techniques: Communication Methods Interpersonal Skills Management Skills Outputs: Issue Log Change Requests Project Management Plan Updates Project Documents Updates Organizational Process Assets Updates	Inputs: Scope statement Tools & techniques: Management & communication skills Outputs: Issue log Scope revision	1. Update project documents based on outcome from stakeholder engagement
13.4 Control Stakeholder Engagement	Inputs: Project Management Plan Issue Log Work Performance Data Project Documents Tools & Techniques: Information Management Systems Expert Judgment Meetings Outputs: Work Performance Information Change Requests Project Management Plan Updates Project Documents Updates Organizational Process Assets Updates	Inputs: Project documents Work performance data Tools & techniques: Meetings Outputs: Change requests Project document updates Work performance reports	1. Update project documents based on outcome from control stakeholder

Conclusion:

According to the comparative analysis using the processes listed in the PMBOK and the processes used in the USF project management, there were gaps identified in each of the knowledge areas. The major gaps noted were the lack of a detailed project management plans and the non-existence of subsidiary plans to guide the project implementation. Key areas such as risk management, quality management, plan communications management, plan schedule management, plan cost management, plan scope management were not undertaken as part of the USF process. Therefore, these areas should be included as a formal part of the planning process.

4.1.3 Deliverable 3:

Recommendation for improvement - a proposal outlining a list of areas in project management which can be an improved method for making the improvements outlined

Based on the assessment conducted it is determined that while there is some semblance of a process in place, this process needs to be refined in order to weed out the problems identified within the projects.

4.1.3.1 Initiation

A project business case should be considered as part of the selection of the project. A business case will provide guidance on what is occurring in the market. Many projects are selected on limited information supplied by the applicant as outlined in Regulations and Guidelines. However, this information does not provide the depth necessary to make an informed decision. This has caused projects to be stalled midway during implementation because key information such as proper institutional framework to support the project and product was not addressed. This information should have been outlined in the business case and further assessed in the risk management plan. In its absence, these key information have been overlooked. This information will serve to address one of the issues plaguing the failure of some USF projects as cited by the USF unit which is possible duplication in projects occurring within the market.

Recommendation: A Business Case should be included as part of the project initiation process to guide the selection of USF projects

4.1.3.1.1 Stakeholder Engagement

Based on the comparison, it is clear that one of the strong points of the PM process is stakeholder engagement which is executed from the beginning of the process. However, there are still some elements of stakeholder management that can be improved. This includes a proper and detailed stakeholder analysis to identify which stakeholders should be managed closely, kept satisfied, monitored or informed. In addition, a stakeholder management plan should be developed in accordance with the PMI 2013 as specified in the PMBOK.

Recommendation: Stakeholder engagement should be expanded to include a detailed stakeholder analysis, stakeholder register and a stakeholder management plan

4.1.3.2 Planning

In addition, the planning process is conducted in a haphazard manner. While a project management plan is prepared, the plan is not used to guide the process, but only exists in theory. As a result, not enough effort is placed into the plan and its importance underestimated. Further, the plan does not consider all knowledge areas. Thus the planning process needs more details and should always involve all project stakeholders and not limited to the USF Administrator. A thorough planning process will help improve the USF implementation rate and serve to minimize the rate of failure. The problem of not accurately stating their requirements as cited by the USF unit can be addressed by proper planning. The planning should consider all knowledge areas and not be limited to stakeholder, cost, scope, schedule, and procurement.

Recommendation: A Project Management Plan (PMP) should be developed and should include all knowledge areas. This PMP should be used throughout the project cycle

4.1.3.2.1 Risk Management

Another major cause of the problems within the project is the lack of a proper risk assessment. Risks are only conducted at a high level during the project initiation phase, in the project charter. A risk management plan is not prepared and risk triggers etc not detailed and monitored. In addition, a risk strategy is not detailed and is not documented and implemented. This is critical to the success of the project and to prevent problem management. Thus, the risk management plan should form an important part of the process.

Recommendation: A risk management plan should be developed as part of the planning process and should include the project risk strategy

4.1.3.2.2 Quality Management

The USF does not address quality management as part of the project. Therefore, a formal quality management plan should be developed to guide the quality management of the project. According to Rose (as cited in Derming 2000), quality must be planned into the project; it cannot be inspected into it. Therefore, quality management must form part of the planning process.

Recommendation: A quality management plan should be developed as part of the planning process

4.1.3.2.3 Communications

While communications is undertaken by the department as part of stakeholder management, communications management should be more detailed. At present, communications management is limited to manage and control communications. A proper communications management plan should be implemented to ensure that all aspects of communication are identified. This will prevent the omission of key stakeholders who should form part of the communications process. It will also serve to update the roles and responsibilities which should be managed throughout the process. Updating the communication plan and roles and responsibilities will ensure that information flow is circulated to the relevant stakeholders who can affect the project outcome.

Recommendation: A communications management plan should be developed as part of the planning process and should be used throughout the project cycle

4.1.3.3 Execution

Projects are executed in accordance with an Agreement. However, no reference is made to the project management plan during the execution. A project management plan should be developed to manage each aspect of project management knowledge area and this plan should be referred to during the project execution.

Recommendation: The project management plan should be applied to the project execution and should be updated to reflect changes

4.1.3.4 Monitoring and Controlling

Like the project execution, this process should refer to the project management plan which should guide the monitoring of the progress in addition to the Contract agreement. Plans should also be updated based on changes within the project.

Recommendation: The project management plan should be applied to the project monitoring and controlling and should be used together with the Contract, this plan should be updated to reflect changes

4.1.3.5 Close

There is no process in place to formally close USF projects. Thus a process map will be developed to guide project close out.

Recommendation: A formal process to close USF projects should be developed

4.2 Objective 2: To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency

4.2.1 Deliverable 1:

Document with a description of the relevant project management methodologies - Defines and set a baseline for the comprehension of already established PMMs.

The following are the main project management methodologies used to manage projects. Each method presents different opportunities and ideally works best based on the nature of the project under development.

4.2.1.1 Waterfall

The waterfall approach is a traditional approach to project management where project planning was undertaken at the onset of the project and the project implemented in a sequential order, where the output of one phase is an input into the next phase. This approach typically lends itself to projects where the project requirements are known at the beginning (Aston, 2017).

4.2.1.2 Scrum

According to the Aston (2017), the scrum methodology is primarily used in software development projects and lends itself to an environment where persons collocate and the resources such as time and budget are not rigid.

4.2.1.3 Kaban

The kaban approach to project management focuses on increasing efficiency by adopting a lean approach to project management. This methodology focuses on environment where requirements change frequently and where work flow operates on continuous faster release and uses visual display of task to identify and determine

priority, making it easier to reprioritize based on changing project requirements. This is ideally suited for environment such as production and support (Aston, 2017).

4.2.1.4 DSDM – Dynamic System Development Methodology

The DSDM approach to project management focuses activities across the whole project cycle using rapid application development. This approach uses iterative approach similar to scrum. However, unlike the scrum it includes strong governance. Resources such as cost, time are fixed at the onset of the project; this approach has been used primarily for software and non-It projects (Solutions IQ, 2018).

Chart 12 Project Management Methodologies (Collated by author)

Categories	Project Management Methodologies			
	Waterfall **A sequential approach to PM with task done in logical steps approach**	**Scrum** **Is methodology where processes are done in short iterative approach steps**	**Kanban** **A lean process which works to create a balance between work flow and the resources**	**DSDM – dynamic system development** **This approach is similar to agile, however, it is based on a rapid application development**
Life-cycle	Sequential hand-down phases.	Lifecycle iterations until product meets requirements.	Associated to goal completion.	Pre-project, feasibility, foundations, evolutionary development, deployment and post project.
Iterations	No iterations,	2-4 week	Associated	Incremental

	sequential work.	sprints. Incremental iterations.	to goal completion.	iterations.
Limit Work in Progress	No, WIP determined by schedule and WBS.	Indirectly limited by sprints.	Limited by WIP limits.	Indirectly limited by iterations.
Communication	Push	Interactive	Pull	Interactive
Time Estimation	Critical Path Method	Sprint Planning	Optional	Timeboxes
Meetings	None required. Recommended, not specified goals.	Established: Daily Scrum, Sprint Planning, Sprint retrospective, Backlog Grooming.	None established.	Workshops recommended as needed.
Team size	Any size	Small	Any size	Any size
Team members	Departmental	Cross-functional	Cross-functional or specialized.	Cross-functional
Examples	Projects where requirements are known at the onset, Construction	Software development	Production and support	Software and non-IT projects

USF projects are primarily based on a waterfall approach. The planning is undertaken at the onset with the stakeholders. The process allows sequential work with minor room for iterations which can impact the project budget which is fixed from the onset. Please

see below the current USF methodology based on the categories according to the PMM.

Chart 13 USF Project Management Methodology (Collated by author)

Categories	Project Management Methodologies			
	Waterfall	**Scrum**	**Kanban**	**DSDM**
Life-cycle	Sequential hand-down phases.	Lifecycle iterations until product meets requirements.	Associated to goal completion.	Pre-project, feasibility, foundations, evolutionary development, deployment and post project.
Iterations	No iterations, sequential work.	2-4 week sprints. Incremental iterations.	Associated to goal completion.	Incremental iterations.
Limit Work in Progress	No, WIP determined by schedule and WBS.	Indirectly limited by sprints.	Limited by WIP limits.	Indirectly limited by iterations.
Communication	Push	Interactive	Pull	Interactive
Time Estimation	Critical Path Method	Sprint Planning	Optional	Timeboxes
Meetings	None required. Recommended, not specified goals.	Established: Daily Scrum, Sprint Planning, Sprint retrospective, Backlog Grooming.	None established.	Workshops recommended as needed.

Team size	Any size	Small	Any size	Any size
Team members	Departmental	Cross-functional	Cross-functional or specialized.	Cross-functional

Chart 14 Proposed USF Project Management Methodology (Collated by author)

Categories	**Project Management Methodologies**			
	Waterfall	**Scrum**	**Kanban**	**DSDM**
Life-cycle	Sequential hand-down phases.	Lifecycle iterations until product meets requirements.	Associated to goal completion.	Pre-project, feasibility, foundations, evolutionary development, deployment and post project.
Iterations	No iterations, sequential work.	2-4 week sprints. Incremental iterations.	Associated to goal completion.	Incremental iterations.
Limit Work in Progress	No, WIP determined by schedule and WBS.	Indirectly limited by sprints.	Limited by WIP limits.	Indirectly limited by iterations.
Communication	Push	Interactive	Pull	Interactive
Time Estimation	Critical Path Method	Sprint Planning	Optional	Timeboxes
Meetings	None required. Recommended, not specified	Established: Daily Scrum, Sprint Planning,	None established.	Workshops recommended as needed.

	goals.	Sprint retrospective, Backlog Grooming.		
Team size	Any size	Small	Any size	Any size
Team members	Departmental	Cross-functional	Cross-functional or specialized.	Cross-functional

Conclusion:

USF projects should incorporate elements of the DSDM approach, in addition to elements of the current waterfall approach. This should be applied to the life-cycle, iterations, team size, team members. This recommendation is driven by the following:

- According to the interview/survey conducted, it was recognized that some challenges of the USF projects are that projects are selected on the basis on limited information, since proposals submitted by applicants are not detailed. Incorporating a project feasibility as part of the pre-project phase and a business study will ensure that the feasibility of projects are thoroughly reviewed as well as details surrounding the project application, through the business case. Another challenge recognized is that projects are setback because Clients do not properly articulate their requirements. Incorporating incremental iterations throughout the project, as oppose to restricting detailed planning to the onset of the project, will carter for changes in the environment which can be reflected by changes in the project
- The projects should progress based on interaction with the Client and the NTRC and should be driven by the business needs, use case and developments within the Client organization
- Team members should have the authority to make decision on some issues, this is key as this process will minimize time for development
- Each stage of development should be confirmed with Client as increments on project development
- There should be continuous development throughout the project cycle

- Team should be cross functional based on the nature of the project and should not be limited
- USF projects are based on fixed budget, therefore the DSDM methodology allows the USF department to keep track of costs and schedule which are fixed at the onset to prevent changing budget based on iterations

4.2.2 Deliverable 2:

Document proposing a framework project management methodology for

USF projects – outlines a framework which should apply to the PMM

On the basis of the conclusion made in deliverable 4.2.1, a DSDM approach to project management methodology should be used to manage USF projects. Please see below the table with the steps; these steps are based on the recommended PMM.

Chart 15 Project Initiation Methodology (Collated by author)

Steps	Procedures	Responsibilities
Outline tactical objectives of the USF for the year	The tactical objectives will guide the selection of projects, these objectives must stem from the strategic objective of the USF	USF Administrator
Prepare and release Call for Projects	Use project application template Outline criteria for submission and evaluation of project calls, as well as the strategic goal for the year. Include timeline and place for submission	USF Administrator
Review project feasibility and select projects for the operating year	Business case should be based on business case template Review and evaluation of projects will be based on criteria outlined in the call for project The Committee must document the outcome of their review of the business case and make recommendations for project selection, this must include a justification for their recommendation	USF Committee
Submit to Board for approval	Prepare committee recommendation, recommendations must include decisions, scope, objective, estimated cost of project, and must comply with strategic objective, use SOW template Once approved, the SOW must be signed by the applicant and will be used to prepare the project charter	USF Administrator
Prepare project charter for	Use project charter template and	USF

approval	submit to the Coordinator for approval. Charter must be signed by the Coordinator.	Administrator
Assign project number to approved charter and log to PMIS	Once approved, assign project number and project manager and file the Project Charter in the PMIS	USF Administrator
Identify stakeholders and meet with stakeholders	Prepare stakeholder register using template Hold kick off meeting - Meet with stakeholders to brief them on the project process	Project Manager

Chart 16 Project Planning Methodology (Collated by author)

Steps	**Procedures**	**Responsibility**
Develop project management plan	Use project management template Project management plan must be developed in consultation with the stakeholders and must include all knowledge areas Meetings should be held as needed to ensure a proper plan development The project plan must also be used to manage the project and updated as changes occur in the project	Project Manager
Meet with stakeholders outlined in the Project Charter	Prepare meeting minutes and circulate for approval keep contacts of stakeholders on file, especially the Client who the project manager will work with from this point forward	Project Manager

Plan project scope management	Use project scope management template Liaise with stakeholders	Project Manager
Develop project requirements	Use requirements documentation template All stakeholders must be involved in this process This can be acquired through meetings, interviews with experts, facilitation workshops based on the nature of the project	Project Manager
Define project scope	Specify the work that is required for the project to be delivered, what does the project entail. This process should include only the work required to execute the project, refer to the SOW and scope management plan to guide this process	Project Manager
Develop project WBS	Breakdown project work according to project phase or deliverables and outline work packages required to be completed to complete the phase/deliverables. Each work package must be numbered	Project Manager
Prepare project schedule management	Use project schedule management plan template Refer to past records and schedule management plan to assist with the development of project Liaise with stakeholders	Project Manager
Define project activities	Outline the activities required to complete the project and describe each	Project Manager

	activity Use activity attribute templates and activity list template Liaise with stakeholders	
Develop project activity sequence	Prepare chronological flow of activities (pay attention to overlapping activities or activities occurring in tandem), this will have to be addressed in the risk management	Project Manager
Prepare estimates of activity resource	Specify all resources needed to complete the activities Expert judgment such as technical team should be solicited to develop the estimate. In addition, the client should also be included in this process	Project Manager
Prepare activity duration	Specify timeline required to complete each activity Expert judgment such as technical team should be solicited to develop the estimate. In addition, the client should also be included in this process	Project Manager and Technical
Develop project schedule	Using the duration, develop the project schedule	Project Manager
Prepare project cost management plan	Use cost management plan template	Project Manager
Estimate project cost	Use historical information to determine project cost estimates Expert judgment such as technical team should be solicited to develop the estimate. In addition, the client should also be included in this process Refer to past records (organization process assets and cost management	Project Manager and Technical

	plan) to estimate project cost Liaise with stakeholders	
Prepare project budget	Using cost estimates prepare project budget	Project Manager and Technical
Prepare project quality management plan	Use quality management plan template	Project Manager
Prepare project human resource management plan	Use human resource management plan template Liaise with stakeholders	Project Manager
Prepare project communications plan	Use communication management plan template Liaise with stakeholders	Project Manager
Prepare project risk management plan	Use risk management plan template Liaise with stakeholders	Project Manager
Identify risks	Specify risks which may affect the project (use cause, risks format) Liaise with stakeholders	Project Manager
Perform qualitative risk analysis on project risks identified	Outline the probability, specify the risk parameters	Project Manager
Develop risk response strategy	Outline the response strategy based on the qualitative analysis Liaise with stakeholders	Project Manager
Prepare project procurement management	Use procurement management plan template Liaise with stakeholders	Project Manager
Prepare stakeholders management plan	Use stakeholders management plan template Liaise with stakeholders	Project Manager

Complete project management plan	Circulate to project team and clients for comments and approval	Project Manager

Chart 17 Project Execution Methodology (Collated by author)

Steps	**Procedures**	**Responsibility**
Meet with clients and Contractor	Ensure all parties are aware of what is required and the process involved. Document the Minutes of the meeting	Project Manager
Direct and manage work executed by the Contractor	Conduct routine site assessment – inspection Collect performance reports Prepare and submit routine reports to the Board on project developments	Project Manager
Perform quality assurance on project	This can be performed by quality audits and use of quality metrics established for the project	Project Manager / Technical
Select project team	The Client to identify project team to work with the Contractor for project implementation	Project Manager /Client
Develop project team	Hold Kick of meeting to introduce team members. hold team building exercise, the frequency to be determined by the project manager based on the nature and duration of the project	Project Manager & Contractor
Manage project team	Manage the project team execution, address issues (must be documented and assigned an owner, use issue log template), track performance against plan (note variances and implement strategy), provide feedback	Project Manager & Contractor

Manage communications	Manage stakeholder's expectations. Communications should be updated throughout the process as some stakeholders/interest may change during the course of the project	Project Manager
Conduct procurements	Contractor to procure equipment according to specifications in the Agreement USF to verify proof of procurement inspection should be conducted	Contractor
Manage stakeholders	Ensure stakeholders expectations are met, update stakeholder register as some stakeholder will change during the course of the project Use together with the communications management process	Project Manager

Chart 18 Project Monitoring & Controlling Methodology (Collated by author)

Steps	**Procedures**	**Responsibility**
Conduct monitoring & controlling on project work	Collect project performance data in accordance with Agreement Prepare reports on the project progress. Any changes should be addressed according to the change control procedure	Project team
Perform Integrated change control (Receive and review changes to project)	Change requests must be made formally in writing using the change control form All change control forms, upon receipt will be assigned a number for tracking purposes Log change requests in the change	Project Manager & Change control team

	control log All change request must be evaluated and risks considered by the PM and technical team Change must be approved and sign off on before notification to the Contractor for implementation Update change control log and file change control form Update project documents to reflect change	
Monitor and Control project scope	Monitor project scope against plan	Project Manager
Validate project scope in accordance with Agreement and project plan	Ensure scope is based on Agreement Prepare site acceptance test (SAT) report validating the scope is delivered in accordance with the agreement, SAT must be filled out and signed by the project manager and site manager	Project Manager
Monitor and Control project schedule	Monitor project schedule against plan, note any variances, use project management plan and schedule variance	Project Manager
Monitor and Control project costs	Monitor project cost against plan, use project management plan Earned value analysis can be used to monitor costs	Project Manager
Monitor and control project quality	Monitor project quality against metrics Variances should be recorded and reported to the Contractor to be rectified, any such variances should be noted in the issue log and assigned an	Project Manager

	owner	
Monitor and control project communications	Monitor communications methods, technologies to ensure they are still relevant control communications with stakeholders, refer to the communications management plan	Project Manager
Monitor and control project risks	Monitor risk triggers in order to implement response strategy	Project Manager
Monitor and control project procurements	Monitor Contractors performance against Agreement	Project Manager
Monitor and control stakeholders expectations	Monitor stakeholders as this will change during the stage of the project This should be done together with communications management	Project Manager

Chart 19 Project Close Methodology (Collated by author)

Steps	**Procedures**	**Responsibility**
Close project phases and overall project	Ensure all activities etc under the project or phase is completed Settle all payments or claims made against the project	Project Manager
Close project Contract obligations	Ensure all contract requirements were met, note non conformances to be rectified by the Contractor Send written notification to Contractor, including accounts update	Project Manager
Complete project reviews	Prepare lessons learnt Make recommendations for improvements	Project Manager

	File in PMIS	
Handover deliverable	Handover to Client SLA will be effect	Project Manager

Because USF focuses on projects geared at the development of the telecommunications sector, communities and individuals such as persons with disabilities, it is important to assess the benefits of the projects in meeting its objectives; hence, this table will outline the procedures to undertake this.

