UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE IMPLEMENTATION OF AN ELECTRONIC INVOICE SYSTEM FOR TRANSACCIONES FERRETERAS S.A

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DEDICATION

To my Mom, for the greatest gift I could have ever received, everlasting love and patience. To my Dad, for always pushing me forward, to do my best, to be better, and to take the next step. To my older Brothers, thank you for the never-ending support in all my academic endeavors. Last but not least, to Michel, you inspire me every day, I love you.

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ABBREVIATIONS AND ACRONYMS

- EPR: Electronic Resource Planning
- FPG: Final Graduation Project
- RBS: Risk Breakdown Structure
- Tax Administration: Ministry of Finances of Costa Rica
- TRANSFESA: Transacciones Ferreteras de Costa Rica Sociedad Anónima
- WBS: Work Breakdown Structure
- WBD: Work Breakdown Dictionary

EXECUTIVE SUMMARY (ABSTRACT)

As it happens in other countries, tax evasion is a problem most governments face and the Tax Administration in Costa Rica is trying to implement new systems to combat the situation that has severe consequences on the financial health of the public administration. Starting in 2014, in order to reduce this problem and have better control of the income that the administration should receive from the taxpayers, a pilot program to implement the electronic invoice issuance for the sale of products and services provided was presented via Legal Decree.

Transacciones Ferreteras de Costa Rica Sociedad Anónima (TRANSFESA) has had an operational growth that meant a new category for the company as a taxpayer and the need to adjust to the regulations established by the Ministry of Finance of Costa Rica. As a "large taxpayer," the company needed to comply with an electronic invoice system to register all the sales made and payments received during the fiscal year to ensure that tax declarations are accurate and thus helping the Costa Rican Government to prevent tax evasion.

The general objective was to develop a project management plan for the implementation of an electronic invoice system in the company to comply with the Tax Administration mandate for. However, before completing the project management plan, the project charter was generated, as the first process in the integration management knowledge area, using a template and included in this Final Graduation Project as Annex 1. The development of the project management plan**,** the second process in the Project Integration Management Knowledge Area, consists of all of the subsidiary plans developed as specific objectives during the Final Graduation Project.

The specific objectives of this project were to create a scope management plan to ensure the necessary work to comply with the goals is completed, to create a schedule management plan to support the development and management of the project schedule and complete the project tasks, to create a cost management plan for developing and managing the project within the proposed budget, to produce a quality management plan to determine if the company is in compliance with the tax administration requirements, to create a human resource management plan to establish effective assignation of human talent, to create a communication management plan to ensure adequate information flow and the proper documentation of the project development, to create a risk management plan to identify possible risks to increase the probability of success of the project and to develop strategies to respond to risks and take advantage of opportunities, to produce a procurement management plan to ensure the necessary services or goods are attained to allow the project completion, and to develop a stakeholder management plan to identify the project stakeholders and be able to engage them effectively.

The methodologies applied in the development of this Final Graduation Project were the analytical and qualitative methods to examine the information obtained from

both, primary and secondary sources, such as interviews, legal documents, the Guide to the *Project Management Body of Knowledge*, fifth edition, academic works, newspapers and other. Through the analysis of the information, the Project Manager and the Project Manager Assistant were able to develop the project management plan.

The project management plan developed using the *PMBOK® Guide 5th Edition* (Project Management Institute [PMI], 2013), provided the methodology for the project team to create the necessary project management plan to ensure the company would be able to comply with the legal mandate given by the Tax Administration.

One important request made by the Project Sponsor was to keep the time constraint as the most important during the project development. The failure to comply with the issuance of electronic invoices as indicated by the Tax Administration implied economic sanctions to the company. Another important request made by the Project Sponsor was having only the staff of the company participate of the project process, since he was concerned with the protection of confidential information, of both the company and the clients. Thus the staff release plan was a rather flexible one, since the conclusion of a task didn't mean the termination of a contract for the staff members, but rather returning to their regular functions and becoming an internal stakeholder of the project.

As for recommendations, the company should implement project management practices such as the use of the planning process and documents like the ones created during the development of the project. The company should also use this opportunity to utilize, organize, store, and create a central location for project planning documents and future organizational process assets that are necessary for the development of project management plans in the future as well as functional to extrapolate values that can help determine how effective a project has really been or the level of impact it has had in the organization. TRANSFESA should also research other project cases, if available to them, regarding the implementation of the electronic invoice system in order to understand future challenges related to it.

Including a companywide induction to the use of the electronic invoice system could be useful to the company, since it transmit to the clients a sense of security regarding the company and it serves as an incentive to employees seeking to grow in the company.

1. INTRODUCTION

1.1. Background

Transacciones Ferreteras de Costa Rica Sociedad Anónima (TRANSFESA) is a Costa Rican based hardware imports company that started as a small family business thirty-three years ago. Throughout the years, the company has had the opportunity to grow and expand operations providing not only hardware products, but also construction materials to hardware stores and deposits all over Costa Rica.

The operational growth meant a new category for the company as a taxpayer and the need to adjust to the regulations established by the Ministry of Finance of Costa Rica. As a “large taxpayer,” the company needs to comply with an electronic invoice system to register all the sales made and payments received during the fiscal year to ensure that tax declarations are accurate and thus helping the Costa Rican Government to prevent tax evasion.

The conversion to the electronic invoice system will be in charge of the Information & Technology Department and, given its importance and sensitivity, the conversion process will require a project management plan to conduct the execution, monitoring, controlling, and closing of the project.

The implementation of a project management plan will help the company to have a successful transition to the system required by law and minimize the impact of its operations significantly.

1.2. Statement of the problem

By regulation of the Ministry of Finance of Costa Rica, all large taxpayers have to implement the electronic invoice system. To ensure the modification is done correctly and the outcome will have a minimum effect on the daily operations of the company, a project management plan that adheres to the guidelines established by the Project Management Institute will be created for the Information & Technology Department to execute. Every component of the project management plan will develop the necessary tools, techniques, and essential concepts to ensure that the plan responds to the needs of the company.

1.3. Purpose

For the company to comply with the regulations established by legal mandate as well to satisfy the growing demand for improved coordination and cooperation between the Tax Administration and the companies, large taxpayers have been required to implement an electronic invoice system that will facilitate the control of tax reports and payment. This transition; however, needs to be carefully executed to ensure the lowest impact on the daily operations of the company.