Chart 20 Benefits Realization (Collated by author)

Steps	**Procedures**	**Responsibility**
Meet with stakeholders to review the project	To be conducted within 3 months after the end of the SLA Prepare minutes of the meeting Document any areas for improvement based on the outcome of the meeting and include in lessons learnt This should form part of the project process assets	Project Manager & Client
Conduct post project implementation review	Conduct impact assessment Should be conducted within 6 months after the end of the SLA Impact assessment should form part of the process assets	Project team

4.3 Objective 3: To develop process maps and templates to streamline the universal service fund program in order to ensure effective selection of projects for prudent spending of public funds

4.3.1 Deliverable 1:

Document with a flow diagram describing proposed project management methodology - General reference guide of the proposed PMM.

The USF department does not have a documented process chart in place. However, based on interview/survey, the following is process map complied to represent the current approach by the organization based on the waterfall approach.

Chart 21 Project Initiation Current approach (Collated by author)

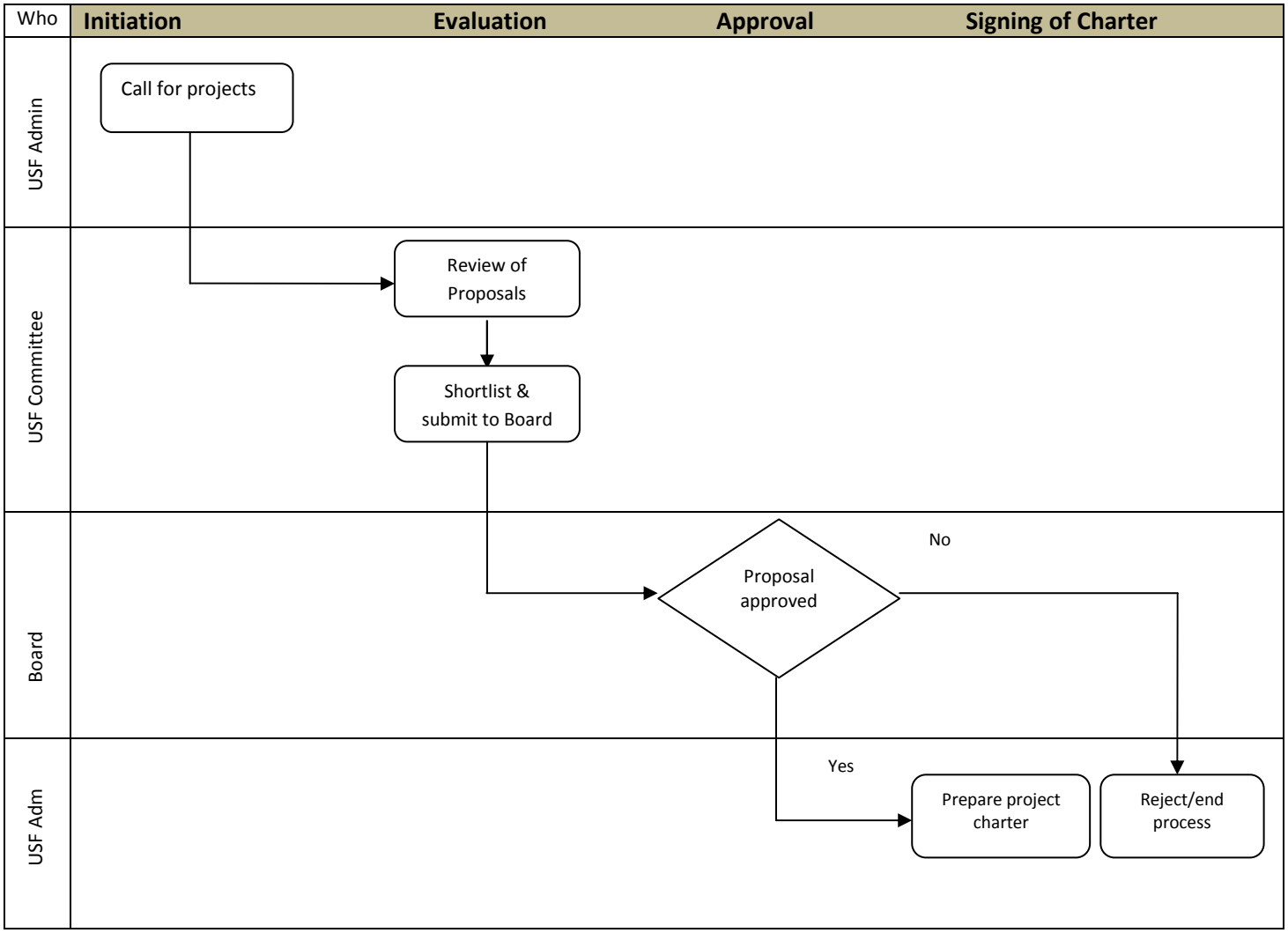


Chart 22 Project planning current approach (Collated by author)

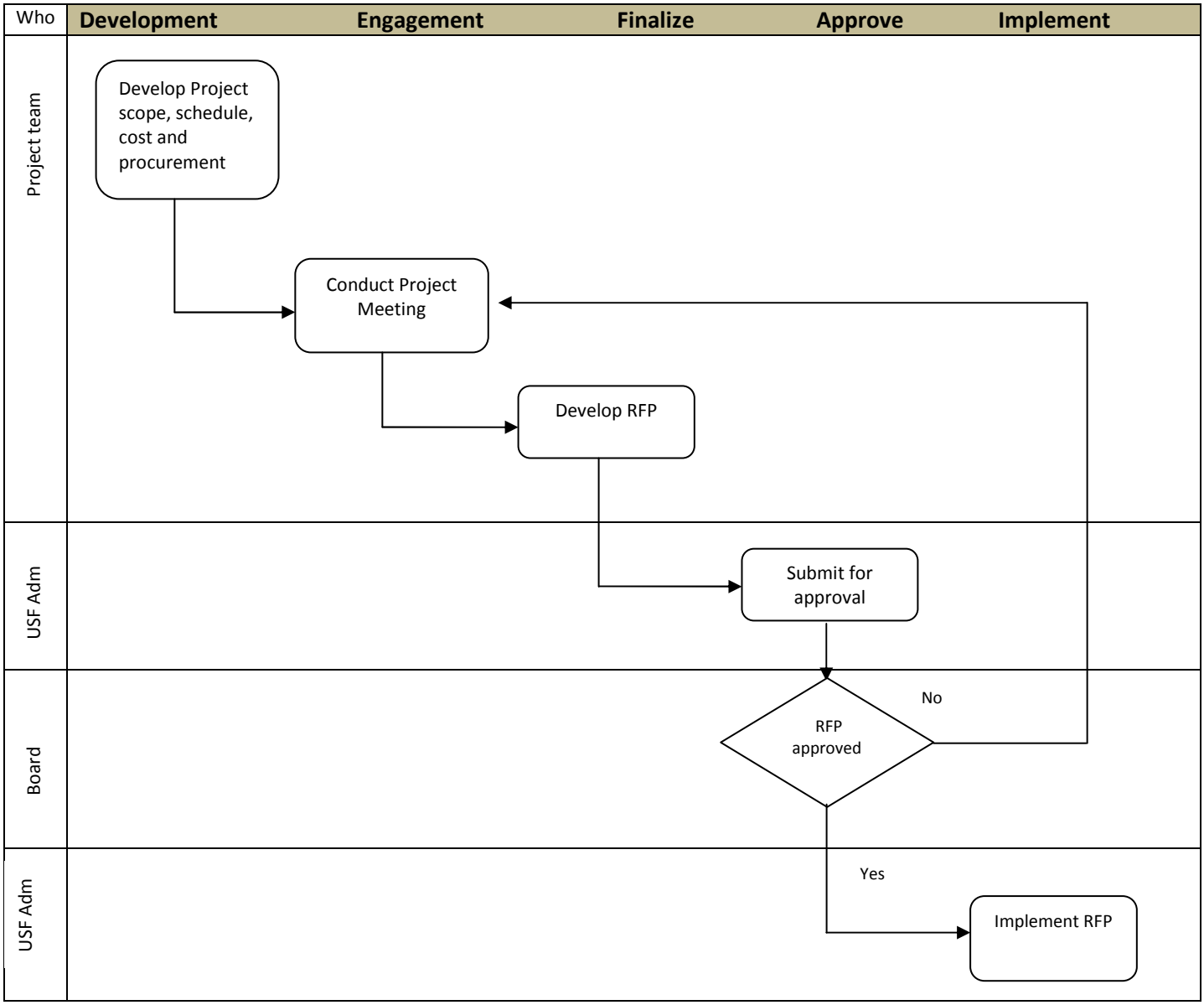
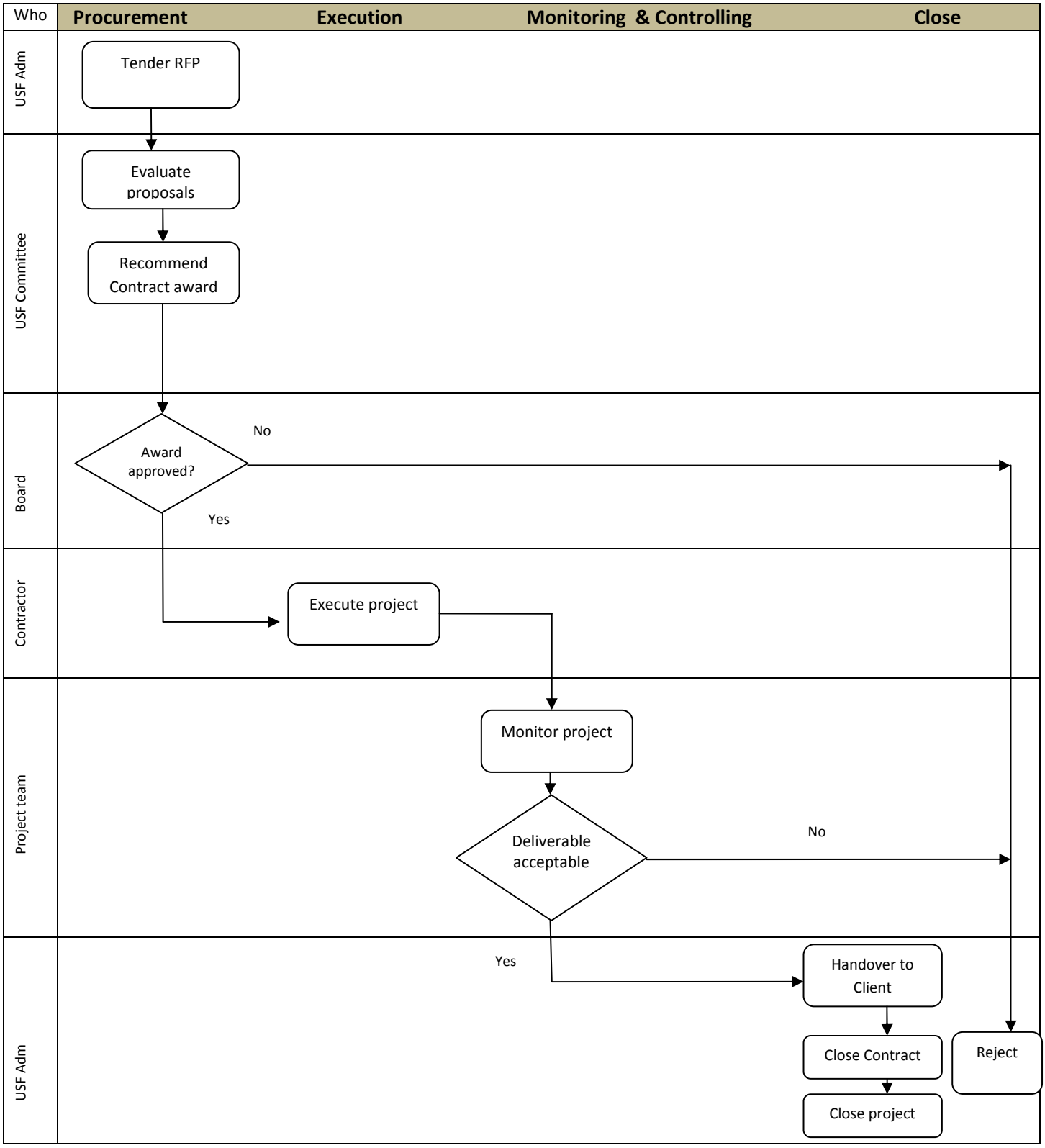


Chart 23 Project Execution current approach (Collated by author)



The process of identifying and developing projects within the USF is clearly understood. However, there isn't a clearly documented process map. Thus, a process map was developed to guide the selection of projects and to ensure standardization of the process. Please see below the process maps for project initiation, project planning, project execution, and project closing.

Chart 24 Project Initiation proposed approach (Collated by author)

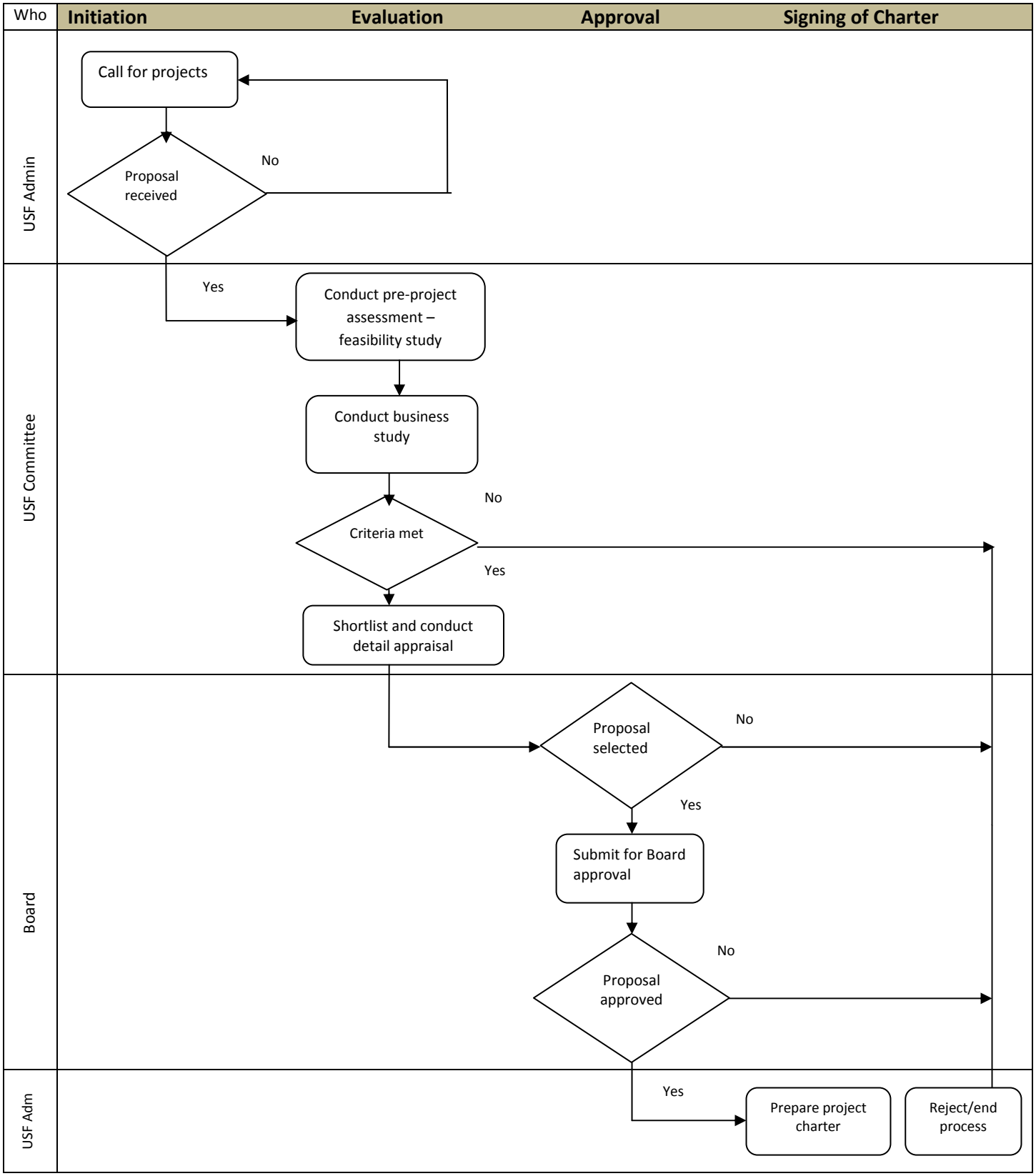


Chart 25 Project Planning proposed approach (Collated by author)