The project seeks to develop the project management plan for the implementation of an electronic invoice system. This guide will be a tool that allows the Project Manager to engage all interested stakeholders in the process and provide a clear path to the company on how the transition will be conducted ensuring the company is up to date with the current tax regulations while it keeps providing a quality service to its clients.

1.4. General objective

To create a Project Management Plan compliant with the standards of the Project Management Institute for the implementation of the electronic invoice system to make the company compliant with the legal mandate established by the Tax Administration.

1.5. Specific objectives

1. To create a Scope Management Plan to ensure the necessary work to comply with the goals is completed.
2. To create a Schedule Management Plan to support the development and management of the project schedule and complete the project tasks.
3. To generate a Cost Management Plan for developing and managing the project within the proposed budget.
4. To develop a Quality Management Plan to determine if the company complies with the Tax Administration requirements.
5. To create a Human Resource Management Plan to determine effective assignation of human talent to execute the project
6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.
7. To create a Risk Management Plan to identify possible risks and develop plans to respond to them in order to increase the probability of success of the project.
8. To develop a Procurement Management Plan to ensure the necessary services or goods are purchased to allow the project completion.
9. To develop a Stakeholder Management plan to identify the project stakeholders and be able to engage them effectively.

2. THEORETICAL FRAMEWORK

2.1 Company framework

2.1.1 Company background

Times of need often represent an opportunity to grow and develop new business ideas that, when conducted correctly, can result in long-term success. Three decades in business are the result of Mr. Marco Hernandez, founder and CEO of TRANSFESA, who identified a need and took advantage of it to enter the market of hardware products and build a successful company.

Through the years, the need to remain competitive took the company through several renovation processes that included the adjustment of their strategy and their approach to clients, the management of logistics and inventory, and the implementation of technological tools like the electronic invoice. This last adjustment was driven by new regulations established by the Costa Rican Tax Administration.

The growth of the company from a small business to what the law defines as a large taxpayer implies that TRANSFESA has acquired new obligations that have to be fulfilled with the different governmental authorities in Costa Rica. Thus, the company seeks to adjust to the electronic invoice system, using a management plan as an implementation tool, to ensure the possible disruption of operations will be minimum (M. Hernández Jr., personal communication, 15 November 2017).

2.1.2 Mission and vision statements

Mission

TRANSFESA’s mission is to help Costa Ricans to realize their dreams of remodeling and construction with our wide assortment of hardware, plumbing, and high-quality taps through our prestigious distribution network.

The countrywide distribution network allows the company to maintain a healthy income that sets it in the category of large taxpayers, which in turn implies that the company has to obey the legal mandate of the Tax Administration (M. Hernández Jr., personal communication, 1 December 2017).

Vision

TRANSFESA's vision is to be the wholesale distributor of hardware and construction products leader in the country, recognized for promoting the integral development of its employees and the community by ensuring the satisfaction and prosperity of their business partners (M. Hernández Jr., personal communication, 1 December 2017).

2.1.3 Organizational structure

Over its thirty years of existence, TRANSFESA has gone through multiple reorganizations and restructuring processes to ensure the quality of their service remains firmly committed to excellence. Currently, the company has fifty-eight full-time employees and five employees will work exclusively on the execution of the project. However, the company has not discarded having support from a third party contractor to ensure the project is completed in due time, given that this change is a legal mandate and will be obligatory starting on February 2018.

Below in figure 1 the company's organizational structure is illustrated; the Executive Director Mr. Marco Hernandez Sr. heads the company. The IT Department, under the Human Talent and Organizational Development Direction, will carry out the project.

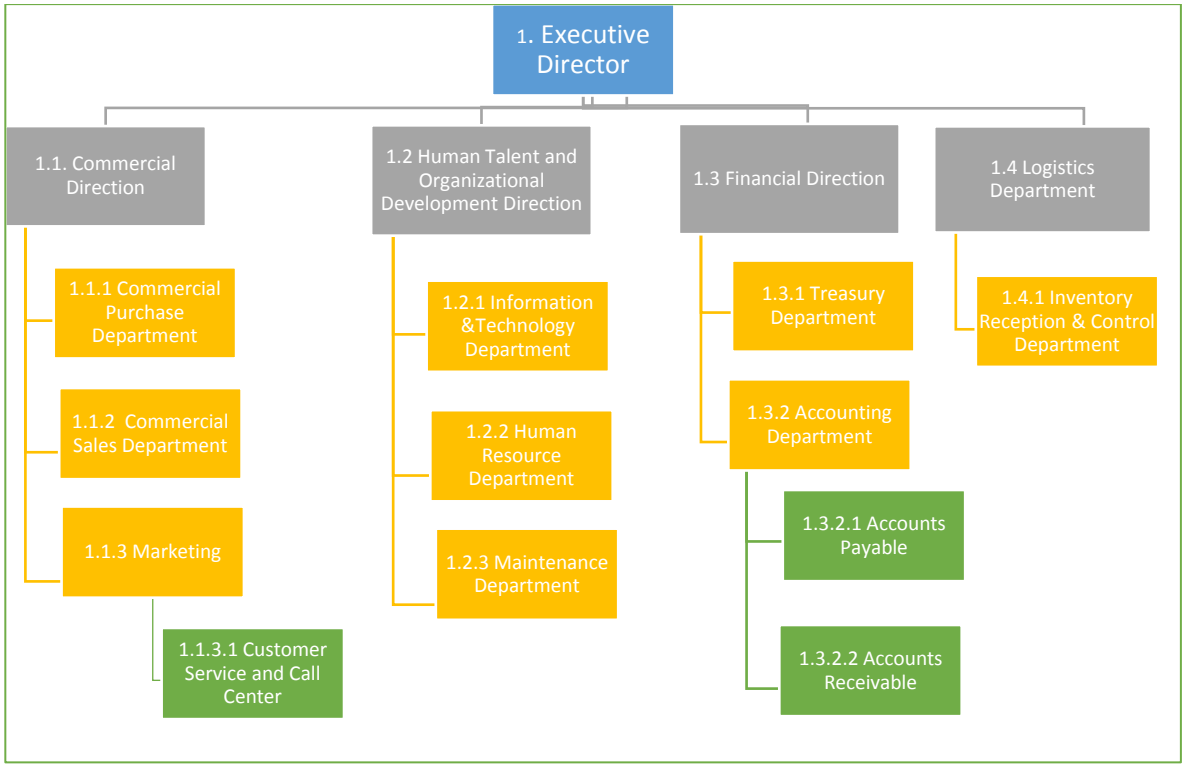

Figure 1 Organizational structure

Source: M. Hernández, personal communication, 1 December 2017.