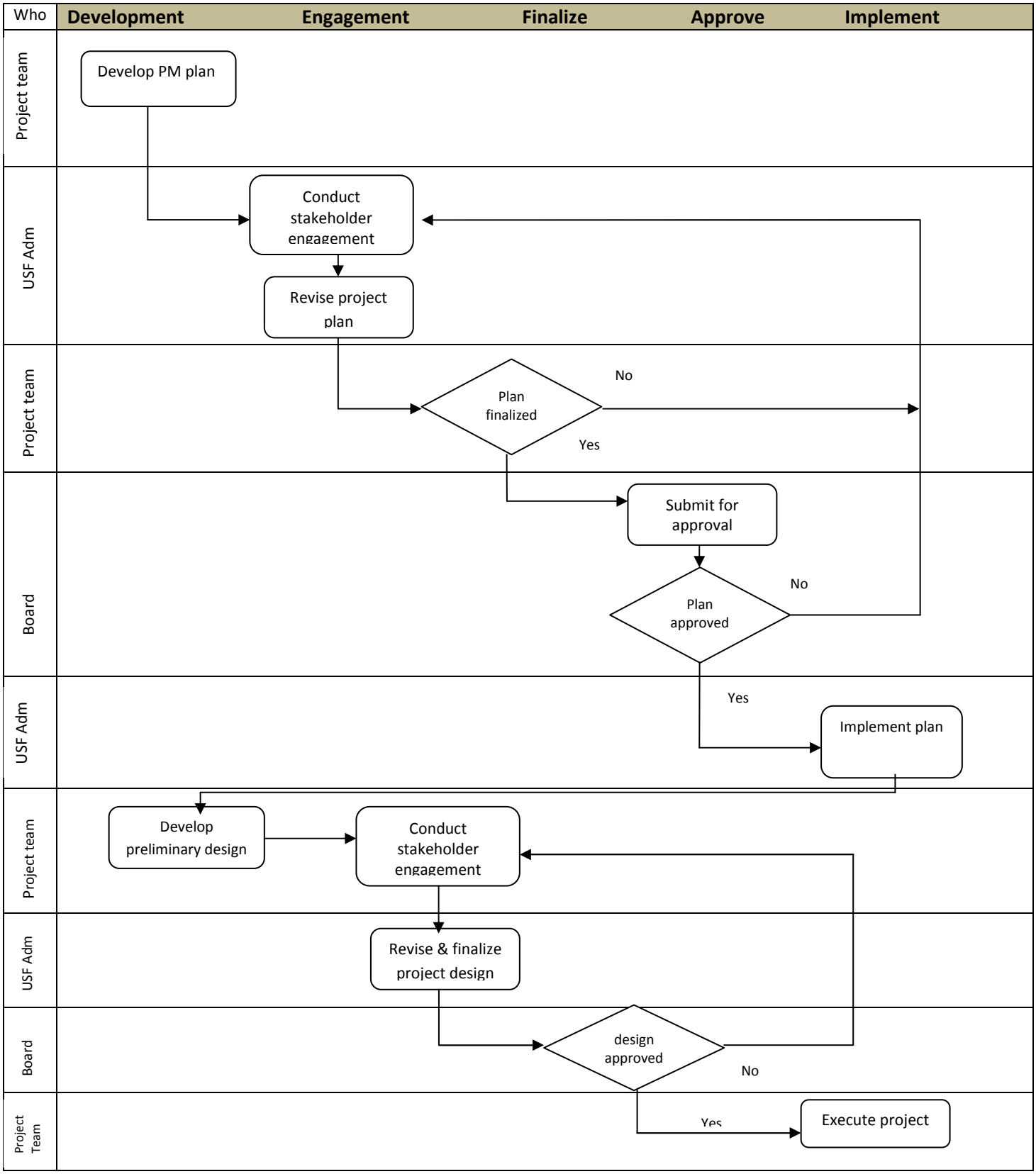


Chart 26 Project Execution proposed approach (Collated by author)

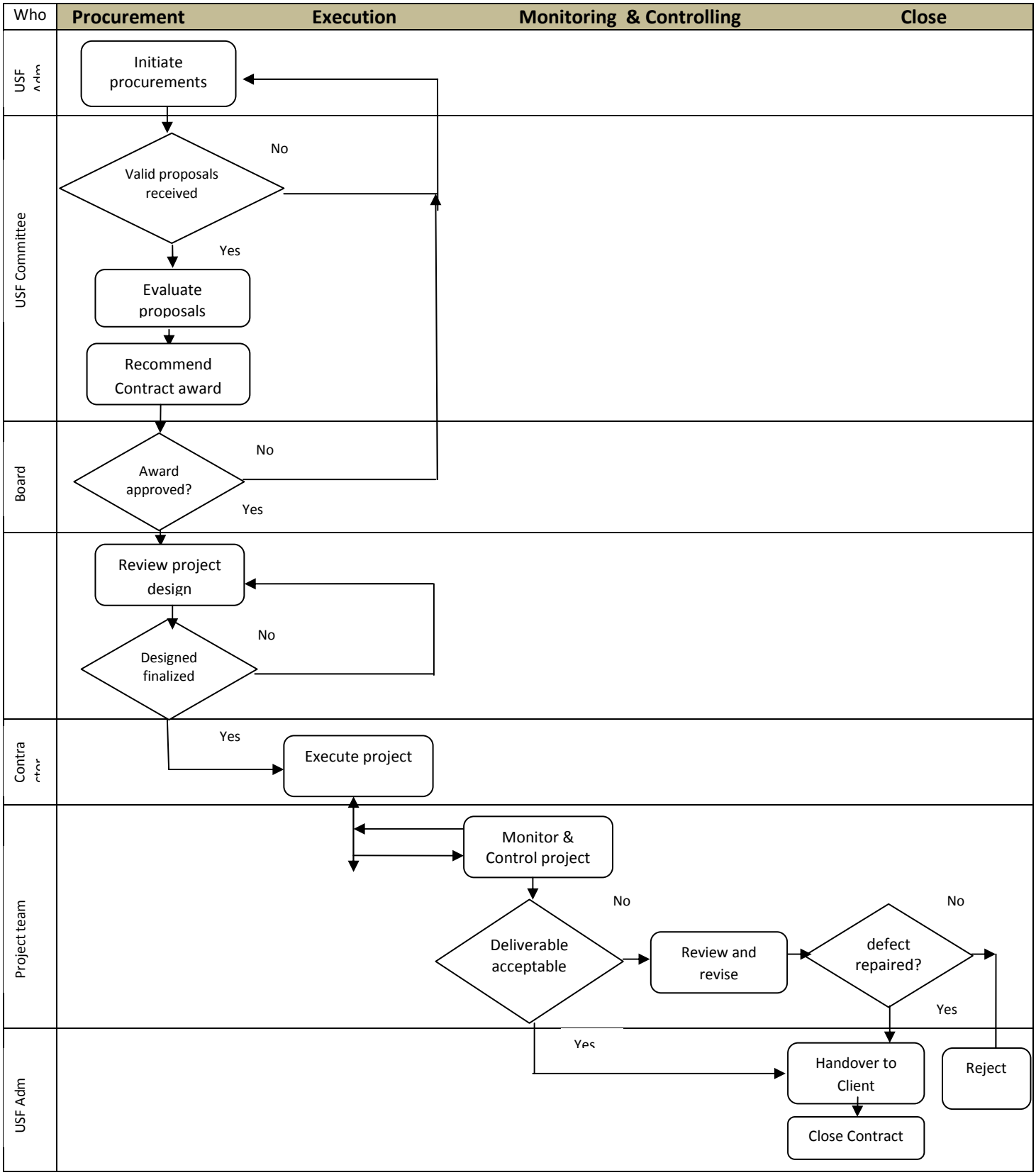
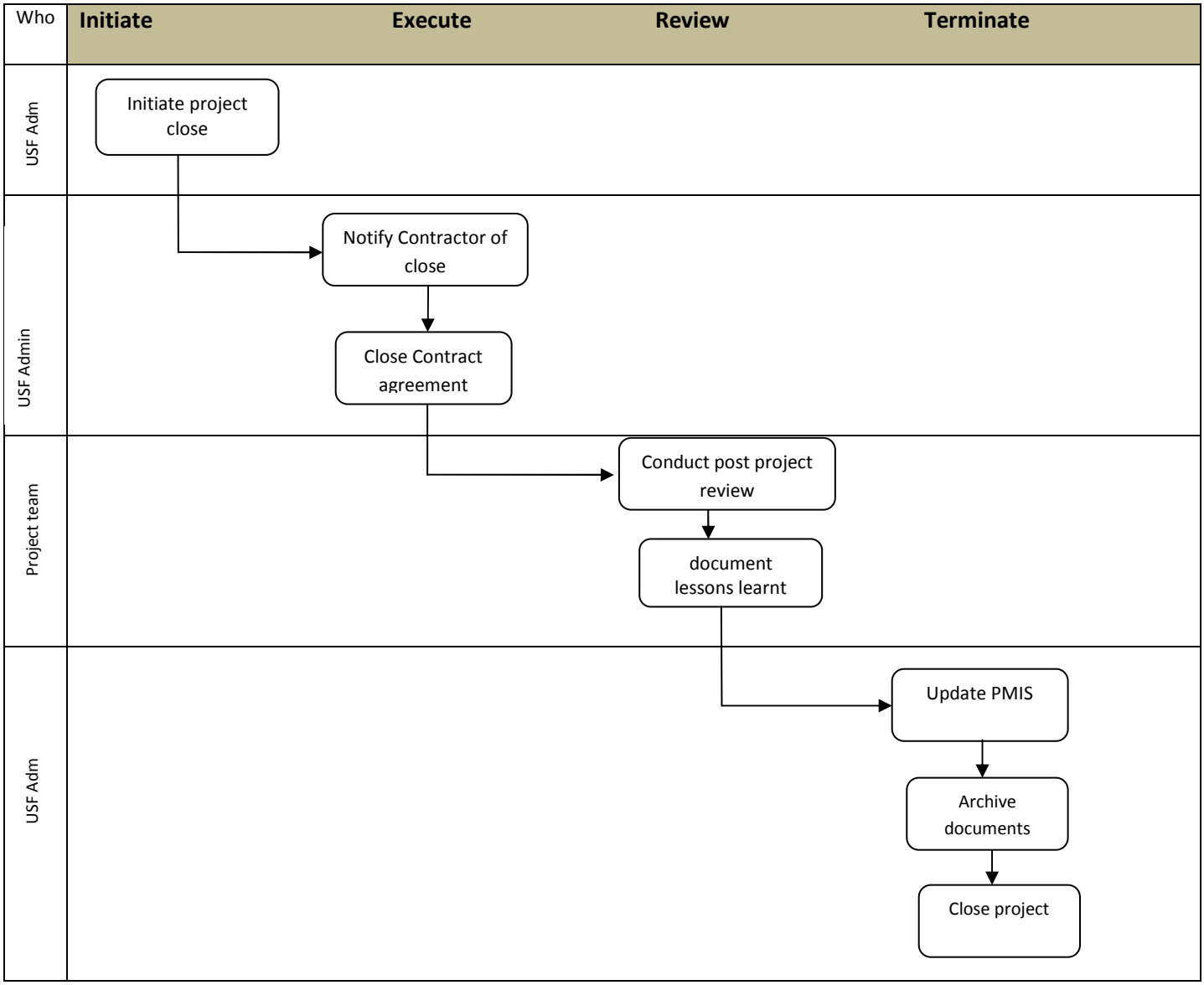


Chart 27 Project Closing proposed approach (Collated by author)



4.3.2 Deliverable 2:

Templates for USF project management and implementation – sample templates which can be applied to USF as part of the PMM

Chart 28 Project templates recommendation (collated by author)

Knowledge areas	Templates	Location
Integration	Template 1: Statement of Works Template 2: Project Charter Template 3: Lessons learnt Template 4: Project management plan Template 5: Business case	Appendix 4
Scope	Template 6: Scope Management Plan	Appendix 4
Schedule	Template 7: Activity attributes template Template 8: Activity list template Template 9: Schedule management plan	Appendix 4
Cost	Template 10: Cost management plan	Appendix 4
Human resource	Template 11: Human resource management plan	Appendix 4
Communication	Template 12: Communications management plan	Appendix 4
Quality	Template 13: Quality management plan	Appendix 4
Risk	Template 14: Risk register template Template 15: Risk management plan	Appendix 4
Procurement	Template 16: Procurement management plan	Appendix 4
Stakeholders	Template 17: Stakeholder register	Appendix 4

	template Template 18: Requirements document template Template 19: Stakeholder management plan	

4.4 Objective 4: To apply the methodology to a typical project case to ensure understanding of the proposed process methodology

4.4.1 Deliverable 1:

Sample project management plan using a typical project – a project management plan outlining all knowledge areas applied to a typical USF project

Project Charter

Applicable Processes/Procedures:

The project charter shall be created upon recommendation from the USF Committee and approval from the Board of Commissioners for projects to be funded by the USF

Document Tracking:

Version No.	Revisions	Date	Author
Version 1.	Document development	April 12, 2018	Christa Burke-Medford

1. General Information:

Project Title:	ICT equipment and wireless internet access for the Community College		
Partnering Organization:	Community College	**Partner Representative:**	Ms. Jane Doe
Prepared by:	Christa Burke-Medford	**Title:**	Administrator

Project Manager: Mr. George

2. Executive Summary

Project description

This project will provide access to broadband internet services and provide computer lab facility. This facility will be equipped with electronics and engineering equipment needed to enhance the college's curriculum in the area of telecommunications and ICTs. The objective of the project is to provide the necessary services and equipment which will facilitate practical training needed by the students to fulfil the needs of the industry and to spur entrepreneurship. Some of the equipment to be provided under the project can transform any existing classroom into a computer lab thereby giving them the flexibility to deliver other ICT courses as part of their curriculum.

3. Project Purpose

Rationale for executing the project

3.1. Business Need / Problem

The facility and the students trained at the facility have to meet the standards and requirements of the job market. At present, the IT students do not have the equipment required to receive the practical training necessary to meet the requirements of the programme. Thus with the lack of equipment and a proper functioning lab, the College is unable to adequately meet the needs of the students or to offer additional programs which is needed for the College to be abreast with the needs of the job market and demand of the students. In addition, this limits the College ability to expand the technical department to secure the additional funds needed by the campus.

3.2. Business Objectives

Strategic Plan Element	Project Business Objectives
Expansion of telecommunication services and ICTs to public institutions	To increase access to ICTs among the students
Economic, Social and Educational development	Increase training and education development of the students

4. Project Overview

4.1. Scope

Provide Ethernet cabling and electrical wiring
Procure and install ICT equipment and wireless internet access points
Test and Commission the equipment and cabling
Provide maintenance and support to the equipment

4.2. Assumptions

The institution will fund the facility upgrade of the labs which is necessary for the provision of equipment
The institution will cover the cost of the broadband internet services necessary for access to hotspots
The institution will cover all insurance cost of the equipment assigned to the facility

4.3. Constraints

The project is limited to the provision of ICT equipment, facility upgrade has to be financed by the recipient

4.4 Flexibility Matrix

	Rigid	Partially flexible	Fully flexible
Scope	x		
Cost		x	
Schedule		x	

4.5 Success Criteria

Equipment meets 100% of test standard test report
All equipment and electronic devices are supplied to the facility on time
The equipment meet the minimum technical specifications set by the Agreement
All students across the campus can access the wireless internet access points
The College increases its course offering within 1 year of the project

5. Project Risks

Risks	Category	Probability
Interested bidders to respond to the Invitation to Bid (ITB) Resources to execute the facility upgrade in time The schedule may be delayed due to class schedule	Execution Execution Execution	High Medium Low

6. Project Deliverables

ICT equipment for the computer labs Support services

7. Project Management Milestones

Milestone / Deliverable	Estimated Date	Responsible Individual
Project requirements developed	1.5 months	Client
Project implementation	3 months	Contractor
Project support (Monitoring & Evaluation)	3 years	Contractor & NTRC

8. Budget

Purpose	*Amount*	*Source*
Equipment and services	$820,358.54	USF Project funds
Project Administration	$15,498.80	USF Administration funds

9. Personnel & Other Resources

Resources	*Description*
Project Team	College, NTRC Technical staff & USF staff
Support	USF Committee
Facilities	Meeting room
Equipment	Computer, laptop
Software Tools	PM software

10. Project Stakeholders:

Stakeholder	Requirement/expectation	Power/Interest	Contact details
NTRC	Facility that meets the needs of the users and is sustainable	High/High	Refer to project contacts
College management	Functional ICT lab that meets the needs of staff and students, ability to recruit additional students and offer more programs	High/High	Refer to project contacts
Technical department teachers	Update equipment that can provide the requisite training for the students	Medium/High	Refer to project contacts
Electronics and engineering students	Up to date equipment that can provide training applicable to the industry needs/job market	Low/High	Refer to project contacts
Telecom providers	Facility that is upgraded to receive the equipment. A facility that can meet the needs of the College	Medium/Medium	Refer to project contacts
Government of Grenada	Facility that can expand training and provide additional employment opportunities	High/High	Refer to project contacts

11. Project Organization

11.1. Roles & Responsibilities

Stakeholder Title	Name	Roles & Responsibilities
Project team	NTRC and College	Plan project
NTRC	Technical team and USF Adm	Administer process and funds
Project Committee	USF Committee	Evaluate proposals

12. Approval Signatures

This project has been officially approved with the following signatory signing bringing the project into existence.

Approved by:			
Printed Name	**Position/Title**	**Signature**	**Date**
AF	Coordinator		04.01.18

PROJECT MANAGEMENT PLAN

WIRELESS INTERNET ACCESS AND ICT EQUIPMENT TO THE COMMUNITY COLLEGE

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION (NTRC)
MAURICE BISHOP HIGHWAY
ST. GEORGE
GRENADA

APRIL 13, 2018

TABLE OF CONTENTS

INTRODUCTION

The National Telecommunications Regulatory Commission (NTRC) has approved a project to provide wireless internet access and ICT equipment to the College computer labs for engineering and electronics under the universal service fund programme. This project will provide the College with upgraded facility to enable them to meet the needs of the job market and improve the delivery of the technical program at the College. Currently the students do not have adequate access to computers and electronic devices which are needed for the delivery of the programme. In addition, with an increase in enrollment, the College is unable to provide the services needed to ensure the students are trained for the job market. Thus, this limitation hinders the growth of the technical department, as the department is unable to offer additional programs which are needed to generate additional revenue.

These new equipment will position the college to be a premier tertiary institution with a state of the art facility necessary to provide proper training to the students in the electronics and engineering department. The project will also enable the institution to offer additional programs in the department catering to a larger cross section of the population.

PROJECT MANAGEMENT APPROACH

The project will be managed by the NTRC USF Administrator in the initial stages of planning and development. The project will thereafter be managed by a Contractor who will be responsible for the project execution. The NTRC will still maintain oversight for the execution to ensure that the project is proceeding according to plan. The USF Adm will work with the stakeholders to collect all the requirements for the project and develop the RFP for tender. Once a Contractor is selected and a Contract awarded, the Contractor will be responsible for implementing the project.

All approvals with regards to planning will be done by the USF Adm and once the project proceeds to the execution, any changes will be approved by the USF Adm. The USF Adm will be responsible for monitoring the plans and overseeing the change control process. Decisions with regards to changes to scope, cost will be approved by the Board of Commissioners, overseen and managed by the USF Adm.

The Project team will be drawn from the College as the Client and the NTRC who will work to develop the project requirements. The project will operate in a matrix environment as technical personnel are drawn from other departments of the NTRC.

PROJECT SCOPE

The project scope will include the design, development, installation, testing, commission and support of ICT equipment and wireless internet access provided to the College. The Contractor will be required to procure, install, test, commission and provide support services to the College. This shall include all Ethernet wiring or electrical required to provide the equipment and the wireless internet access points. All software will also be supplied by the Contractor.

The Contractor is not required to do any other facility work outside of the electrical and Ethernet wiring needed to deliver the project. The College is required to provide all facility upgrade work to ensure the lab is ready to receive the equipment. In addition, the Contractor is not required to provide broadband internet connectivity, this will be part of the Schools existing connection.

MILESTONE LIST

Below is a list of the project milestones. The milestones are limited to major activities that will be executed under the project and does not include all activities, such as smaller tasks which are required for the project to be delivered. Any delay

to the milestone may result in a delay in the overall project. Any such delays should be reported to the USF Adm and the Contractor.

Milestone	Description	Date
Gather project requirements	All requirements with regards to the equipment are agreed by the project team	05/28/xx
Complete RFP	The RFP is designed and approved by the Board for public tender	07/15/xx
Contract Award	A Contractor is selected to execute the project	08/01/xx
Equipment installation	All equipment are installed at the respective facility	9/18/xx
Testing and Commission	All equipment are tested and are Commissioned for use	09/20/xx

SCHEDULE BASELINE AND WORK BREAKDOWN STRUCTURE

The project will include a WBS which will provide a breakdown of all work packages to be executed under the project. The work packages will be accompanied by a WBS dictionary which will explain the work packages on the project, this dictionary will also include the resources which will be required for the project. The WBS will be developed by the USF Adm and the project team.

The schedule baseline refers to project schedule which will serve as a benchmark for monitoring the project schedule. The schedule will be developed by the USF Adm and the project team; this schedule will be approved by the Coordinator. Microsoft tools such as a Gantt chart will be used to monitor the project schedule and will be maintained by the USF Adm. Any change to the project schedule will follow the formal change control process which will be overseen by the USF Adm. All such requests will be reviewed by the project team to determine the potential impact on the project. The final decision for the project will be made by the USF Adm and signed by the Coordinator. Because the project schedule and cost is partially flexible, below is the threshold which will govern the project:

CPI less than .9 and greater than 1.1
SPI less than .9 and greater than 1.1

CHANGE MANAGEMENT PLAN

The project's change control process will be guided by the organization's change control procedure. Please see hereunder the steps; this process will be overseen by the USF Adm:

1. Request must be filled out using the change request form
2. The change request that is received will be entered into the change control log and the change request will be submit to the technical team for review by the USF Adm
3. A meeting will be set to review the change requested. The change will be evaluated on the basis of the impact to the project scope, time, cost, and the risk to the project. In addition, the risk of not implementing the change will be review. After a thorough evaluation of the change, the technical team will make a decision to accept or reject the change
4. The decision will then be submitted to the Coordinator for sign off, where the impact of the change will result in a major scope change or change is cost, the recommendation will be sent to the Board further approval
5. The Fund Adm will notify the requestor of the decision
6. The project management plan will be updated where the change affects any of these plans
7. The decision will be logged in the change control log
8. The change request form will be filed in the project folder
9. A change request can be submitted by stakeholder or any member of the project team

A change request may be submitted by a stakeholder or any member of the project team.

COMMUNICATIONS MANAGEMENT PLAN

Communications is an integral part of the project, particularly with regards to ensuring that stakeholders are adequately aware of the project. This is a critical

success factor and must be managed properly to prevent any setbacks with regards to the project. A formal communications plan provides for the recipient, the type of information needs, the frequency of information, the medium of communications and the level priority with regards to information to stakeholders. This communications management plan will guide the project communications.

The USF Adm will oversee the project communications. Please see below a communications matrix which outlines the project communications.

Communication type	Description	Frequency	Format	Distribution	Deliverable	Owner
Project overview	Summary of the project, objectives, deliverable and budget	Once, upon commencement of the project	Written email	Project stakeholders	Project overview	USF Adm
Status meetings	Meeting to review the project status and make any decisions on the project	Weekly	Face to face	Project team	Minutes of meetings, action items	USF Adm
Project reports	Reports on the activities of the project, project outcome/benefits	Based on project milestones	Written email	Stakeholders, project sponsor, Client	Project Report	USF Adm
Project updates	Brief updates on the project status from Contractors	Based on the project milestones	Emailed	Stakeholders, project sponsor, Client	Project update	USF Adm
Project reviews	Meeting held with the project team to review changes or close out	As needed	Face to face	Project team	Project review report	USF Adm
Technical meetings	Meeting held to review technical matters relating to the project design, configuration etc	As needed	Face to face	Project team	Technical review report	USF Adm

In addition to the Communications Matrix, a project team directory will be kept on file. This will include the contract information of all stakeholders on the project.

Name	Title	E mail	Office Phone	Cell Phone
Mrs. Medford	Project Sponsor - Administrator	Medford@ntrc.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Mr. George	Project Manager	George@telecom.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Mr. Lewis	Quality control specialist	lewis@telecom.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Mr. Tott	IT specialist	tott@college.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Mr. Ford	Technical specialist	ford@college.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Ms. Willis	Client	willis@college.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Ms. Cart	It Manager - Client	cart@college.com	xxx-xxx-xxxx	xxx-xxx-xxxx
Mr. Paul	Configuration/ testing	paul@telecom.com	xxx-xxx-xxxx	xxx-xxx-xxxx

Communications Conduct:

Meetings:

A meeting could be initiated by the project manager, stakeholder or project team. Where such meeting is initiated, an invitation should be sent to all participants at least 3 days prior to the meeting; this will be accompanied by a meeting agenda. At the start of the meeting, there will be a review of the last meeting, where applicable. Where there are amendments to the agenda, the agenda will be updated accordingly. The USF Adm will Chair any such meeting. The minutes of the meeting will be recorded and the action items will be recapped prior to the end of the meeting. All meeting attendees shall observe proper meeting etiquette; this shall include cell phones on silent and calling ahead of the meeting where the attendee will be late. All attendees will sign a register documenting their attendance. Meeting minutes and action items should be released 48 hours after the end of the meeting.

Email:

Emails governing the project should be sent from the Company's email set aside for the project. This communication will be managed by the project manager. All

inquiry and project reports or meeting invitation should be sent to this address. All emails should observe the general company code of conduct. This shall include the subject of the email and the recipient should be properly addressed with their respective title, Mr., Mrs. Ms. Dr, etc. Emails sent to this address should also observe the same protocol for code of conduct and should be responded to promptly. All emails should be immediately acknowledged and any follow up should be provided within a reasonable period of time, based on the nature of the email. All attachments will be scanned by the company virus system. However, emails should only be opened from trusted source.

Informal Communications:
While the project is guided by formal communication channel, any informational communication as it relates to the project such as issues, concerns should be communicated to the project manager/USF Adm so it can be addressed.

COST MANAGEMENT PLAN

The USF Adm will be responsible for managing and monitoring the project cost throughout the project. The project budget will be first approved in the project charter. After which, the cost will be broken in the WBS based on the work packages. This will allow the project cost to be itemized and provide for ease of reference and monitoring. The activity list will enable the USF Adm / project manager to report on the cost performance throughout the project. The USF Adm will set a threshold CPI which will be monitored to keep the project on schedule. Where the project exceeds this CPI, actions will be taken to bring the cost back in line with the threshold.

This CPI for this project is:
CPI less than .9 and greater than 1.1
SPI less than .9 and greater than 1.1

The cost will be reviewed and discussed as part of the project meetings. The USF Adm will also use other calculations such as budget to completion, earned vale to monitor the project performance. These calculations will allow the USF Adm to determine where there are deviations and to put measures in place to prevent any further deviations. Where this involves changes, this will follow the change control procedure. Therefore, such changes will be recommended by the technical team and approved by the Coordinator if the cost change is within 5% of the project budget or below $10,000, where the project exceeds $10,000 this shall be approved by the Board.

Payments for the project will be made on the basis of reimbursements for work completed. This will be based on the project payment milestone. Once all work is confirmed and signed off, the NTRC will proceed with the payments. Project cost can be paid based on reimbursements; however, this should not exceed 20% of the project costs.

Cost measures	Indicators	Action
CPI +/-10%	Project is deemed to be moderate	USF Adm will implement measures to get project on track
SPI +/-10%	Project is deemed to be moderate	USF Adm will implement measures to get project on track
CPI +/- 25%	Project deemed to be critical and requires immediate action	Escalate to Coordinator / Board
SPI +/-25%	Project deemed to be critical	Escalate to Coordinator / Board

Such reports will be submitted as part of status update or project reports and will be sent via email, or discussed at face to face meetings.

PROCUREMENT MANAGEMENT PLAN

The procurement management process will be managed by the USF Adm. All project procurements must be approved by the Board based on recommendations

from the USF Adm or Ad hoc Committee. All projects under the USF are executed by a Contractor based on open competitive bidding process. The USF Adm will oversee the preparation of the RFP which will be tendered to interested bidders. The USF Adm shall maintain a list of eligible bidders based on the telecommunications regulations and such procurement notices should be released to the list of eligible bidders.

The USF Adm will work with the technical team and other stakeholders to develop the requirements. Such procurements will be evaluated by a Committee based on the specifications and evaluation criteria outlined in the tender. Recommendations for Contact award will be submitted to the Board for approval. Once approved, the procurement will be guided by the Agreement. The USF Adm will oversee the acceptance of contract deliverables in accordance will performance metrics outlined in the Contract. During the Contract, the USF Adm will monitor and record the performance of the Contractor for future projects.

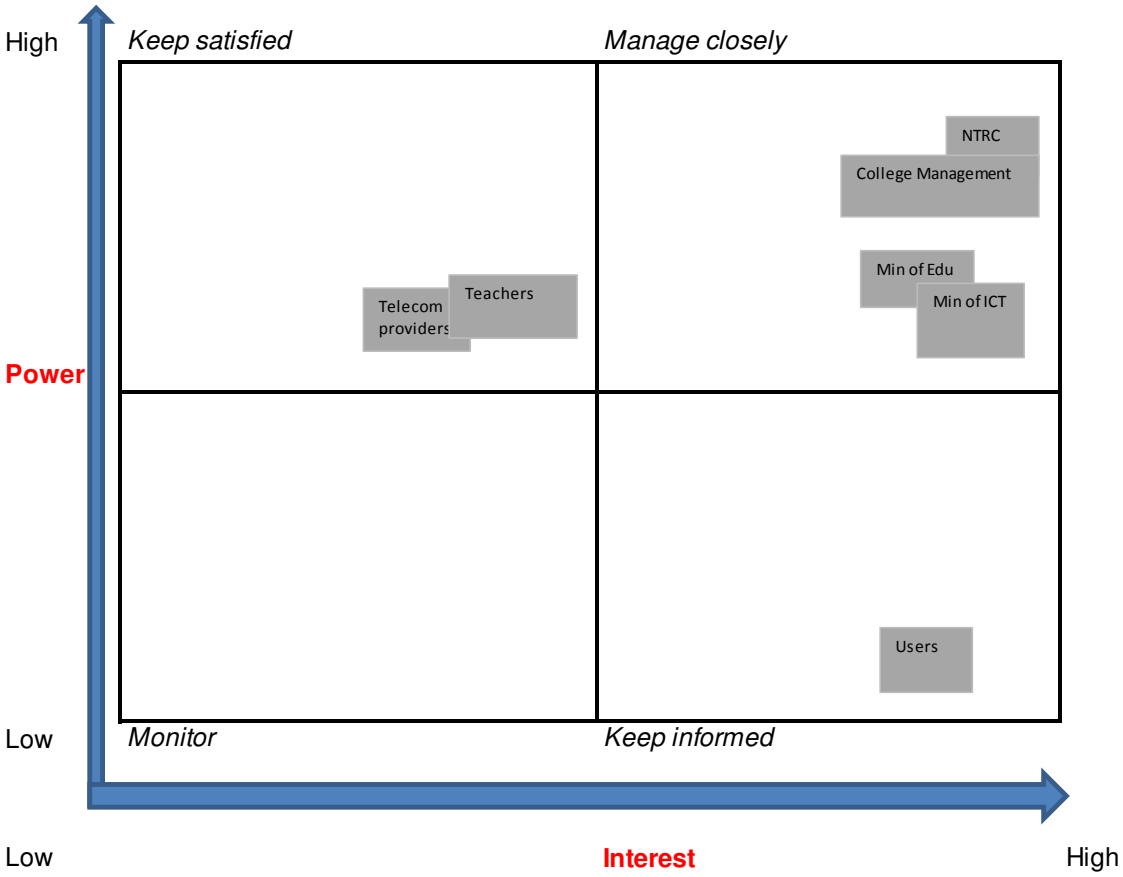
PROJECT STAKEHOLDER MANAGEMENT PLAN

Stakeholder management is an important component of the project as stakeholders can affect the outcome of the project. The project charter includes a list of the stakeholders who can affect or be affected by the outcome of the project. As part of this project, the stakeholders should be identified early in the project since this list will determine who should be part of the stakeholder engagement. In addition, the list of stakeholders will guide the project communication. For this project, a stakeholder analysis will be conducted. The purpose of this analysis is to determine the stakeholders influence and impact on the project.

Based on the stakeholder analysis, a power interest analysis will be conducted for the project; the power interest analysis will outline what strategy should be adopted for each stakeholder group. This will enable the NTRC to determine which stakeholders must be managed closely, as this group could have the greatest

impact on the project. The USF Adm should monitor this list throughout the project, as the influence of the stakeholder may change as the project progress.

Project Name	ICT Equipment for ICT Compoter Lab	ICT Equipment and lab facility				
Client/partnering Organization	Community College					
ID	Stakeholders	Functional Area	Roles - Responsibilities	Main Expectations	Influence/Impact (Low-Medium-High)	Additional Comments
1	College Management	Client /Owner	To provide information on their requirements to ensure the project meets the needs of the organization, ensure the facility is ready to receive the project	Functional ICT lab that meets the needs of staff and students, ability the recruit additional students and offer more programs	H/H	
2	Minsitry of Education	Policy/Strategy	To provide strategic direction with regards to ICT requirements in Grenada to guide project implementation	Facility that can expand training and provide additional employment opportunities	H/H	
3	NTRC	Project sponsor/ Project Manager	To provide financial support and manage the stakeholders and project implementation	Facility that meets the needs of the users and is sustainable	H/H	
4	Staff of College	User	To provide information with regards to their requirements	Update equipment that can provide the requisite training for the students	M/H	
5	Students/Users	User	To ensure facility meet their needs	Update to date the equipment that can provide training applicable to the industry needs/job market	L/H	
6	Telecommunication providers	Opoertaions	To provide feedback on the project requirements and to implement the project	Facility that is upgraded to receive the equipment	M/M	
7	Ministry of ICT	Policy/Operations	To provide strategic direction with regards to ICT requirements in Grenada to guide project implementation	Facility that can drive the national ICT Agenda an dprovide ICT training for students, as well as create local ICT entrepreneurs	H/H	



Analysis

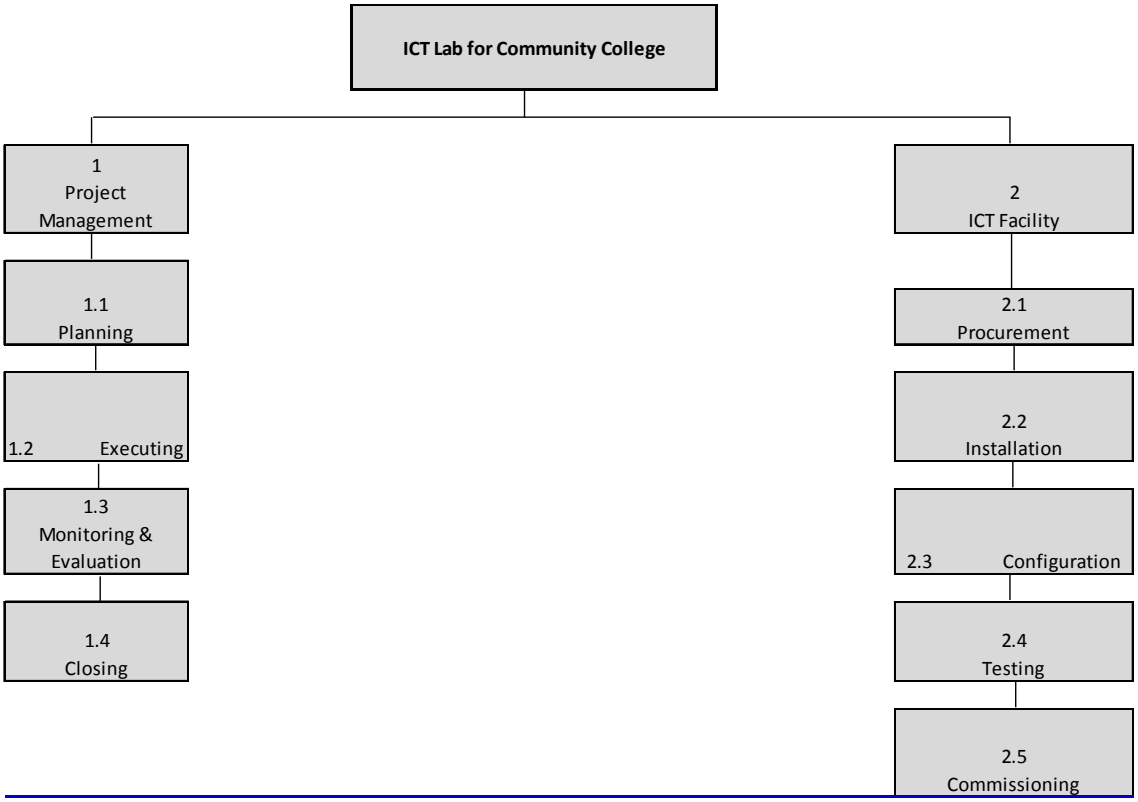
1	NTRC as the project sponsors makes all decisions with regards to the project and is overall responsible for the project success, thus the will wield high power and interest
2	Community College is the Client who provide all information with regards to the requirements and project specifications, thus they will have a high power to make decisions on the project which will affect them and they will have a high interest in seeing the project executed
3	Ministry of Education as the Ministry which sets strategies and Government policies which can affect secondary and tertiary institutions will be in a position to exert power in this project, they will also have a high interest in the project execution
4	Ministry of ICT as the Ministry reponsible for ICT strategies and policies and the Ministry reponsible for the NTRC will be able to exert some power in this project exection and direction, they will also have high interest in the outcome
5	Teachers will be the primary uses of the technology and who will assit in framing the requirements to ensure that the needs of the students are met will have high interest in the project outcome, they will have moderate powere to exert some direction in the project
6	Telecom providers as project implementors and persons who will bid on this project can exert power in terms of their reponse and participation in the bid process, they will have moderate interest in the project given the source of funds is the USF
7	Users, the students will have high interest as users of the technology, they will want equipment that meet their needs, howver they are not in a posiition to exert any form of power on this project

PROJECT SCOPE MANAGEMENT PLAN

The project scope will be managed by the USF Adm. At the start of the project, after approval of the project charter and during the project planning stage, the project scope statement, WBS and WBS dictionary will be developed and detailed. This will form the scope baseline and will guide the project scope.