2.1.4 Products offered

The primary product provided by the company is the wholesale of hardware and construction materials as well as the distribution of these products to the hardware stores and material deposits in Costa Rica.

2.2 Project Management Concepts

2.2.1 Project

A project can be defined as “a temporary endeavor undertaken to create a unique product, service, or result” (PMI, 2013, p. 3). The project that will be used to develop this FGP has its starting point in a legal mandate provided to taxpayers by the Costa Rican Tax Administration.

Even though the nature of this project is not part of the regular portfolio of activities the company has, the need to comply with the new legal requirements made the company seek guidance to develop this project.

2.2.2 Project management

According to PMI's (2013) *A Guide to the Project Management Body of Knowledge* (PMBOK® Guide), project management started as an informal process implemented in companies to ensure that new endeavors were completed in time and within budget. Slowly but surely, project management emerged as a professional field that is currently regulated by institutions like the Project Management Institute and guided by generally accepted documents such as the PMBOK® Guide.

As of today, project management can be defined as "the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements" (PMI, 2013, p. 5).

The development of the Final Graduation Project (FGP) will consist of the creation of the Project Management Plan for the implementation of the electronic invoice system and the PMBOK® Guide will be used as the guiding source to develop the project management plan.

2.2.3 Project life cycle

Even though each project is unique regarding what it seeks to achieve or produce and the period to develop it, all projects have a life cycle that identifies five generic processes: initiation, planning, executing, monitoring and control, and closing (PMI, 2013, p. 38).

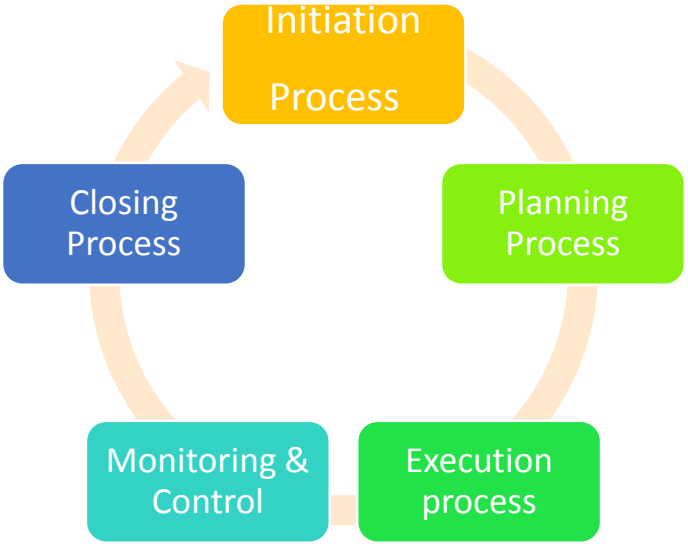

Figure 2 Generic Project Life Cycle

Source: Author, 2017.

Given that this project is not part of the regular activities TRANSFESA executes, a generic project life cycle will be used to conduct the project.

2.2.4 Project management processes

A process is defined as "a set of interrelated actions and activities performed to create a pre-specified product, service or result…the project management processes are presented as discrete elements with well-defined interfaces. However, in practice, they overlap and interact" (PMI, 2013, p. 47).

For the initiation phase to develop the Project Management Plan for the implementation of the electronic invoice system, the Project Charter will be created. Once the Executive Director, who is the primary sponsor of the project, approves it, the Project Manager will formally start the other processes of the project.

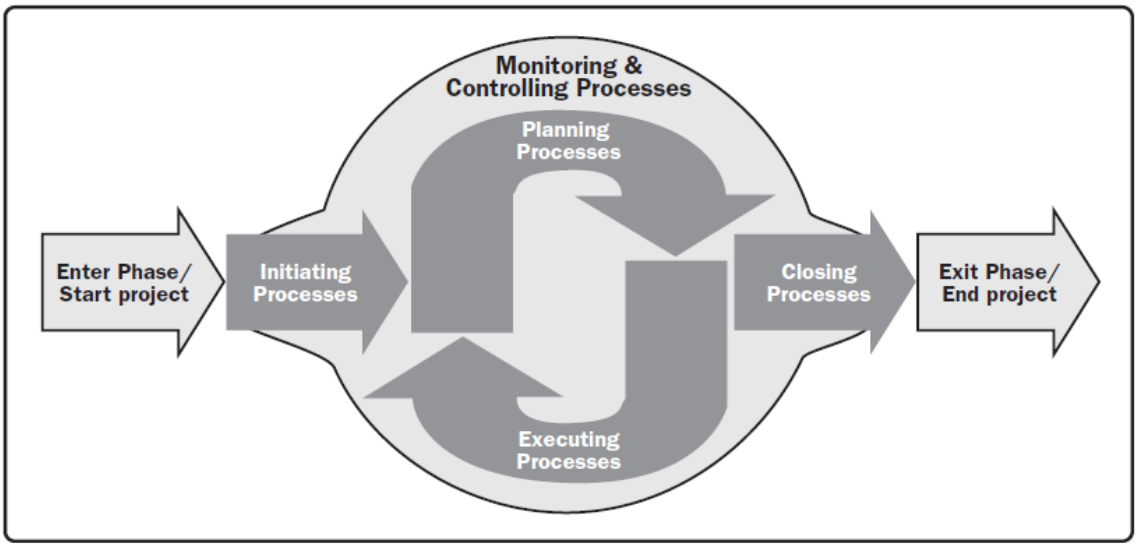

Figure 3 Project Management Process Groups. Reprinted from A Guide to the Project Management Body of Knowledge (p. 50), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

2.2.5 Project Management Knowledge Areas

The PMBOK Guide fifth edition, identifies 47 project management processes that can be grouped into ten Knowledge Areas that are used on most projects most of the time (PMI, 2013, p. 60).

The Knowledge Areas defined by the PMBOK Guide and that will be applied to this project are Project 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, and Project Stakeholder Management.

Project Integration Management

This Knowledge Area includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups. (PMI, 2013, p. 63). Figure 4 depicts the overview of the Project Integration Management.