The USF Adm will monitor the project performance as it relates to the scope. Any changes to the project scope will follow the change control process and will be overseen by the USF Adm. A change can be initiated by the USF Adm or any stakeholder (Client, project team). Where such scope is approved, the USF Adm will update the scope baseline where applicable. The project reports and status meetings will be used to review the project scope. Scope will be measured based on metrics outlined in the project quality management plan and the Agreement as referenced in the procurement management plan.

WBS


ICT Lab for Community College
1
Project
Management
1.1
Planning
1.2 Executing
1.3
Monitoring &
Evaluation
1.4
Closing
2
ICT Facility
2.1
Procurement
2.2
Installation
2.3 Configuration
2.4
Testing
2.5
Commissioning

WBS dictionary

Account ID	Work package	Work package description	Deliverable	Assumption & constraint	Resource assignment	Schedule	Responsible organization
1	**Project Management**	Overseeing, planning, managing and controlling all elements of the project to ensure success	Project Documents	Assumption: The NTRC will receive the support from Collegeand other stakeholders to address all issues which may affect the project Constraint: Time	Technical staff, finances, computer equipment	6 months	NTRC
1.1	Initiating	The process/activities involved in bringing a project into existence	Project Charter	Assumption: Collegeis aware of and versed on the needs of the students and technology which will enable them to expand their curriculum Constraint: Schedule, budget	Technical staff, finances, computer equipment	6 weeks	NTRC
1.2	Planning	Preparation of documents outlining all details necessary to execute the project	Project Management Plan	Assumption: All stakedholers are onboard and interested in the project Constraint: Schedule, budget	Technical staff, finances, computer equipment	2 month	NTRC
1.3	Executing	Activities involved in undertaking the work required to implement the project	Commisisoned equipment and system	Assumption: There will be providers interested in bidding on the project and the facility will be upgraded to receive the equipment Constaint: Schedule, budget	Technical staff, finances, computer equipment	3 months	NTRC
1.4	Monitoring	the work executed to validate the Contract and milestones as outlined in the Contract	Progress Reports	Assumption: There will be providers interested in bidding on the project Constaint: Budget, Schedule	Technical staff, finances, computer equipment	3 years	NTRC
1.5	Closing	The process of officially terminating the Contract which has ended	Lessons learnt and completed contracts	Assumption: There will be providers interested and available to execute the project Constaint: Schedule	Technical staff, finances, computer equipment	1 month	NTRC
2	**ICT Facility**	The activities by the Contractor to erect/setup the network necessary to deliver the services	Equipment installed, site acceptance	Assumption: There will be providers interested and available to execute on the project Constaint: Schedule	Technical staff, finances, computer equipment	3 months	Contractor (TBD)
2.1	Procurement	Purchasing of equipment, materials and supplies required to deliver the project	Equipment, materials	Assumption: The vendor will provide the equipment in accordance with qualiy requirements, there will be support availabel for the equipment Constaint: Schedule	Technical staff, finances, computer equipment	1 months	Contractor (TBD)
2.2	Installation	The process of setting up and installing all equipment and materials required to deliver the project	Installed equipment	Assumption: There will be providers interested and available to execute on the project Constaint: Schedule	Technical staff, finances, computer equipment, materials	2 months	Contractor (TBD)
2.3	Configuration	The process of configuring and conduting checks to ensure that theequipment meet minimum performance standards	Reports	Assumption: There will be providers interested and available to execute the project Constaint: Schedule	Technical staff, finances, computer equipment, materials	1 week	Contractor (TBD)
2.4	Testing	The process of conduting checks and system tests to ensure that the system meet minimum performance standards	System and test report	Assumption: There will be providers interested and available to execute on the project Constaint: Schedule	Technical staff, finances, computer equipment, materials	1 week	Contractor (TBD)
2.5	Commissioning	The go live process required to make the equipment and system accessible to the users	Completed lab network and system	Assumption: Collegehas the resources necessay to support the equipment to ensure sustainability Constaint: Schedule, finances	Technical staff, finances, computer equipment	1 week	Contractor (TBD)

SCHEDULE MANAGEMENT PLAN

The project schedule will be managed by the USF Adm who will be responsible for overseeing the project schedule. The work package will be used as a framework to develop and sequence the project activities which is essential for the developing the project schedule. The sequencing will determine relationships and dependencies between project activities. Defining and sequencing the project activities will enable the USF Adm to develop and estimate the activity resources. The project schedule will be developed in collaboration with the Community College. Once completed, the schedule will be approved by the USF Adm and submitted to the Coordinator for submission to the Board; this schedule will form the baseline and will be used by the Board to assess the project progress.

The project schedule will be developed using tools such as Microsoft projects. This software is a standard project management tool used for scheduling. This will assist the USF Adm in identifying the project's critical path which must be managed carefully to prevent any delays in the project. The following are a list of the project milestones:

- Prepare project plan
- Bidding process
- Contract award
- Procurement
- Installation of equipment
- Configuration and commissioning
- Handover of equipment
- Maintenance and support
- Project close

The project schedule will be reviewed and updated at the status review meeting. At this meeting, the performance of the project schedule will be discussed. Where

it is determined that the project is not adhering to schedule, the project team will implement activities to bring the project back on track. Where such actions will result to changes, the official change control process should be followed. Any change to the project schedule should be approved by the USF Adm and submitted to the Coordinator for review and final sign off. This update should then be submitted to the Board as information. Any changes should be communicated to the respective stakeholders.

The review shall include the start and completion dates of the project activities, the number of activities that are on schedule or behind schedule; this will help to determine the schedule variance. The threshold for the project schedule is 10%, therefore no more than 10% of the project activities should be behind schedule, where this is recorded, the USF Adm should institute measures to address the variances.

QUALITY MANAGEMENT PLAN

Quality management component of the project will ensure that the customer/client satisfaction with regards to the project deliverables is achieved. The Client will play a pivotal role in determining and confirming quality as part of the project. The USF Adm will collect all quality requirements from the project stakeholders which includes the technical team and the project client. The quality requirements will be documented and will form the basis of the project monitoring.

The quality will be measured using quality metrics. The USF Adm will be responsible for monitoring the project's quality throughout the project. The USF Adm will be supported by the technical team who will function as the quality specialist to ensure that the project meets the quality requirements. This will include quality inspections and audits to the project site to ensure compliance with quality requirements. Any quality requirements will be approved by the technical/quality specialist and signed off by the USF Adm.

Please refer to quality metrics for information on the quality requirements for the project.

Where the process of monitoring the project quality results in changes to the project, this will be addressed in accordance with the change control procedure. The approval of such changes will be approved by the USF Adm and signed off by the Coordinator.

RISK MANAGEMENT PLAN

A critical factor to ensure the successful implementation for projects, is managing risks. Risks must be planned for by identifying the potential risks that can impact a project and take actions to address the risks. The plan will outline the risks to the project and shall prioritize the risks on the grading scale. This scale will enable the development of a risk strategy to address the risks.

The project team, client and other stakeholders will assist with the risk identification for the project and the impact of each risk to the project. The risks shall be assigned a trigger and an owner. The assignment of risks to an owner shall be based on the skills set of the individual and their ability to adequately manage the risk.

Risks will be tracked by their respective owner. Risks will be tracked by monitoring the triggers of the risks. The project rating will also notify the owner of the probability of the risks and trigger the risk strategy. Due to the importance of project risks, risks shall be addressed at weekly status update meetings. Where risks results in changes to the project, such changes shall be addressed as part of the project's change control process, the USF Administrator shall be responsible to oversee the project risks managed by the owner.

Please see below the project risk register.

RISK REGISTER

	Risk impact matrix with parameters for project objective				
Objectives	Very Low/1	Low/2	Moderate/3	High/4	Very high/5
Cost	Insignifinat increase in the project cost <5% of the project cost	An increase in the project cost by 5-10%	An increase in the project cost of 10-20%	An increse in project cost of 20-30%	>30% increase in the project cost
Time	Insignifinat increase in the project schedule	Increase in project schedule by <5%	5-10% increase in project schedule	10-20% increase in project schedule	>20% increase in project schedule
Quality	Impact on project quality barely noticeable	Minor Impact on quality with impact on the applications affected	Moderate impact on the project requires approval from PM	Major impact on the project quality with threat to the project outcome 40% of quality metrics impacted, require escalation to project sponsor	Impact on the project quality unacceptable with most quality metrics affected, project to terminate, items unusable
Scope	Change in scope barely noticeable	Minor change in scope, does not impact project outcome	Moderate change in scope some items affected immediate action will bring project on track	Change in project scope unacceptable to Client, requires immediate action	Project scope change affects overall project, project unusable

PROBABILITY SCALE

Probability Scale	Event Occurrence Probability
1- Very low	A risk event very not likely to occur
2- Low	A risk event is likely to occur with 5% surety
3- Moderate	Risk event very likely to occur with a 10% chance of surety
4- High	A risk event most likely to occur with a 25% chance of surety
5- Very high	The risk event significantly likely to occur with a 40% chance of surety

IMPACT RATING SCALE

		Impact Rating				
		1 Very Low	***2 Low***	***3 Moderate***	***4 High***	***5 Very High***
Probability	***5 Very High***	***5***	***10***	***15***	***20***	***25***
	4 High	***4***	***8***	***12***	***16***	***20***
	3 Moderate	***3***	***6***	***9***	***12***	***15***
	2 Low	***2***	***4***	***6***	***8***	***10***
	1 Very Low	***1***	***2***	***3***	***4***	***5***

Cause	Risk	Consequence	Probability	Impact	Pxl Score	Trigger	Owner	Strategy
Procurement	Interested bidder to participate in the ITB to execute the labs	The project may be cancelled	4	5	20	No response to ITB	Medford	**Accept** The USF is guided by regulations, if there is no interest to bid on the RFP by eligible bidders, then the project has to be cancelled because it cannot be executed by any other party except the eligible bidders
Infrastructure	Access to funding sources to renovate the labs in time for the project	The project could be placed on hold	4	5	20	No response to request for funding	Willis	**Mitigate** College should look at alternative funding sources, outside their regular donors to ensure renovation is undertak

								en
Schedule	Access to classroom to install the equipment	The project could be delayed	4	5	20	Classroom booked during weekdays	Cart	**Mitigate** Work can be done during the vacation where the classroom will be available full time
Sustainability	College support to maintain the software and equipment provided	The labs will not be functional after completion of the project	**3**	**3**	**9**	Year end budget item for insurance	Willis	**Transfer** Enter service level agreement with third party to manage support component
Technology	Compatibility of the equipment with the College existing IT systems	Failure of the project	2	4	8	Vendor solution with no reference to current technology	Cart	**Avoid** College should review finalized equipment to ensure compatibility prior to order
Quality	Changes in equipment due to later models with no support for the equipment supplied to the project	No support to upgrade the equipment, short life cycle of equipment can cause lab to not be functional after the project	1	4	4	Rejection of warranty request	George	**Avoid** Purchase equipment that has at least 3 year support services to ensure that end of life will not occur during project cycle

Human resource	Skilled staff to provide training on the equipment	College unable to provide additional training /programs	1	4	4	Program release at the first year of the project	Cart	**Avoid** Hire external person to train staff on the equipment which will enable the staff to offer the e training

STAFFING MANAGEMENT PLAN

The project will be managed in a matrix structure with the technical staff drawn from the licencing and compliance department and the ICT department. The staffing will include both internal and external persons; external persons will be from the Contractor. The staffing required for the project is as follows:

Project Manager (1) – the project manager will be responsible for the overall management of the project, this shall include planning, managing all work, activities, human resource, cost, communication, monitoring and evaluation of the project performance, reporting on the project progress, addressing any issues arising in the projects, overseeing the evaluations of procurements and liaising with the Mangers across the department.

Project Assistant (1) – the project assistant will be responsible for assisting the project manager with the administrative work related to the project. This shall include assisting with the requirements documentation, documenting the technical and other requirements of the Client and other stakeholders on the project. The assistant will also be responsible for coordinating site visits to the project site with the client to assist in the requirements documentation and performance evaluation. The assistant will also document any meetings and agreements at the project meetings. The assistant will be managed by the Project manager.

IT Specialist (1) – The IT Specialist will be responsible for reviewing and approving all technical requirements with equipment, setting quality metrics and approving the project quality requirements. This shall include performance evaluation and approving site acceptance test reports. This IT specialist will be managed by the project manager who will sign co–sign on reports.

Network Administrator (1) (Contractor) – The Network administrator will be responsible for installation of the networking on the project site, overseeing the installation of equipment and electronics on the project. The Administrator will also procure all equipment and verify the equipment upon receipt to the project site prior to installation. The Administrator will manage the implementation and will be a Contractor approved by the NTRC. The Administrator will report to the Project Manager and submit all progress reports to the PM, submit requests for changes required to keep the project on track to the project manager for review and approval.

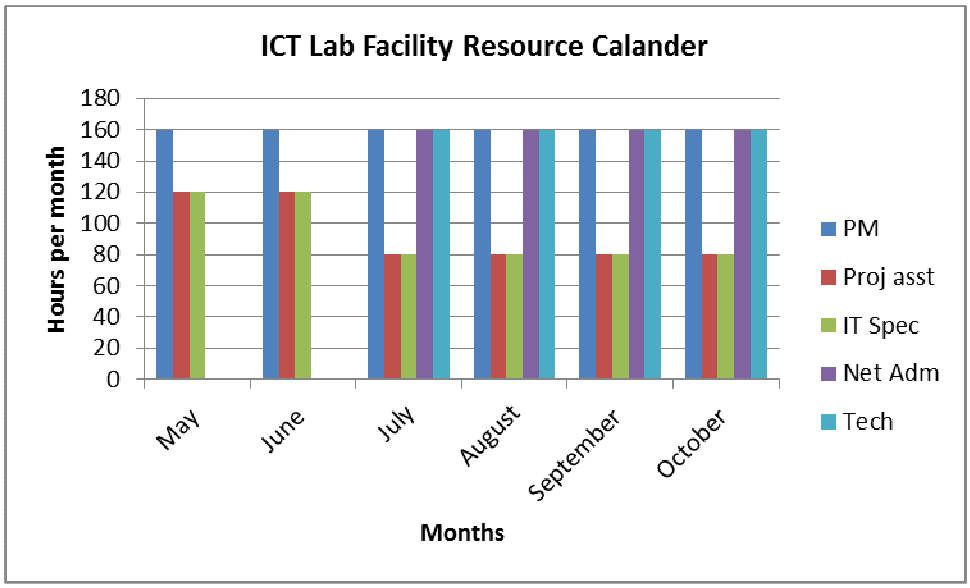
Technician (2) – The technician will be responsible to assist the Network Administrator with the installation of equipment at the labs, installation of software on the computers and troubleshooting, configuring and testing all equipment to ensure the equipment are functional and meet all quality metrics as part of the performance evaluation and handover. The technician will report to the Network Administrator.

The project team will use emails and other mechanism to communicate and will not collocate.

RESOURCE CALENDAR

The project will require the project team for the project duration, however, the internal team such as the project assistant and IT specialist will require more hours

during the project planning stage. The project is anticipated to last for 5 months which includes the planning and implementation stage. The project manager will be required to work 40 hours per week for the duration of the project. The IT specialist and project assistant will be required to work for 30 hours per week during the planning stages which will last two months. However, the hours will decline in the implementation stage to 20 hours per week. The Network Administrator and Technician will be required to work full time during the project implementation stage; however, they will not be required to work during the planning stage. After the implementation phase there will be a SLA for a period of three years, the PM will manage this SLA on a part time basis.



COST BASELINE

The cost baseline for this project, includes all budgeted items outlined below, this will be used as the project benchmark.

Project Phase	Budgeted Total	Comments
Planning	$15,498.80	This includes facility assessment, salaries for the project team to develop the project and gather requirements from the stakeholders.
Implementation	$410,129.27	This includes the cost paid

		to the Contractor to implement the project, this includes the cost to procure all equipment and materials to deliver the project
Configuration & testing	$328,103.42	This includes the cost to configure and test all hardware and software at the lab facility, this includes the inspection costs to verify testing
Close out	$82,125.85	This includes the cost to close procurements, handover the project, conduct any assessment related to the project and sign off on all warranty and support work

QUALITY BASELINE

The project quality baseline outlines the quality metrics baseline that will be used as a benchmark for the project.

Item	Acceptable Level
Functionality	100% of the equipment are functional – represented by equipment starting up, logging on to the network and user accessing software on the equipment
Compatibility	Software is compatible with the equipment and network and can be accessed by the user on the network
Security	All security protocols are activated and require authentication prior to connection by the user

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

Adriel Frank

_____ Date: 5/28/18

Coordinator

5.0 CONCLUSIONS

An assessment was conducted on the Universal Service Fund Project Management procedures in place to determine any gaps which exist within their current process to identify areas for improvement and to develop a formal project management methodology which will guide the USF projects.

1. An assessment conducted on the USF based on the objective to identify gaps in the current USF project management practices, revealed that there is no formal written and documented procedures which guide the USF projects. While there are regulations and guidelines which guide the selection and implementation of projects, these guidelines are very broad and not based on any recognized standards such as the Project Management Institute. As such, the NTRC has relied on lessons learnt from past projects to guide the USF projects through the project cycle.

2. Based on the objective to identify gaps in the current USF project management practices, it was noted that there are strengths within the current USF system which have seen some successes in USF projects. One of the major strength is their stakeholder management. It was noted that stakeholders are engaged early in the project planning phase and stakeholder engagement continues throughout the project process. While this is a current strength of the USF, it was also noted that there are some processes which are not undertaken as part of stakeholder management and this should be included to improve the USF planning process. One such process is a formal stakeholder analysis to determine which stakeholder should be kept satisfied, monitored, informed or managed closely. This is addressed in the recommendations section.

3. In keeping with the objective to identify gaps in the current USF project management practices, it was also noted that planning as part of the USF is

not done in a detailed manner and this has contributed to the failure of some USF projects. In addition, while a project management plan is developed, this plan does not apply to all the knowledge areas of the project and is limited to scope, schedule, procurement and cost. Further, this project plan is not used throughout the project process in stages such as execution, monitoring and control, and close. Thus, it was concluded that the plan exists in theory and the value of the plan is not realized. The USF unit should ensure that the plan guides the other phases of the USF projects and therefore it should be used throughout the USF project cycle. Attention should be paid to areas such as risk management, schedule management, communications management, in addition to other knowledge areas.

4. An assessment of the USF based on the objective to develop process maps and templates to streamline the USF revealed that there were some templates being used as part of the management of projects. In addition to the templates used, a total of nineteen (19) other templates were recommended for application as part of the USF process and four process maps were also recommended for implementation; these templates will help to improve the overall management of the USF.

5. In keeping with the objective to create and document a Project Management Methodology Framework according to PMI good practices, it was noted that, at present, there is no documented USF methodology in place. Therefore, as part of the objective of this project, a methodology was developed to guide the USF. This methodology included steps in the USF project phases which will guide how USF projects are managed. It includes the steps to be followed in the concept, planning, execution, monitoring and controlling and project close.

6. Based on the objective to create and document a Project Management Methodology Framework according to PMI good practices, USF projects are

geared towards the development of the telecommunications sector in Grenada. Projects selected under the USF are channeled to projects which may not be financially viable without subsidization from the USF. Therefore, because of the strategic importance of these projects towards the development of the country, it is important to consider the benefits as part of the process. Therefore, it is recommended that benefits realization form part of the USF project management process, where the projects are evaluated during their operations to determine the impact of the project in achieving their overall objective and the value added to the users.

6.0 RECOMMENDATIONS

The following recommendations are directed to the Coordinator of the Organization for implementation as part of the USF:

1. A Business case should form part of the initiation process. The business case will provide insight into the projects requiring funding. Key information such as current activities within the market and the institutional framework will enable the USF department to make a more informed decision in the selection of projects. In addition, this will help to alleviate the issue of funding projects which are already being undertaken in the market, as this information in the business case can help to prevent this problem

2. Stakeholder's engagement should continue to be a continuous process; however, this should be detailed during the planning process to include a stakeholder analysis at a minimum

3. Planning should form an essential and critical part of the project. This should start immediately after the approval of the project charter and must involve experts as well as key stakeholders. Proper planning as part of project management is important to minimize problems during the project implementation

4. Risk management should be included as a formal part of the project management process; this process is currently not undertaken by the USF and has resulted in setbacks in some USF projects. A proper risk management process, as outlined in the methodology, should be implemented as part of the planning process

5. Quality management should be undertaken and should include the preparation of a formal quality management plan. This plan should guide the monitoring and control of the project deliverables

6. While communications is undertaken, it must form part of the formal planning process to guide the flow of communications throughout the project cycle

7. While some knowledge areas are considered, there is no formal process in place and many key areas of these knowledge areas are not detailed. As a result, planning should extend to all knowledge areas to ensure the project is thoroughly planned and should not be limited to schedule, scope, procurement and stakeholders

8. There should be a PMIS. While past records are archived and referred to, consideration should be given to incorporating IT to store documents to make retrieval and storage of information easier

9. Project management plan should guide the project management process and should not exist in theory. Therefore, it must apply to all stages of the project after its conception into the development/planning phase

10. There should be a formal close process in place to close of projects. While this is done, there is no formal process in place and therefore its application is not consistent

11. The USF unit should follow the process maps and the sample project plan which were developed as part of the research project to guide the project planning within the USF

12. The USF department should adopt the templates that are recommended as part of the project management methodology. These templates will help standardize the USF projects and also ensure that proper planning is undertaken. This will improve the success of USF projects.

13. The USF department should use the methodology and the steps proposed in this research project as guidance through the USF project phases. This should form part of their official project management methodology since there isn't a documented procedure in place

14. The USF Administrator has formal training in project management. Thus, the Administrator should ensure that all other staff of the USF unit are trained in project management to develop a greater appreciation for the process and to apply the templates and methodology proposed

15. Benefits realization should be conducted as part of the USF. This was included as a process in the project management methodology; the idea of this recommendation is due to the nature of the USF projects which are primarily for development of the telecommunications sector. This process will include an impact assessment which will assess the value of the projects to the users and the success of the project in meeting its objective

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8 Appendices

Appendix 1: FGP Charter

PROJECT CHARTER

PROJECT CHARTER Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries.	
Date	**Project Name:**
November 13, 2017	Project Management process methodology for the Universal Service Fund (USF) Programme in Grenada
Knowledge Areas / Processes	**Application Area (Sector / Activity)**
Knowledge areas: Integration, Scope, Time, Cost, Communications, Human Resource, Quality, Risk, Procurement, Stakeholder **Process groups:** Initiation, planning, execution, monitoring and control, close	Telecommunications
Start date	**Finish date**
November 13, 2017	July 13, 2018
Project Objectives (general and specific)	
General objective: To elaborate and develop a project management methodology framework according to PMI standards by the end of 2018 for a better development of (USF) projects Specific objectives: 1. To identify gaps in the current USF project management practices in the knowledge areas with a matrix to assess characteristics for improvement in USF 2. To create and document a Project Management Methodology Framework according to PMI good practices to be used in future USF projects to increase operating efficiency 3. To develop process maps and templates to streamline the universal service fund in order to ensure Effective selection of projects for prudent spending of public funds 4. To apply the methodology to a typical project case to ensure understanding of the proposed process methodology	
Project purpose or justification (merit and expected results)	
The universal service fund program utilizes public funds to implement projects in the telecommunications sector to improve access to telecommunications services as part of the national policy of the Government. These projects enable Government to meet local agenda and country strategies and enable the population to have access to a telecommunications service and ICTs which are considered a public good. The USF is governed by regulations and guidelines which guides the management of projects. At present, these regulations and guidelines, which are used to implement projects, are limited and do not provide the depth of detail necessary to ensure sound, standardize process which can in turn transfer to projects which are relevant and addresses the strategic direction of the country. As a result of the strategic importance of these projects in the national agenda and the millions of dollars expended on each project, it is imperative to have sound processes and procedures to ensure the proper management and implementation of projects. The development of a project management process methodology will enable the USF to achieve its mission of project sustainability. These processes will result in internal operating efficiencies and enable the externality benefit to the telecommunications sector which will benefit from projects which are adequately managed from inception through to handover of the product or services. In addition, the amount of money expended on these projects, require the implementation of practices to ensure that projects selected can meet the overall objective and result in value for the targeted communities. Projects selected can meet the overall objective and result in value for the targeted communities. At present, there are guidelines which are used to implement projects, however, these guidelines are limited and do not provide the depth of detail necessary to ensure sound, standardize process which can in turn transfer to projects which are relevant and	

addresses the strategic direction of the country.

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

Recommendations for improvement in USF
Project management procedures to manage and implement projects
Project management process maps and templates
Sample project management plan using a typical project

Assumptions

Stakeholders - The stakeholders will be available to participate in the assessment, Cost – the project will utilize internal resources and therefore the cost assigned is for logistics to sent the final report to UCI, Scope – the information gathered from the organization will enable completion of the project scope, Time – preparation of the final project will be executed according to the schedule, The project will be approved for implementation by management, Records for assessment is public information

Constraints

Time - to conduct assessment and develop templates (the FGP is limited to 3 months), Scope – completion of scope/objectives if based on access to data provided by the Company, Resources - limited availability of internal resources (some procedures are not documented to enable proper assessment), Cost – limited to the logistics cost to sent the final report to UCI

Preliminary risks

Write as follows: If (cause), might (effect), impacting (scope, time, cost, quality, etc.)

Cause	Effect	Impact
Planning	Limited availability of staff to be interviewed	Schedule
Regulations	Change in USF regulations can make recommendations obsolete/not applicable	Quality
Resources	Knowledge of staff can affect the assessment based on staff recount of current process in the organization	Quality
Requirements	Current regulations can constrain procedures which can be implemented	Scope

Budget

$700 EC – logistics

Milestones and dates

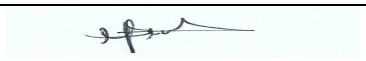
Milestone	Start date	End date
Graduation seminar	November 13, 2017	December 17, 2017
Tutoring process	February 19, 2018	May 18, 2018
Reading by reviewers	May 21, 2017	June 8, 2018
Adjustment and modifications	June 11, 2018	July 6, 2018
Presentation to final board	July 9, 2018	July 13, 2018

Relevant historical information

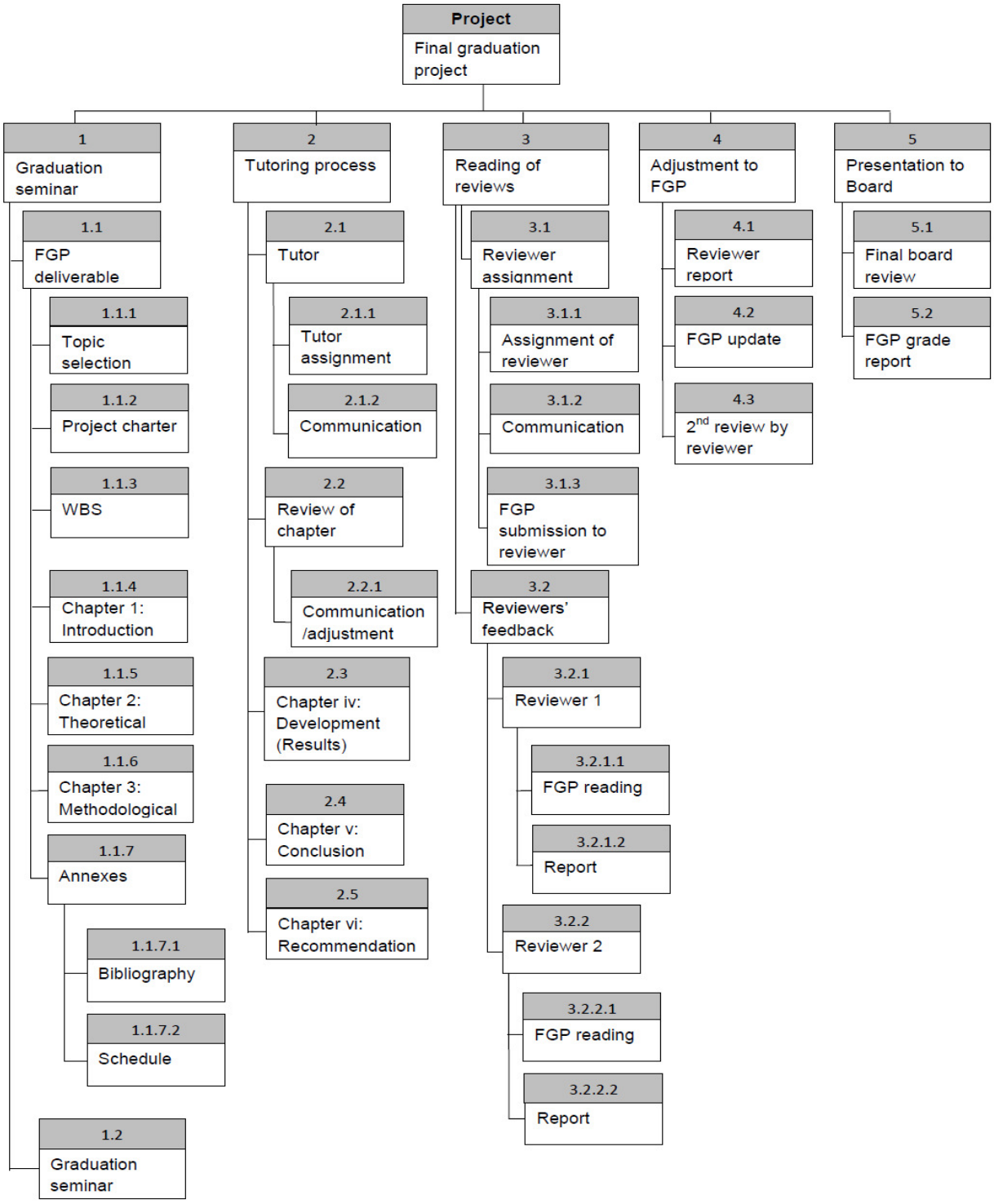
As part of its mandate, the NTRC is responsible for the administration of a universal service fund program in Grenada which was established to expand access to telecommunication infrastructure and services to underserved and unserved locations through USF projects. The USF is managed by the Telecommunications Act and Universal Service Fund Regulations and Guidelines, which restricts how the USF can be managed and operated. Funds are collected from licenced telecommunications providers according to their licence obligations. These contributions are channeled into projects which are geared to develop the telecommunications sector where commercial market may be unable to execute such developments because of the financial viability of the investment.

Stakeholders

Direct stakeholders:
Board of Commissioners
Coordinator
USF Administrator
Technical Staff of the NTRC: TICT Specialist, Engineer

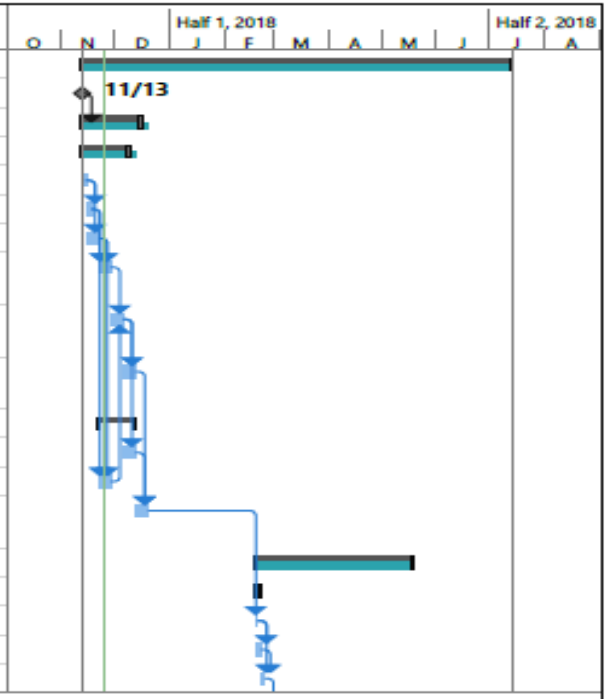
Indirect stakeholders: Telecommunication providers Ministry of Communications	
Project Manager: Christa Burke-Medford	**Signature:** 
Authorized by:	**Signature:**

Appendix 2: FGP WBS



Appendix 3: FGP Schedule

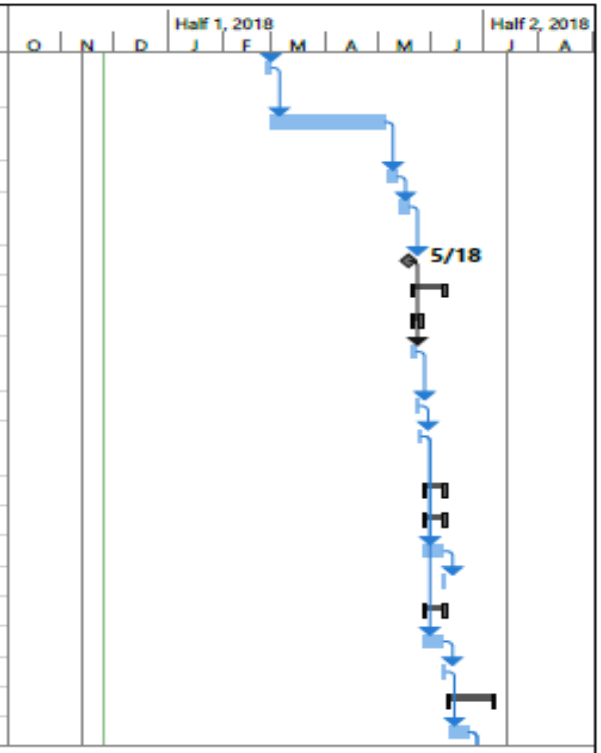
ID	Task Mode	Task Name	Duration	Start	Finish
1		**Final Graduation Project**	**175 days**	**Mon 11/13/17**	**Fri 7/13/18**
2		FGP Start	0 days	Mon 11/13/17	Mon 11/13/17
3		**1,Graduation Seminar**	**25 days**	**Mon 11/13/17**	**Fri 12/15/17**
4		**1.1,FGP Deliverables**	**20 days**	**Mon 11/13/17**	**Fri 12/8/17**
5		1.1.1,Topic selection	2 days	Mon 11/13/17	Tue 11/14/17
6		1.1.2,Project charter	3 days	Wed 11/15/17	Fri 11/17/17
7		1.1.3,WBS	5 days	Wed 11/15/17	Tue 11/21/17
8		1.1.4,Chapter I. Introduction	5 days	Wed 11/22/17	Tue 11/28/17
9		1.1.5,Chapter II. Theoretical framework	5 days	Wed 11/29/17	Tue 12/5/17
10		1.1.6,Chapter III. Methodological framework	5 days	Wed 12/6/17	Tue 12/12/17
11		**1.1.7,Annexes**	**15 days**	**Wed 11/22/17**	**Tue 12/12/17**
12		1.1.7.1,Bibliography	5 days	Wed 12/6/17	Tue 12/12/17
13		1.1.7.2,Schedule	5 days	Wed 11/22/17	Tue 11/28/17
14		1.2,Graduation Seminar approval	5 days	Wed 12/13/17	Tue 12/19/17
15		**2,Tutoring process**	**65 days**	**Mon 2/19/18**	**Fri 5/18/18**
16		**2.1,Tutor**	**3 days**	**Mon 2/19/18**	**Wed 2/21/18**
17		2.1.1,Tutor assigment	1 day	Mon 2/19/18	Mon 2/19/18
18		2.1.2,Communication	2 days	Tue 2/20/18	Wed 2/21/18
19		2.2,Review of Chapter	2 days	Thu 2/22/18	Fri 2/23/18



Project: Project2
Date: Sun 11/26/17

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

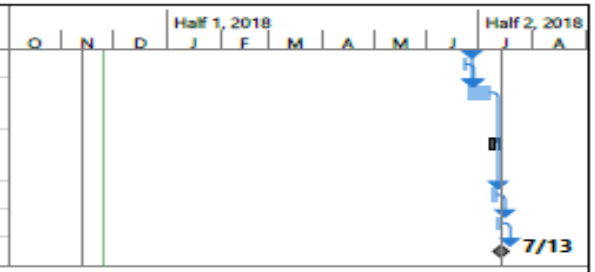
ID	Task Mode	Task Name	Duration	Start	Finish
20		2.2.1, Communication/adjustments	3 days	Mon 2/26/18	Wed 2/28/18
21		2.3,Charter IV. Development (Results)	47 days	Thu 3/1/18	Fri 5/4/18
22		2.4,Chapter V. Conclusions	5 days	Mon 5/7/18	Fri 5/11/18
23		2.5,Chapter VI. Recommendations	5 days	Mon 5/14/18	Fri 5/18/18
24		Tutor approval	0 days	Fri 5/18/18	Fri 5/18/18
25		**3,Reading of reviews**	**15 days**	**Mon 5/21/18**	**Fri 6/8/18**
26		**3.1,Reviewers assigment**	**5 days**	**Mon 5/21/18**	**Fri 5/25/18**
27		3.1.1,Assigment of reviewers	2 days	Mon 5/21/18	Tue 5/22/18
28		3.1.2,Communication	2 days	Wed 5/23/18	Thu 5/24/18
29		3.1.3,FGP submission to reviewers	1 day	Fri 5/25/18	Fri 5/25/18
30		**3.2,Reviewers feedback**	**10 days**	**Mon 5/28/18**	**Fri 6/8/18**
31		**3.2.1,Reviewer 1**	**10 days**	**Mon 5/28/18**	**Fri 6/8/18**
32		3.2.1.1,FGP reading	9 days	Mon 5/28/18	Thu 6/7/18
33		3.2.1.2, Report	1 day	Fri 6/8/18	Fri 6/8/18
34		**3.2.2,Reviewer 2**	**10 days**	**Mon 5/28/18**	**Fri 6/8/18**
35		3.2.2.1,FGP reading	9 days	Mon 5/28/18	Thu 6/7/18
36		3.2.2.2,Report	1 day	Fri 6/8/18	Fri 6/8/18
37		**4,Adjustments to FGP**	**20 days**	**Mon 6/11/18**	**Fri 7/6/18**
38		4.1,Reviewers report	9 days	Mon 6/11/18	Thu 6/21/18