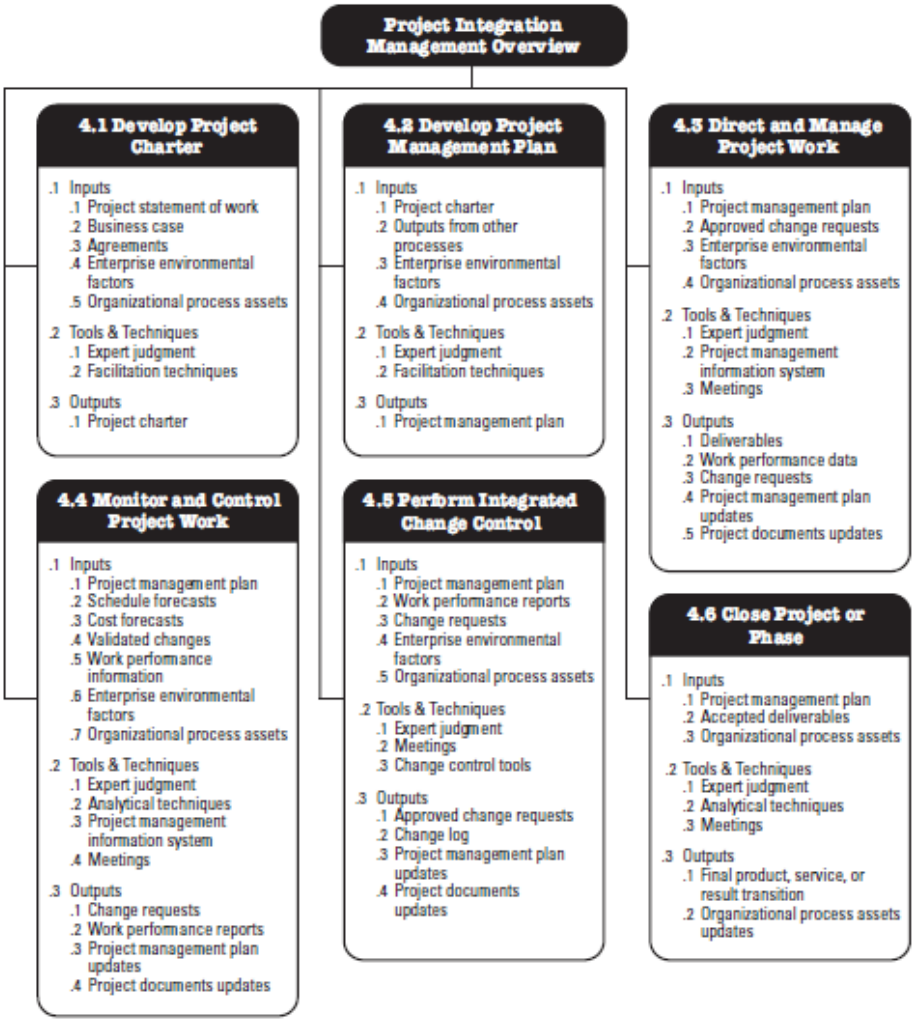

Figure 4 Integration Management Overview. Reprinted from A Guide to the Project Management Body of Knowledge (p. 65), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

From the six processes that this Knowledge Area has, the FPG will generate the Project Management Plan that integrates all subsidiary plans. Before proceeding with the FPG development, the Project Charter that formally authorizes the existence of the project was created with the company CEO and the Lead IT Engineer who was the proposed Project Manager.

Project Scope Management

This Knowledge Area includes the processes required to ensure that all the necessary work to complete the project successfully was defined and when it is correctly established and defined, it helps prevent scope creep.

From the scope management processes determined by the PMBOK Guide and represented in figure 5, this project will use plan scope management, collect requirements, define the scope, and create WBS.

5.1 Plan Scope Management—The process of creating a scope management plan that documents how the project scope will be defined, validated, and controlled.

5.2 Collect Requirements—The process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.

5.3 Define Scope—The process of developing a detailed description of the project and product.

5.4 Create WBS—The process of subdividing project deliverables and project work into smaller, more manageable components.

5.5 Validate Scope—The process of formalizing acceptance of the completed project deliverables.

5.6 Control Scope—The process of monitoring the status of the project and product scope and managing changes to the scope baseline.

Figure 5 Overview of the Project Scope Management processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 105), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Schedule Management

This Knowledge Area includes the processes required to manage the timely completion of the project. Figure 6 provides an overview of the Project Schedule Management processes according to the PMBOK Guide (PMI, 2013). The correct application of this Knowledge Area and its processes will allow the Final Graduation Project conclusion by the period provided by the Tax Administration.

6.1 Plan Schedule Management—The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.

6.2 Define Activities—The process of identifying and documenting the specific actions to be performed to produce the project deliverables.

6.3 Sequence Activities—The process of identifying and documenting relationships among the project activities.

6.4 Estimate Activity Resources—The process of estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.

6.5 Estimate Activity Durations—The process of estimating the number of work periods needed to complete individual activities with estimated resources.

6.6 Develop Schedule—The process of analyzing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.

6.7 Control Schedule—The process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

Figure 6 Overview of the Project Schedule Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 141), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Cost Management

This Knowledge Area includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (PMI, 2013, p. 193). From the processes contemplated in this Knowledge Area depicted in figure 7, the Final Graduation Project will use plan cost management, estimate cost management, and determine a budget.

7.1 Plan Cost Management—The process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs.

7.2 Estimate Costs—The process of developing an approximation of the monetary resources needed to complete project activities.

7.3 Determine Budget—The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

7.4 Control Costs—The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline.

Figure 7 Overview of the Project cost Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 193), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Quality Management

This Knowledge Area includes the processes and activities of the performing organization that determines quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken (PMI, 2013, p. 227). For the Final Graduation Project, only identifying quality requirements and standards for the project and its deliverables and documenting how the project will demonstrate compliance with the quality requirements will be used (PMI, 2013, p. 227). This responds to the first process of Plan Quality Management, depicted in figure 8 below.

8.1 Plan Quality Management—The process of identifying quality requirements and/or standards for the project and its deliverables and documenting how the project will demonstrate compliance with quality requirements.

8.2 Perform Quality Assurance—The process of auditing the quality requirements and the results from quality control measurements to ensure that appropriate quality standards and operational definitions are used.

8.3 Control Quality—The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

Figure 8 Overview of the Project Quality Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 227), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Human Resource Management

This Knowledge Area includes the processes that organize, manage, and lead the project team, which is comprised of the people with assigned roles and responsibilities for completing the project. Project team members may have varied skill sets, maybe assigned full or part-time, and may be added or removed from the team as the project progresses (PMI, 2013, p. 255). For the Final Graduation Project, the only process that will be carried is the Plan Human Resource Management, which is the first process of the Project Human Resources Management depicted in figure 9**.**

9.1 Plan Human Resource Management—The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan.

9.2 Acquire Project Team—The process of confirming human resource availability and obtaining the team necessary to complete project activities.

9.3 Develop Project Team—The process of improving competencies, team member interaction, and overall team environment to enhance project performance.

9.4 Manage Project Team—The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.

Figure 9 Overview of the Project Human Resources Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 255), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc

Project Communications Management

This Knowledge Area includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information (PMI, 2013, p. 287). Figure 10 describes the processes related to this Knowledge Area. For the Final Graduation Project only the first process, Plan Communication Management, will be developed.

10.1 Plan Communications Management—The process of developing an appropriate approach and plan for project communications based on stakeholder's information needs and requirements, and available organizational assets.

10.2 Manage Communications—The process of creating, collecting, distributing, storing, retrieving and the ultimate disposition of project information in accordance with the communications management plan.

10.3 Control Communications—The process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.

Figure 10 Overview of the Project Communication Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 255), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Risk Management

This Knowledge Area includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project to increase the likelihood and impact of positive events and decrease the probability and impact of negative events (PMI, 2013, p. 309). Figure 11 below describes the processes related to this Knowledge Area. For the Final Graduation Project, the plan

risk management, identification of risks, qualitative risk analysis, and planning of risk responses will be developed.

11.1 Plan Risk Management—The process of defining how to conduct risk management activities for a project.

11.2 Identify Risks—The process of determining which risks may affect the project and documenting their characteristics.

11.3 Perform Qualitative Risk Analysis—The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.

11.4 Perform Quantitative Risk Analysis—The process of numerically analyzing the effect of identified risks on overall project objectives.

11.5 Plan Risk Responses—The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.

11.6 Control Risks—The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

Figure 11 Overview of the Project Risk Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 309), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Procurement Management

This Knowledge Area includes the necessary processes to purchase or acquire products or services needed from outside the project team (PMI, 2013, p. 355). Figure 12 describes the processes related to this knowledge area. For the Final Graduation Project, only the Plan Procurement Management will be developed.

12.1 Plan Procurement Management—The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.

12.2 Conduct Procurements—The process of obtaining seller responses, selecting a seller, and awarding a contract.

12.3 Control Procurements—The process of managing procurement relationships, monitoring contract performance, and making changes and corrections as appropriate.

12.4 Close Procurements—The process of completing each project procurement.

Figure 12 Overview of the Project Procurement Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 355), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

Project Stakeholder Management

This Knowledge Area includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project. It also helps to analyze stakeholder expectations and their impact on the projectand to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution and keep a healthy flow of communication with them while the project develops (PMI, 2013, p. 391). Figure 13 describes the processes related to this Knowledge Area. For the Final Graduation Project, Stakeholder Management will ensure that everyone who is impacted by or can affect the project is identified and engaged and will have a clear understanding of their expectations and the subsequent development plans to reduce harmful interference.

13.1 **Identify Stakeholders**—The process of identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.

13.2 **Plan Stakeholder Management**—The process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success.

13.3 **Manage Stakeholder Engagement**—The process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle.

13.4 **Control Stakeholder Engagement**—The process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders.

Figure 13 Overview of the Project Stakeholder Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 355), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc

2.3 Key Project Concepts

Electronic Invoice

The Connecting Europe Facility digital portal defines electronic invoicing as “an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing”

The Deloitte branch in Costa Rica defines an electronic invoice as " [It's] a commercial document with tax implications that is generated, expressed and transferred electronically… it is created through a digital system that uses "XML" files to generate, express and transfer it instead of a printing company authorized by the General Directorate of Taxation."

EPR system

According to the European E-invoicing Service Providers Association an ERP system is "a software that allows an organization to use a system of integrated applications to manage the business and automate many back office functions such as procurement and accounting"

Invoice

Is defined in general terms as "a document issued by a seller to a buyer listing the goods or services supplied and stating the sum of money due" (Dictionary.com, 2018). The precise content of an invoice includes the above information, as well as the requirements established by the Tax Administration, ensuring the document has legal effectiveness and probative force in the legal system.

3. METHODOLOGICAL FRAMEWORK

3.1 Information sources

During the execution of project planning and decision-making process information is necessary, whether the information is obtained directly by the person carrying out the project or investigation or it comes from a secondary source, information is always a vital element in the process.

Information becomes an essential tool, it allows stakeholder engagement, risk assessments, procurement planning, among other aspects. This Final Graduation Project is not an exception; to ensure an adequate development both primary and secondary sources of information will be used.

3.1.1 Primary sources

According to the Harvard Library Research Guidelines (2017), primary sources are those that provide first-hand testimony or direct evidence concerning a topic under investigation, such as witnesses or recorders who experienced the events or conditions being documented. The Ithaca College Library (2017) goes further and mentions that this type of source includes a rather extensive range of materials that go from historical and legal documents to interviews, surveys, fieldwork, and Internet communications via email, blogs, and newsgroups.

3.1.2 Secondary sources

According to the Harvard Library Research Guidelines (2017), secondary sources are those that are created by someone who did not experience the events first-hand or who did not participate in the events or conditions that are under research. Secondary sources may contain pictures, quotes, graphics, or interpretations and analysis of primary sources. The Ithaca College Library (2017) mentions that this type of source includes articles in newspapers or favorite magazines, book or movie reviews, or publications found in scholarly journals that discuss or evaluate a primary source.

Given the many types of sources, personal communications, meeting memos, and research and legal documents issued by the Tax Administration will be the primary sources of information to develop the Final Graduation Project. PMBOK and other text that can be found at both the UCI Library and the PMI Database and other online sources will be used as secondary sources for the development of this project. Chart 1, details both primary and secondary information sources that will be used.