Project: Project2
Date: Sun 11/26/17

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

ID	Task Mode	Task Name	Duration	Start	Finish
39		4.2,FGP update	1 day	Fri 6/22/18	Fri 6/22/18
40		4.3,Second review by reviewers	10 days	Mon 6/25/18	Fri 7/6/18
41		**5,Presentation to Board of Examiners**	**5 days**	**Mon 7/9/18**	**Fri 7/13/18**
42		5.1,Final board review	2 days	Mon 7/9/18	Tue 7/10/18
43		5.2,FGP grade report	3 days	Wed 7/11/18	Fri 7/13/18
44		FGP End	0 days	Fri 7/13/18	Fri 7/13/18



Project: Project2
Date: Sun 11/26/17

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

Appendix 4: Templates

Template 1

STATEMENT OF WORK (SOW)

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

TABLE OF CONTENTS

INTRODUCTION/BACKGROUND

[The statement of works is a document which seeks to outline the project scope of work required to execute the project, the work requirements and performance metrics which will govern acceptance of the project. This document must be signed by the Client to represent agreement with the details as stipulated in the SOW. The SOW must provide the necessary detail to ensure that it is understood by the reader. The introduction/background is intended to provide background description of the project to put the project into context. The background should be detailed enough to ensure the project is clearly understood]

SCOPE OF WORK

[The scope of works should outline all the work that should be executed to deliver the project; the scope of works may also outline scope exclusions which are not part of the project scope. The scope must be clear and unambiguous so the reader is clear on what is required. For example, the Contractor shall be responsible to develop a comprehensive design for the build out of a broadband infrastructure to be executed in Belle Isles, St. David. The Contractor shall procure, supply, install, test, commission, operate and maintain the infrastructure. The Contractor shall be responsible to provide all materials and equipment required to establish the broadband infrastructure. The Contractor shall also provide broadband internet connectivity to persons in the area of Belle Isles St. David, such quality of service shall meet all requirements outlined in the project requirements.]

PERIOD OF PERFORMANCE

[This section will outline the timeframe over which the project will occur. If the specific start date is known, this should be included. The performance is important as some projects may be time sensitive. Any delays in the period should promptly communicated to the Client. For example, the period of performance will run for 8 months starting from April 26, 2018. Any variances to the schedule should be agreed by all parties.]

PLACE OF PERFORMANCE

[This section will specify the place where the project will be performed. Where the place of performance includes more than one location, this should be specified. For example, the project will be conducted at Belles Isles, St. David. The initial procurement will be done online and will be stored at the Contractor premise for transportation to the project site.]

WORK REQUIREMENTS

[This section will include a description of all tasks required to deliver the project. This should be detailed enough to ensure that each task is understood. The tasks can be specified according to the project phase or deliverable. For example:

Project Planning:
List all activities

Project Implementation
List all activities

Project Handover
List all activities

Project close
List all activities]

SCHEDULE/MILESTONES

[This section should outline the deliverables that should be executed under the project and all major milestones including the timeline for completion of each]

ACCEPTANCE CRITERIA

[This section will outline the criteria the client will use to accept the deliverables. The criteria must be clearly written and understood as this will be used as a metric for handover. It should identify a point person who will be responsible for accepting the results. The process of acceptance can also be mentioned in this section.]

OTHER REQUIREMENTS

[This section will specify other requirements of the project that must be met for the project to be accepted. This may include for instance special requirements, security clearance. In addition, any restrictions or stipulations must be clearly listed.]

ACCEPTANCE

Approved by:

_____ Date: _____

<Approvers Name>
<Approvers Title>

Figure 15 Statement of Works template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 2

Project Charter

Applicable Processes/Procedures:

The project charter shall be created upon recommendations from the USF Committee for projects and approval from the Board of Commissioners for projects to be funded by the USF

Document Tracking:

Version No.	Revisions	Date	Author
Version 1.			

1. General Information:

Project Title: _____

Partnering Organization: _____ **Partner Representative:** _____

Prepared by: _____ **Title:** _____

Project Manager: _____

2. Executive Summary

Project description

3. Project Purpose

Rationale for executing the project

3.1. Business Need / Problem

3.2. Business Objectives

Strategic Plan Element	Project Business Objectives

4. Project Overview

4.1. Scope

4.2. Assumptions

4.3. Constraints

4.4 Flexibility Matrix

	Rigid	Partially flexible	Fully flexible
Scope			
Cost			
Schedule			

4.5 Success Criteria

5. Project Risks

6. Project Deliverables

7. Project Management Milestones

Milestone / Deliverable	Estimated Date	Responsible Individual

8. Budget

Purpose	Amount	Source
	$	
	$	

9. Personnel & Other Resources

Resources	Description

10. Project Stakeholders:

Stakeholder	Requirement/expectation	Power/Interest	Contact details
Sponsor Representative			
Customer / User Representative(s)			

11. Project Organization

11.1. Roles & Responsibilities

Stakeholder Title	Name	Roles & Responsibilities

12. Approval Signatures

This project has been officially approved with the following signatories signing bringing the project into existence.

Approved by:			
Printed Name	**Position/Title**	**Signature**	**Date**

Figure 16 Project charter template (NTRC, 2015)
Adapted from NTRC

Template 3

LESSONS LEARNED
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

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INTRODUCTION

[The purpose of the lessons learnt is to document the lessons learnt during the execution of the project and to make recommendations for areas of improvement in other similar projects. This is a rich source of an organization process assets and key in starting new projects. This section will include a description of the intended purpose of this document.]

LESSONS LEARNED APPROACH

[This section will describe what is entailed in the document, the phases that this lessons learnt applies to and how will it be presented, for example will lessons learnt apply to the phases or the knowledge areas.]

LESSONS LEARNED FROM THIS PROJECT

[This section will detail the lessons learnt and the recommendations for future projects. It should be detailed enough and should include any problems/success and impacts to the project. This will guide the recommendations. This section should be in keeping with your approach in terms of whether the information is presented by phases or knowledge areas.]

Category	Issue Name	Problem/Success	Impact	Recommendation

LESSONS LEARNED KNOWLEDGE BASE / DATABASE

[This section should specify where the lessons learnt will be stored for future reference, given that it will be an important input in future projects. Reference should be made to any index or catalogued number where application to allow for ease of reference. For example, USF Projects, project type <institution projects>, Year and project title]

LESSONS LEARNED APPLIED FROM PREVIOUS PROJECTS

[This section will reference whether lessons learnt applied to the current project was based on recommendations from other previous projects, in addition, the name the previous project should also be referenced.]

PROCESS IMPROVEMENT RECOMMENDATIONS

[Any recommendations made based on lessons learnt should be approved for application in future projects. This section will detail the process of applying such recommendations to future projects.]

Figure 17 Lessons learnt template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 4

PROJECT MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

TABLE OF CONTENTS

INTRODUCTION

[This Section should provide an overview of the project and what is entailed in the project management plan. Referenced can be made to the project charter or business case which includes some of this information.]

PROJECT MANAGEMENT APPROACH

[This section will outline your approach to the project. This should include the team members and the roles and responsibilities for each member, any constraints or assumptions on which the project is based and the resources that will be assigned to the project. If the project is based on a specific structure for example matrix or functional which has specific reporting structure, this should be detailed in this section.]

PROJECT SCOPE

[This section will specify the project scope that is all the work that should be executed for the project objectives and deliverables to be achieved. This section should provide more depth than the project charter and should also include scope exclusions.]

MILESTONE LIST

[This section will list the milestones to be accomplished under the project and the timeline for completion of each milestone. It should also include action which should be taken should there be any changes to the milestones or timelines.]

Milestone	Description	Date

SCHEDULE BASELINE AND WORK BREAKDOWN STRUCTURE

[This section should make reference to the WBS, WBS dictionary and Schedule baseline and how these will be used as part of the scope management. Reference should be made to what is each item, for example, what is the WBS, WBS dictionary and what do they entail or how will it be used in the project. For example, the WBS contains a list of work packages which details the work that will be undertaken to

achieve the deliverable. Each level of detail is referenced at a lower level of the WBS. The minimum acceptable CPI and SPI or threshold level should also be referenced.]

CHANGE MANAGEMENT PLAN

[This section will outline the change control process which will apply to the project. This should be based on internal operating procedures for addressing change requests as part of the change control process. The section should also include responsibilities with regards to approvals of any changes.]

COMMUNICATIONS MANAGEMENT PLAN

[This section should detail how communications will be handled on the project, this includes your approach to communications, any roles and responsibilities and how communication will be disseminated, access, control etc, frequency of disseminating information, formats etc. This section should also reference the location of your project management plan, where a separate plan exists; this will be applicable to complex projects where there are numerous communication channels. This plan will help guide the communications process.]

Communication Type	Description	Frequency	Format	Participants/ Distribution	Deliverable	Owner

Project team directory for all communications is:

Name	Title	E mail	Office Phone	Cell Phone

Communications Conduct:

Meetings:

Email:

Informal Communications:

COST MANAGEMENT PLAN

[This section will include the cost management plan, which details how cost will be managed throughout the project. The plan should include responsibilities for reporting costs and approving changes to the budget. In addition the frequency and formats for reporting the project cost should also be detailed. This should include any threshold or minimum level of variances permitted. Where a separate plan exists, the location of the cost management plan should also be included.]

PROCUREMENT MANAGEMENT PLAN

[The procurement management plan should outline all the responsibilities for procurement. This should include any special approvals that must be sought where a threshold is exceeded. The activities will be managed in collaboration with the procurement department. Where a separate plan exists, the location of the procurement management plan should be specified.]

PROJECT SCOPE MANAGEMENT PLAN

[This section will describe the project scope and detail how the scope will be managed throughout the project cycle. This is important to prevent scope creep which can also affect the project cost and schedule. The scope management should include responsibilities and authority, performance measurements, how changes to the project scope will be addressed and final acceptance of project scope. Where a separate plan exists, the location for the scope management plan should be included.]

SCHEDULE MANAGEMENT PLAN

[This section will outline the approach to developing and managing the project schedule. In addition, roles and responsibilities should be clearly documented and authority for changes to schedule should also be specified. Where a separate schedule management plan is created, the location of such plan should be specified.]

QUALITY MANAGEMENT PLAN

[This section will document how quality management will be addressed on the project; this includes documenting how quality requirements will be measured to ensure the deliverables meets its acceptance criteria. Responsibilities with regards to quality management should also be specified. Where a separate plan exists, the location should be specified.]

RISK MANAGEMENT PLAN

[This section will specify how risks will be addressed in the project and the general approach to managing risk strategy. Where a separate plan is created, the location should be specified.]

RISK REGISTER

[A separate risk register can be prepared for the project; the location of the risk register should be referenced in this section.]

STAFFING MANAGEMENT PLAN

[This section should outline how staffing will be assigned and managed in the project. Referenced should also be made to the type of organization structure. The staff and responsibilities of each staff member should also be mentioned.]

RESOURCE CALENDAR

[This section will specify the resources required for the project and the availability of such resources.]

COST BASELINE

[The section will detail the cost baseline for the project. The baseline will be used to manage and track the project cost.]

Project Phase	Budgeted Total	Comments

QUALITY BASELINE

[This section will specify the minimum quality levels that the project must meet.]

Item	Acceptable Level	Comments

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 18 Project management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 5

BUSINESS CASE
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

[This section will provide general information surrounding the project and the organization. This will set the tone to show the correlation between the project and the business need. The summary will also outline the content of the project.]

1.1. Issue

[This section will provide information on the problem that the project is seeking to address only. This will help frame the justification for the project.]

1.2. Anticipated Outcomes

[This section will outline the outcome that is expected should the project be accepted. This should include details with regards to the benefit to the organization and how the organization may change as a result of this project.]

1.3. Recommendation

[The section will provide recommendation with regards to how the business problem will be addressed as a result of the project. This section should be detailed enough to ensure that the business problem is adequately addressed.]

1.4. Justification

[This section will provide a justification, justifying why the project should be selected. Where figures are available, it should be included to support the justification. The effects of not selecting and implementing the project can also be specified in this section.]

2. BUSINESS CASE ANALYSIS TEAM

[This section will detail the team members who developed the business case. This will include their role in the organization, description of their role as it relates to the project and their name and title.]

Role	Description	Name/Title

3. PROBLEM DEFINITION

3.1. Problem Statement

[This section should specify the business problem that the project will solve.]

3.2. Organizational Impact

[This section outlines the impact the project will have on the organization, this should include how the process flow or operations will be impacted, how roles and responsibilities will be altered and any changes to technology: hardware or software should the project be selected]

3.3. Technology Migration

[This section will make reference to any new technology that will be used and processes in integrating with or moving from the old system]

4. PROJECT OVERVIEW

[This section will provide a description of the project including the goals, objectives any constraints or assumptions that should be considered. Project milestones and performance criteria]

4.1. Project Description

[Provide a high level description of the project, purpose and how the project should be executed, including any potential outcomes of the project.]

4.2. Goals and Objectives

[Specify the goals and objectives of the project and provide a description of each. Include how these goals and objectives will be addressed by the project.]

Business Goal/Objective	Description

4.3. Project Performance

[Provide details of the project performance and the metrics which will be used to assess the performance.]

Key Resource/Process/Service	Performance Measure

4.4. Project Assumptions

[Provide details of the assumptions that are made as it relates to the project. For instance, will training be included or will it be done by the organization]

4.5. Project Constraints

[Provide details with regards to the project constraints]

4.6. Major Project Milestones

[Outline the major project milestones and the corresponding date]

Milestones/Deliverables	Target Date

5. STRATEGIC ALIGNMENT

[This section should outline how the project is aligned with the organization's strategic plan. This should include the goals and objectives, as well as the relationship with the project]

Plan	Goals/Objectives	Relationship to Project

6. COST BENEFIT ANALYSIS

[This section should quantify the cost and benefits that will be derived from the project. This section should be as detailed as necessary to ensure a depiction of the cost and benefits that will be accrued to determine whether the project should be pursued.]

Action	Action Type	Description	First year costs (- indicates anticipated savings)
Net First Year Savings			

7. ALTERNATIVES ANALYSIS

[This section will consider other alternative that can address the business problem. This will show that other alternatives were considered, the rationale for not pursuing any alternatives should also be detailed.]

No Project (Status Quo)	Reasons For Not Selecting Alternative

No Project (Status Quo)	Reasons For Not Selecting Alternative

8. APPROVALS

[Approvals (acceptance or denial) will be documented in this section.]

Approver Name	Title	Signature	Date

Figure 19 Business Case template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 6

SCOPE MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section will introduce the project and provide an overview of what the document will entail.]

SCOPE MANAGEMENT APPROACH

[The scope management approach will outline the projects approach to scope management, in other words, how will the scope be managed and controlled throughout the project cycle. This shall include a summary of authority levels and responsibilities for scope management and how changes will be initiated and addressed, process for accepting project deliverables and measuring the project performance.]

ROLES AND RESPONSIBILITIES

[This section will outline the roles and responsibilities as it pertains to scope management.]

Name	Role	Responsibilities
		-
		-
		-
		-
		-

SCOPE DEFINITION

[This section will detail the process used to develop the project and the deliverables. For instance, requirements documentation used to collect stakeholders requirements, expert judgment was used to develop the technical specifications, etc. Include all other tools used. In addition, any document used to develop the project scope should be also included.]

PROJECT SCOPE STATEMENT

[This section will detail the scope statement, project deliverables and the work to complete the deliverables. This shall include scope exclusions, assumptions as well as constraints.]

WORK BREAKDOWN STRUCTURE

[The WBS will provide a breakdown of the work required to execute the project. This will include a WBS dictionary which will provide a description of the work to be executed.]

Work Breakdown Structure (WBS)

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget	Resources

WBS Dictionary

SCOPE VERIFICATION

[This section will describe how the scope will be verified; this will include the process to be followed to verify the project deliverables. This should include authority level for accepting and signing off on deliverables.]

SCOPE CONTROL

[This section will detail how the project scope will be monitored and controlled. This shall also include the change control process.]

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 20 Scope management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 7

ACTIVITY ATTRIBUTES

Project Title: _____ **Date Prepared:** _____

ID:	**Activity:**				
Description of Work:					
Predecessors	**Relationship**	**Lead or Lag**	**Successor**	**Relationship**	**Lead or Lag**
Number and Type of Resources Required:	**Skill Requirements:**		**Other Required Resources:**		
Type of Effort:					
Location of Performance:					
Imposed Dates or Other Constraints:					
Assumptions:					

Figure 21 Activity Attribute template (Snyder, 2013)
Adapted from https://www.pmi.org/learning/tools-templates/project-managers-book-of-forms

Template 8

ACTIVITY LIST

Project Title: _____ **Date Prepared:** _____

ID	Activity	Description of Work

Figure 22 Activity list template (Snyder, 2013)
Adapted from https://www.pmi.org/learning/tools-templates/project-managers-book-of-forms

Template 9

SCHEDULE MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
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INTRODUCTION

[This section will provide an overview of the schedule management and outline what the plan will entail.]

SCHEDULE MANAGEMENT APPROACH

[This section will outline the approach to creating and managing the project schedule, including any roles and responsibilities with regards to scheduling or schedule reporting and standard tools used to create the project schedule.]

SCHEDULE CONTROL

[This section will outline the process to monitor and control the project schedule. This will also include responsibilities for monitoring the project schedule.]

SCHEDULE CHANGES AND THRESHOLDS

[This section will outline any thresholds or parameters that the project schedule should operate within. Any non-conformances below the threshold should be addressed in accordance with the change request procedure.]

SCOPE CHANGE

[This section will detail how changes to the project schedule will be addressed to bring the threshold in line with the minimum threshold. The authority level for reviewing and approving change request should be outlined.]