Chart 1 Information sources

Objectives	Information sources	
	Primary	**Secondary**
1. To create a Scope Management Plan to ensure the necessary work to comply with the objectives is completed.	Meeting Memos, personal communications and legal documents issued by the Tax Administration.	PMBOK® Guide, UCI Library, PMI database, Deloitte the ABC of Electronic Invoice, previous research, comparative analysis of similar system implementations, historical data,
2. To create a Schedule Management Plan to support the development and management of the project schedule and complete the project tasks.	Personal communications with the Director of the Information Technology Department	PMBOK® Guide, UCI Library, PMI database, internet, Deloitte the ABC of Electronic Invoice, Previous research, comparative analysis of similar system implementations thesis

3. To create a Cost Management Plan for developing and managing the project within the proposed budget.	Personal communications with the Director of the Information Technology Department and quotes from possible service providers.	PMBOK® Guide, UCI Library, PMI database, internet, market reviews available, international experience reports, articles from magazines and journals, cost reports from past experiences, lessons learned for other it related projects
4. To develop a Quality Management Plan to determine if the company complies with the tax administration requirements.	Personal communications with the Director of the Information Technology Department Tax Administration regulations.	PMBOK® Guide, UCI Library, PMI database, internet, Deloitte ABC of Electronic Invoice, newspaper publications, available research works on the subject.
5. To create a Human Resource Management Plan to determine effective assignation of human talent to execute the project.	Personal communications with the Director of the Information Technology Department and the Human Resource Director.	PMBOK® Guide, UCI Library, PMI database, internet, reference books, articles on human resource management, available report of

		previous experiences on electronic invoice system installation
6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.	Personal communications with the Director of the Information Technology Department.	PMBOK® Guide, UCI Library, PMI database, internet, reference books, articles from magazines, abstracts and works of criticism and interpretation.
7. To create a Risk Management Plan to identify possible risks to increase the probability of success of the project and develop plans to respond to risks.	Personal communications with the Director of the Information Technology Department.	PMBOK® Guide, UCI Library, PMI database, internet, previous research, historical data, and lessons learned in electronic invoice system implementation, newspaper articles, thesis and other academic works.
8. To develop a Procurement Management Plan to ensure the necessary services or goods are acquired as needed to complete the project.	Personal communications with the Director of the Information Technology Department and possible service providers.	PMBOK® Guide, UCI Library, PMI database, internet, internet, market reviews available, international experience reports, articles from

		magazines and journals regarding needs for IT projects, Tax Administration reports on needs, customer reviews for companies..
9. To develop a Stakeholder Management Plan to identify the project stakeholders and be able to engage them effectively.	Personal communications with the Director of the Information Technology Department.	*PMBOK® Guide, UCI Library, PMI database, scholar articles, historical data and information, newspaper articles,*

Source: Author, December 2017.

3.2 Research methods

Research Method is defined by the Web Finance Inc. (2017) as the process used to collect information and data to make business decisions. Given that the Final Graduation Project seeks to create a project management plan for the implementation of an electronic invoice system, the research method to develop this project will be the analytical method in combination with the observational method.

3.2.1 Qualitative research method

Qualitative research, as defined by Srivastava & Thomson (2009), is "an inquiry process of understanding based on distinct and methodological traditions of inquiry that explore a social or a human problem." Within qualitative research an "inductive approach" is usually taken. This begins with empirical data and works towards the development of more abstract ideas and principles.

3.2.2 Quantitative research method

According to the University of Southern California quantitative methods are those research methods that “use numbers as its basis for making generalizations about a phenomenon. These numbers originate from objective scales of measurement of the units of analysis called variables. Four types of measurement scale exist namely nominal, ordinal, ratio, and interval”

3.2.3 Observational research method

According to Research Methodology Website (2018), observation data collection method is classified as a participatory study, because the researcher has to immerse herself in the setting where her respondents are, while taking notes and/or recording.

Observation as a data collection method can be structured or unstructured. In *structured or systematic observation*, data collection is conducted using specific variables and according to a pre-defined schedule*. Unstructured observation*, on the other hand, is conducted in an open and free manner in a sense that there would be no pre-determined variables or objectives.

3.2.4 Analytical research method

On daily life activities, the analytical method is often used to make a decision, given that it is a procedure or a method for the analysis or break down of any problem, status or fact to come up with a solution, proposal, or action plan (Analytical Techniques, 2017).

Using research methods to examine the information obtained from both, primary and secondary sources, will allow the development and creation of the necessary deliverables of this Final Graduation Project. Chart 2 details how the methods will be used in the Final Graduation Project development.

Chart 2 Research methods

Objectives	Research methods	
	Analytical	**Qualitative**
1. To create a Scope Management Plan to ensure the necessary work to comply with the objectives is completed.	The analytical method will be employed by using the information from meeting memos, personal communications, and legal documents issued by the Tax Administration when creating the project scope of work.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about scope management
2. To create a Schedule Management Plan to support the development and management of the project schedule and complete the project tasks.	The analytical method will be employed when examining the personal communications with the Director of the Information Technology Department when creating the schedule management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about schedule management
3. To create a Cost Management Plan for developing and managing the project within the proposed budget.	The analytical method will be employed when examining personal communications with the Director of the Information	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about cost management

	Technology Department and the quotes from probable service providers when creating the cost management plan.	
4. To develop a Quality Management Plan to determine if the company complies with the tax administration requirements.	The analytical method will be employed when examining the requirements of the system as established by the tax administration with the Director of the Information Technology Department when creating the quality management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about quality management
5. To create a Human Resource Management Plan to determine effective assignation of human talent to execute the project.	The analytical method will be employed when examining personal communications with the Director of the Information Technology Department when creating the human resource management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about human resource management

6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.	The analytical method will be employed when examining personal communications with the Director of the Information Technology Department when creating the communication management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about communication management
7. To create a Risk Management Plan to identify possible risks to develop plans to respond to them in order to increase the probability of success of the project.	The analytical method will be employed when examining personal communications with the Director of the Information Technology Department when creating the risk management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about risk management
8. To develop a Procurement Management Plan to ensure the necessary services or goods are acquired as needed to	The analytical method will be employed when examining personal communications with the Director of the Information Technology Department and possible service	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about procurement management

complete the project.	providers when creating the procurement management plan.	
9. To develop a Stakeholder Management Plan to identify the project stakeholders and be able to engage them effectively.	The analytical method will be employed when examining personal communications with the Director of the Information Technology Department when creating the stakeholder project management plan.	This method provides insight into various key components of this knowledge area. It offers an indication of how and why decisions are made about stakeholder management

Source: Author, December 2017

3.3 Tools

Tools are defined as “something tangible, such as a template or software program, used in performing an activity to produce a product or result” (PMI, 2013, p. 556).

For this Final Graduation Project, the tools that will be used for the development of the deliverables are those detailed in the PMBOK, since the regular activities of the company differ from the nature of this project and there is no preexisting guide to create or implement a plan like this one within the company. Chart 3 details the tool that will be used.

Chart 3 Tools

Objectives	Tools
1. To create a Scope Management Plan to ensure the necessary work to comply with the objectives is completed.	Interviews Focus groups Facilitated workshops Group creativity techniques Group decision-making techniques Questionnaires and surveys Observations Prototypes Benchmarking Context diagrams Document analysis
2. To create a Schedule Management Plan to support to support the development and management of the project schedule and complete the project tasks.	Gantt Chart PERT Critical Path Method Critical Chain Method
3. To create a Cost Management Plan for developing and managing the project within the proposed budget.	Expert judgment Analogous estimating Bottom-up estimating Reserve analysis Cost of quality Vendor bid analysis
4. To develop a Quality Management Plan to determine if the company complies with the tax administration requirements.	Cost-benefit analysis Cost of quality Seven basic quality tools Meetings
5. To create a Human Resource Management Plan to determine	Pre-assignment Negotiation

effective assignation of human talent to execute the project.	Virtual teams Multi-criteria Responsibility Assignment Matrix
6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.	Communications Matrix Communication technology Information management systems Performance reporting
7. To create a Risk Management Plan to identify possible risks and to develop plans to respond to risks to increase the probability of success of the project.	Risk Management Planning Risk Identification Qualitative Risk Analysis Quantitative Risk analysis Risk Response Planning Risk Monitoring and Control Expert judgment Documentation reviews Checklist analysis Assumptions analysis SWOT analysis
8. To develop a Procurement Management Plan to ensure that the necessary services or goods are acquired as needed to complete the project.	Make-or-buy analysis Expert judgment Market research Meetings
9. To develop a Stakeholder Management Plan to identify the project stakeholders and be able to engage them effectively.	Power and interest Power and influence Influence and impact Power, urgency, and legitimacy

Source: Author, December 2017.

3.4 Assumptions and constraints

On the one hand, an **assumption** can be defined as a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration (PMI, 2013, p. 529). On the other hand, a **constraint** can be defined as a limiting factor that affects the execution of a project, program, portfolio, or process (PMI, 2013, p.532).

Chart 2 Assumptions and constraints

Objectives	Assumptions	Constraints
1. To create a Scope Management Plan to ensure the necessary work to comply with the objectives is completed.	The company will provide the necessary information to create a scope management plan that covers all the work required for successful project competition.	The company will not allow hiring third parties to protect both company information and clients sensitive information.
2. To create a Schedule Management Plan to support the development and management of the project schedule and complete the project tasks.	The time available is sufficient to implement the electronic invoice system.	The project cannot extend the time limit provided by the legal mandate of ordering the use of the electronic invoice system.
3. To create a Cost Management Plan for developing and managing the project within the proposed budget.	The budget generated during the planning phase depicts the financial resources required to complete the project.	The budget for the project implementation cannot be increased above the sum projected for the total cost.
4. To develop a Quality Management Plan to	The quality management plan will identify the	The software selected needs to be compatible

Objectives	Assumptions	Constraints
determine the stakeholder acceptance criteria.	requirements of the tax administration.	with the already existing system in the company.
5. To create a Human Resource Management Plan to determine effective assignation of human talent.	The organization has sufficient human resources to complete the project.	The project does not allow hiring new staff to participate in the project development
6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.	The organization has access to the necessary technology to cover the communication needs of the project team.	Communications regarding the project need to be done using the company email account to ensure proper tracking of communications.
7. To create a Risk Management Plan to identify possible risks and to develop plans to respond to risks in order to increase the probability of success of the project.	The information available will allow an adequate identification of risks about the project.	Contingency reserve should not exceed 10% of the total project cost.
8. To develop a Procurement Management Plan to ensure that the necessary services or goods are acquired as needed to complete the project.	The company personnel has identified an initial list of service providers.	The service provider needs to offer an electronic resource planning compatible with the existing one of the company
9. To develop a Stakeholder Management Plan to identify the project stakeholders and be able to engage them effectively.	The stakeholder management plan will include a list of all stakeholders involved and possible ways to manage	Stakeholders will have to adhere to the guidelines provided by the Tax Administration for the electronic invoice system.

Objectives	Assumptions	Constraints
	their expectations through the project life cycle.	

Source: Author, December 2017.

3.5 Deliverables

Deliverables can be defined as any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project (PMI, 2013, p. 536). For this Final Graduation Project, the deliverables are detailed in chart 5 below.

Chart 5 Deliverables

Objectives	Deliverables
1. To create a Scope Management Plan to ensure the necessary work to comply with the objectives is completed.	Scope Management Plan, Requirements Management Plan, Work Breakdown Structure.
2. To create a Time Management Plan to support the development and management of the project schedule and complete the project tasks.	Schedule Management Plan Schedule represented in a Gantt chart
3. To create a Cost Management Plan for developing and managing the project within the proposed budget.	Cost Management Plan

Objectives	Deliverables
4. To develop a Quality Management Plan to determine if the company complies with the tax administration requirements.	Quality Management Plan
5. To create a Human Resource Management Plan to determine effective assignation of human talent to execute the project.	Human Resource Management Plan
6. To create a Communication Management Plan to ensure adequate information flow and the proper documentation of the project development.	Communication Management Plan and communications flowchart
7. To create a Risk Management Plan to identify possible risks and develop plans to respond to risks in order to increase the probability of success of the project.	Risk Management Plan and Risk Register
8. To develop a Procurement Management Plan to ensure that the necessary services or goods are acquired as needed to complete the project.	Procurement Management Plan
9. To develop a Stakeholder Management Plan to identify the project stakeholders and be able to engage them effectively.	Stakeholder Management Plan

Source: Author, December 2017.

4. RESULTS

Even though the theory of project management seems natural to apply to any project, the reality is different since some necessary input elements to develop the projects are not present and it takes longer to determine where and how that information is extrapolated into the project. TRANSFESA is an example of this since their focus is a commercial activity and there is very little room for project development. Given this situation, the gathering of the necessary information and the development of some of the primary objectives had to be completed with data obtained from meetings, through consultation with other team members and constant interaction with both the Project Manager and the Project Sponsor.