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 23 Schedule management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 10

COST MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section provides an overview of the cost management plan and details what the plan will entail. This shall include the roles and responsibilities for managing costs, authority for approvals and the methods for reporting costs.]

COST MANAGEMENT APPROACH

[This section will outline the approach to cost management. This will include at what levels cost will be managed and the calculations that may be used to track the project cost performance.]

MEASURING PROJECT COSTS

[This section will specify how project costs will be measured on the project. This section shall include any tools or formulas which will be used to measure the project costs such as cost variance, cost performance index. This section will also set variance thresholds beyond which specified actions will be triggered, for instance reporting or corrective actions.]

Performance Measure	Yellow	Red

REPORTING FORMAT

[This sub-section will detail the formats and frequency for reporting.]

COST VARIANCE RESPONSE PROCESS

[This section will detail the cost variances process for the project. The project will detail the action that will be required should thresholds are triggered. This will include the authority levels to approve any actions needed to bring the project back on track.]

COST CHANGE CONTROL PROCESS

[This section will outline the change control process that should be followed to initiate changes to the project. Approvals for change control should also be referenced.]

PROJECT BUDGET

[This section should include the project budget. The budget should be broken out in categories to provide sufficient detail and should include the reserves.]

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 24 Cost management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 11

HUMAN RESOURCE PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section will provide an overview of the human resource management plan and what the plan will entail.]

ROLES AND RESPONSIBILITIES

[This section will outline the team members and the roles and responsibilities of each. This shall include the work that will be performed by the team member, the competency required to perform the work and any authority that may be assigned to the members.]

PROJECT ORGANIZATIONAL CHARTS

[This section will include a RACI chart which will outline the responsibility, accountability, consult and inform roles. This may be accompanied by resource breakdown structure which will illustrate how resources are assigned by departments.]

Roles / responsibilities						

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

STAFFING MANAGEMENT

[This section will outline the project staffing requirements, this will include when staff will be acquired to meet the project requirements, what will be the skills requirements of staff, will there be any pre-assignments, how performances will be reviewed, the rewards and recognitions which are built into the project and any team building which will be part of the project. This section can also make reference to occupational health and safety and any Government requirements which must be adhered to.]

Staff Acquisition:

Resource Calendars:

Training:

Performance Reviews:

Recognition and Rewards:

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 25 Human resource management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 12

COMMUNICATIONS MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

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INTRODUCTION

[The purpose of this section is to specify the purpose of the communications management plan and detail what the plan will entail. This shall include the communications matrix which will provide a list of the project stakeholders and the communication requirements of the stakeholders, it shall include the information to be communicated and the frequency of such communications; in addition, a communication flow chart can be provided as well as authorizations for confidential information.]

COMMUNICATIONS MANAGEMENT APPROACH

[This section shall detail the approach for communication management. Given the importance of communication, this section should be as detailed as possible. This shall include responsibilities for changes and updates to project communications.]

COMMUNICATIONS MANAGEMENT CONSTRAINTS

[This section should specify the communication constraints. For instance technology or internal policy within the organization which must be adhered to as part of communications may serve as a constraint which must be noted.]

STAKEHOLDER COMMUNICATION REQUIREMENTS

[This section will outline the communication requirements of the stakeholders. Given the important of stakeholders on the project and their ability to influence the project outcome, clearly documenting their communication requirements is important to prevent any delays in communication which can affect the project, especially if the stakeholder is a powerful stakeholder. Outlining the roles of the stakeholders will help guide their communication requirements.]

ROLES

Project Sponsor

Program Manager

Key Stakeholders

Change Control Board

Customer

Project Manager

Project Team

Steering Committee

Technical Lead

PROJECT TEAM DIRECTORY

[The project directory provides the contact information for communications.]

Role	Name	Title	Organization/ Department	Email	Phone

COMMUNICATION METHODS AND TECHNOLOGIES

[This section will specify the communication methods and technology which will guide the project communications.]

COMMUNICATIONS MATRIX

[This table will outline the project communications requirements.]

Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format

COMMUNICATION FLOWCHART

[In this section, include a flowchart which will guide the communication process.]

GUIDELINES FOR MEETINGS

[The following will provide guidance for project meetings.]

Meeting Agenda
Meeting Minutes
Action Items
Meeting Chair Person
Note Taker
Time Keeper
Parking Lot

COMMUNICATION STANDARDS

[This section will outline any communication templates or formats that are used by the organization. These can help to standardize the communications process. Communications standards can be broken down by meetings types e.g. kick off, project team meetings, status meetings, and technical meetings.]

Kickoff Meeting –
Project Team Meetings –
Technical Design Meetings -
Monthly Project Status Meetings -
Project Status Reports –

COMMUNICATION ESCALATION PROCESS

[This section will specify the process for escalation disputes, conflicts with regards to project communications.]

Priority	Definition	Decision Authority	Timeframe for Resolution

GLOSSARY OF COMMUNICATION TERMINOLOGY

Term	Definition

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 26 Communications management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 13

QUALITY MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section will provide an overview of the quality management plan and describe what the quality management plan will entail.]

QUALITY MANAGEMENT APPROACH

[This section will outline the approach to quality management on the project. The Quality in this case should be related to both the project and the process.]

QUALITY REQUIREMENTS / STANDARDS

[This section will specify how the quality team will document or identify quality requirements. This should also include how the project will comply with these quality requirements. The quality requirements should be related to both product and project quality.]

QUALITY ASSURANCE

[This section will detail how the quality requirements for the project will be audited. The quality assurance metrics used should also be included.]

Process Action	Acceptable Process Standards	Process Phase	Assessment Interval
	-		

QUALITY CONTROL

[This section will outline the process for recording the quality activities as part of monitoring and controlling the project. Quality control should be limited to the product and should not include the process.]

Product	Physical/Performance Standards	Quality Assessment Activities	Assessment Intervals

QUALITY CONTROL MEASUREMENTS

[This section will provide a log of the quality control measurements. If requirements do not meet the standards then actions should be taken to address this non conformance.]

Quality Assurance Log

Trial #	Date	Process Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

Quality Control Log

Cable #	Date	Item Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 27 Quality management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 14

RISK REGISTER TEMPLATE

Risk Identification		**Qualitative Rating**				**Risk Response**		
Risk	Risk Category	Probability	Impact	Risk Score	Risk Ranking	Risk Response	Trigger	Risk Owner
				0	1			
				0	2			
				0	3			
				0	4			
				0	5			
				0	6			
				0	7			
				0	8			
				0	9			
				0	10			
				0	11			
				0	12			
				0	13			
				0	14			
				0	15			
				0	16			
				0	29			
				0	30			

Figure 28 Risk Register template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 15

RISK MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section will provide an overview of the risk management plan and detail what the plan will entail.]

TOP THREE RISKS

[This section will outline the top risk to the project; this will allow the project manager to keep track of the major risks to the project.]

RISK MANAGEMENT APPROACH

[This section will outline the approach to risk management.]

RISK IDENTIFICATION

[This section will outline the process for risk identification. Any tools and methods that are in place to identify risks should be referenced here. In addition, it should include the format in which risks are recorded.]

RISK QUALIFICATION AND PRIORITIZATION

[This section will outline the probability and impact of risk that are identified under the project. This can be demonstrated by a probability x impact matrix.]

RISK MONITORING

[This section will describe how risks will be monitored on the project, this is important because as the project progress, new risks may emerge and old risk may no longer present a threat. Thus, risk monitoring should be done throughout the project.]

RISK MITIGATION AND AVOIDANCE

[This section will outline the strategy to address risks identified, whether the risks will be avoided, mitigated, transferred or accepted.]

Risk Register

[This section will include the risk register; this is where risks will be tracked throughout the project.]

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 29 Risk management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 16

PROCUREMENT MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

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INTRODUCTION

[This section will outline the purpose of the procurement management plan and what the plan will entail. This shall include the Contracts which will be used, procurement templates, approval process, risks associated with procurement management, any prequalified sellers which were identified, and performance metrics for procurement.]

PROCUREMENT MANAGEMENT APPROACH

[This section will detail the approach to procurement management. The project manager will work with the project team, purchasing department and vendors to execute this activity.]

PROCUREMENT DEFINITION

[This section will outline the items that need to be procured and the timeline for procurement. This will be helpful in determining whether items needed to be expedited to meet tight timelines. The authority levels for approvals of purchase should be listed.]

Item/Service	Justification	Needed By

In addition to the above list of procurement items, the following individuals are authorized to approve purchases for the project team:

TYPE OF CONTRACT TO BE USED

[This section will specify the type of Contract to be used whether its fixed price, cost reimbursable or otherwise. The Contracts used will also depend on the items to be procured.]

PROCUREMENT RISKS

[This section will highlight the procurement risks on the project. things such as vendor experience, history etc can present risks to a project and should be highlighted.]

PROCUREMENT RISK MANAGEMENT

[This section will discuss how procurement risks identified in the previous section will be managed on the project. This may include certain personnel or approvals levels.]

COST DETERMINATION

[This section will outline how costs will be determined and the costs which will be used as a benchmark for assessing vendor quotes. It should also include what the costs will apply to.]

STANDARDIZED PROCUREMENT DOCUMENTATION

[This section will describe any standard procurement documents which will be used as part of procurement.]

PROCUREMENT CONSTRAINTS

[This section will describe any constraints related to procurement management. This can be categorized by schedule, cost, scope etc]

CONTRACT APPROVAL PROCESS

[This section will describe the process for Contract approval. This may vary based on the size and complexity of the project. In addition, the personnel responsibility for approvals should also be listed; this too can vary based on the cost of the project.]

DECISION CRITERIA

[This section will specify the criteria for Contract acceptance. This may include cost, quality, experience etc.]

VENDOR MANAGEMENT

[This section will outline the roles of the different departments in ensuring that the vendors meet the requirements, this will include how vendors will be managed and who has the responsibility for vendor management.]

PERFORMANCE METRICS FOR PROCUREMENT ACTIVITIES

[This section will specify the metrics which will be used as part of procurement. This information will also be helpful in building records of vendors for future projects.]

Vendor	Product Quality	On Time Delivery	Documentation Quality	Development Costs	Development Time	Cost per Unit	Transactional Efficiency
Vendor #1							
Vendor #2							

1 – Unsatisfactory
2 – Acceptable
3 - Exceptional

SPONSOR ACCEPTANCE

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 30 Procurement management plan template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 17

STAKEHOLDER REGISTER

Project Title: _____ **Date Prepared:** <YYYY-MM-DD>

Name	Role	Requirements or Expectations	Interest	Power
<Name> **<Job Title>**	<Relation to the project>	<What does the stakeholder require from the project, in terms of deliverables or information? What is their stake in it? What might they gain or lose from the project?>	<High>	<High>
			<Low>	<Low>

Figure 31 Stakeholder register template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Template 18

REQUIREMENTS DOCUMENTATION

Project Title _____ **Date Prepared:** _____

ID	Requirement	Stakeholder	Category	Priority	Acceptance Criteria	Validation Method

Figure 32 Requirements documentation template (Snyder, 2013)
Adapted from https://www.pmi.org/learning/tools-templates/project-managers-book-of-forms

Template 19

STAKEHOLDER MANAGEMENT PLAN
<PROJECT NAME>

NATIONAL TELECOMMUNICATIONS REGULATORY COMMISSION
MAURICE BISHOP HIGHWAY
ST. GEORGE

MARCH 28, 2018

TABLE OF CONTENTS

9. INTRODUCTION

[This section will outline the purpose of the stakeholder management plan and detail what the plan will entail.]

10. IDENTIFY STAKEHOLDERS

[This section will discuss the process to identify the project stakeholders. This section should be clearly detailed to ensure the process is understood. It is important to identify all project stakeholders, as omissions can affect the project.]

11. KEY STAKEHOLDERS

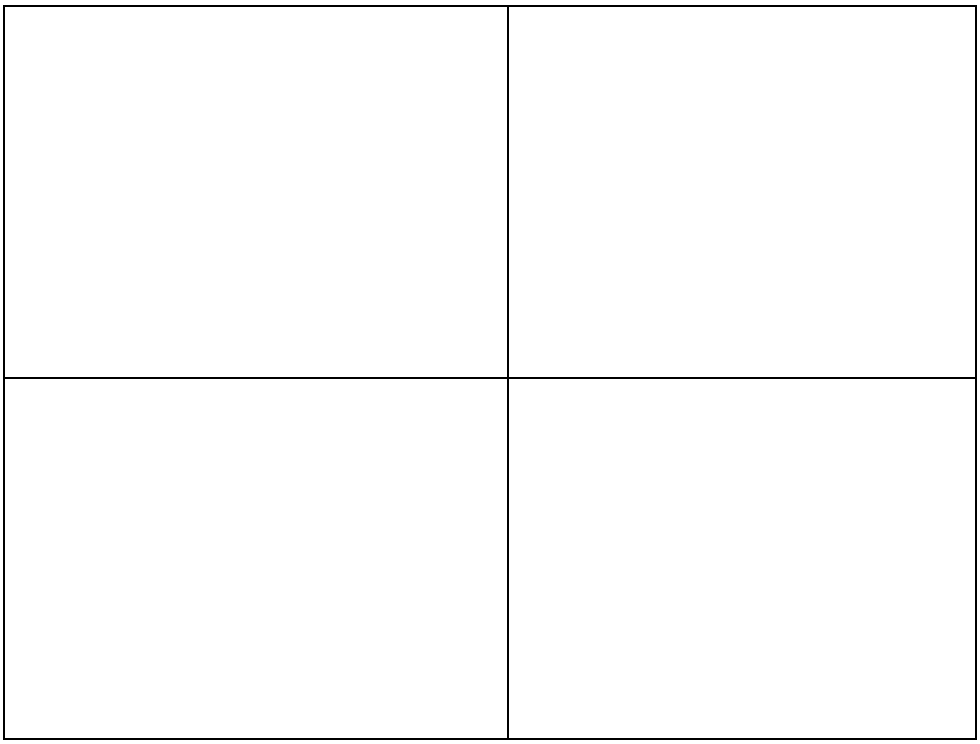
[This section will outline the process of selecting the key stakeholders from the project stakeholders list identified. These will be stakeholders who typically have a high influence over the project and therefore should be managed closely.]

12. STAKEHOLDER ANALYSIS

[This section will describe how stakeholders will be analyzed. The tools and techniques used to analyze stakeholders should also be listed.]

Key	Organization	Name	Power (1-5)	Interest (1-5)

Power



Interest

Stakeholder	Concerns	Quadrant	Strategy

Sponsor Acceptance

Approved by the Project Sponsor:

_____ Date:_____

<Project Sponsor>
<Project Sponsor Title>

Figure 33 Stakeholder management strategy template (Piscopo, 2018)
Adapted from www.ProjectManagementDocs.com

Appendix 5: Interview notes

Interview

This interview is intended to assist with the assessment of the project management procedures used within the organization in order to identify any deficiencies which exist and recommend areas for improvement. Please take a few minutes of your time to answer the following questions thoroughly.

1. What is your position in the organization

   Fund Administrator

2. What is your level of experience in projects

   Seven years

3. What percent of your work is related to projects

   100%

4. Can you describe how projects are typically conducted in the organization

   Projects are managed in accordance with the USF Regulations and Guidelines. The NTRC requests project proposals (Call for Projects) from the general public. These call for projects are then evaluated by a USF Committee. The proposals are evaluated on the basis of compliance with the USF scope, sustainability, priority, institutional capacity, technical feasibility. The selected projects are then submitted to the Board for approval. Once approved a project charter is prepared outlining the high level scope, risks, stakeholders, business case, budget, schedule and a project manager is assigned to manage the process. Once signed, the NTRC will do stakeholder identification which stems from the project charter. The NTRC will then meet with the stakeholders to discuss the project requirements. A project plan is prepared outlining the project components. A project scope is developed and agreed to among the parties. Once completed, the NTRC will develop the RFP for the procurement process. The RFP is used to solicit project bids from eligible bidders. Once bids are received, the NTRC will conduct an analysis and the successful bidder, once approved by the Board is awarded a Contract to execute the project.

   The NTRC will then work with the bidder through the execution phase. The NTRC conducts routine visits, and receive progress reports on the execution process. Performance reports are also used to provide updates on the progress of the projects. Once completed a site assessment and verification is conducted for the deliverables. Once it is determined that the deliverables meet the criteria as outlined

in the bid, the NTRC will sign off and handover the completed deliverable to the Client. Thus the monitoring and execution phase are done together. The NTRC will enter into a service level agreement, as part of the Contract with the Contractor for a period ranging from three to five years. During that period reports will be conducted from the Client on the project progress to access its effectiveness as parts of the benefits, in addition reports will be conducted from the Contractor on the maintenance and support. Once the SLA comes to an end, the project is close.

A site visit is conducted to ensure that all final maintenance and support are done; surveys may be conducted with the users as part of an assessment of the effectiveness of the project. All final payments are made to the Contractor and a lessons learnt is done. The Contract is closed and all project files filed for future reference.

5. Are they any procedures in place which guides project selection and implementation

   Yes

6. If yes, are these procedures based on any standards e.g. ISO 21500, PMI

   No, procedures are based on USF regulations and guidelines and internal operating procedures are an extension of the regulations. The internal operating procedures are not fully documented

7. Are there any challenges with managing projects

   Yes

8. If yes, what are your major challenges

   The major challenges with projects are: 1. Stakeholders fully articulating their requirements, sometime the stakeholders are not fully aware of their needs and thus the projects sometimes do not address all their needs 2. Existing projects, there are other projects going in the industry, sometime some element of the scope will be included in other projects, thus scope and constant assessment of what is going on in the market has to do throughout the project

9. Would you say that there are deficiencies with the project management process

   Yes

10. If yes, briefly state what are the deficiencies

    The regulations limits what can be done, for instance, bidders are only telecommunication providers so the competitive process is not fully competitive. The regulations are not based on industry project management standards

11. How would you recommend improving these deficiencies

Revising the regulations and focus the regulations only on the administration process and the use of the funds, while anything related to project management should be done by the Organization based on adoption of recognized standards

12. Have any of the projects failed

    Yes

13. If yes, what were the reasons

    Lack of stakeholder engagement

14. Do you think the project management processes needs changing
    Yes

15. Do you have any archive / PMIS in place

    Yes

Thank you for taking the time to participate in this interview process.

Appendix 6

Certification by Language Specialist

This is to certify that I Leonie St. Juste have reviewed the Final Graduation Project (FGP) of Christa Burke-Medford and confirm that the content is of correct form, grammar and spelling.

Mrs. Leonie St. Juste

Credentials of Language Specialist

Leonie St. Juste

Qualifications

BA (UWI) – University of West Indies – Language Literature with Education

MA (SIUC) – Southern Illinois University Carbondle – Teaching English to Speakers of Other Language (TESOL)

Experience

Associate Professor and Coordinator of English Program
St. Georges University
St. George's
Grenada

L St Juste

Mrs. Leonie St. Juste