One of the principal necessary documents to proceed with any project is the Project Charter since it will provide the Project Manager with authority needed to execute the actions required to carry out the project. The elaboration of this document is the first process of the Project Integration Management and it consists of the project's purpose, objectives, description, high-level risks, stakeholder list, high-level requirements, assumptions and constraints, identification of deliverables, a summary milestone schedule, overall project budget, necessary criteria for project approval, the identification of the Project Manager, and the sponsor's authorization (PMI, 2013, p. 66).

According to the PMBOK, the inputs needed to create the Project Charter are the project statement of work (SOW), the business case, agreements, enterprise environmental factors, and organizational process assets. In this case, the entire project execution is an in-house work that will employ off-the-shelf products available in the market. Thus, the Project Sponsor along with the Project Manager and the Project Manager Assistant created the Project Charter. However, the regular inputs necessary to develop it as depicted above were not available for immediate use in the execution of this project. To obtain the required information, meeting records and consultation with the different departments involved in the process were essential.

With the creation of the Project Charter and using the outputs from other processes, the Project Manager and the Project Manager Assistant developed the second process in the Project Integration Management, which is the Project Management Plan. To collect the information correctly and in an easy way to understand for all the team members involved in the project, the Project Manager Assistant provided templates to create the overall Project Management Plan.

4.1. Scope Management Plan

The creation of the Scope Management Plan is the first specific objective for this project. Following the guideline provided by the PMBOK, part of the inputs necessary to develop it are the Project Charter and the Project Management Plan.

The Project Charter was created before the start of this project with the support of the Project Sponsor and the designated Project Manager, who discussed what they considered to be the needs and capabilities of the company.

The Tax Administration issued the Resolution No. DGT-R-48-2016, October 7th, 2016, denominated "Electronic Vouchers"; in that resolution the Tax Administration accepts and validates the use of technological means, as facilitating tools for the compliance with the obligations of the taxpayers, as long as the requirements established in that resolution are complied.

The Resolution No. DGT-R-48-2016 established the starting point to determine the project scope, since it provides all taxpayers, equally, with the mandatory requirements the electronic invoice systems needs to have.

Based on the information the Tax Administration provided to the public and the data collected during meetings, the Project Scope Management Plan was developed. The Project Sponsor wanted the project to be completed within the allotted time for the

implementation of the system, which in turn meant several adjustments to the scope of the project, particularly to the work breakdown structure. It was also necessary to take into consideration that since the company is a large taxpayer, it has a massive database that has to be worked on before being able to execute the project because part of their financial records are still on hard copies instead of digital which can constitute a delay in the project progress.

Even when one person could easily develop most of the tasks, pairs or trios were set to work to ensure that all tasks necessary for each package would be effectively completed. Failure to comply with the new regulations can result in different penalties such as fines or closing of the company for a few days, affecting not only the regular workflow, but also the clients and the services provided by the company.

The elaboration of the Project Scope Management Plan had to be done using the PMBOK as a guideline, interviews with the different members of the project team, and the information contained in the resolution mentioned above to complete the template.

The Scope Management Plan was developed using a template tailored for this particular information and technology project.

SCOPE MANAGEMENT PLAN
IMPLEMENTATION
OF ELECTRONIC INVOICE SYSTEM

TRANSFESA
SAN JOSÉ
COSTA RICA

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Introduction

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

This project is for the implementation of an Electronic Invoice System which will be used to comply with the regulations of the Tax Administration and track the company's sells to ensure transparency in the tax declaration.

Scope Management Approach

For this Project, Scope Management will be the sole responsibility of the Project Manager. The scope for this project is defined by the Scope Statement, Work Breakdown Structure (WBS) and WBS Dictionary. The Project Sponsor and the Project Manager will establish and approve documentation for measuring project scope; proposed scope changes may be initiated by the Project Manager, internal stakeholders, or any member of the project team.

All change requests will be submitted to the Project Manager who will log them in a change request tracker and evaluate the requested scope change. If the change responds to technical issues, the Project Manager will be able to approve the change. However, changes that may affect cost and extend the time of execution of the project will have to be presented to the Project Sponsor for approval. Upon approval, the Project Manager will update all project documents and communicate the scope change to all team members and stakeholders.
The Project Sponsor is responsible for the acceptance of the final project deliverables and project scope.

Roles and Responsibilities

The Project Sponsor, the Project Manager, and the Project Team, will all play critical roles in managing the scope of this project. Therefore, the Project Sponsor, Project Manager, and Project Team must be aware of their

responsibilities to ensure that the work performed on the project is within the established scope throughout the entire duration of the project. The table below defines the roles and responsibilities for the scope management of this project.

Table 1.1, ***Scope Management Roles and Responsibilities***

Name	Role	Responsibilities
Marco Hernandez Sr.	Sponsor	1. Approve or deny scope changes requests that affect cost and performance period. 2. Evaluate need for scope change requests that affect value and performance period. 3. Accept project deliverables.
Marco Hernandez Jr.	Project Manager	1. Facilitate scope change requests. 2. Keep records of change requests. 3. Approve technical change requests that do not affect cost and performance period. 4. Organize and facilitate scheduled change control meetings. 5. Communicate outcomes of scope change requests. 6. Update project documents upon approval of all scope changes.
Project Team	Team Member	1. Can propose scope changes. 2. Execute the changes communicated by Project Manager.
Project Manager Assistant	Team Member	1. Can propose scope changes. 2. Provide reports on project advance. 3. Collect documents and information for the project management plan.

SOURCE: AUTHOR, 2018

Scope Definition

The scope for this project was defined through a comprehensive requirements collection process. First, a thorough analysis was performed on the company's current invoicing system based on employee feedback. From this information, the project team developed the project requirements documentation and the requirements management plan for what the new electronic invoice system must accomplish according to to the requirements established by the Tax Administration.

Project Scope Statement

This project includes the purchase, installation, and testing of a new electronic invoice system to report the company's finances accurately by the new regulation issued by the Tax Administration. The deliverables for this project are the purchase of the necessary software and the complete installation of the electronic invoice system for financial reporting to the Tax Administration.

This project will be accepted once the new electronic invoice system has been successfully tested in each department and has shown to be compatible with the company's current information technology (IT) infrastructure as well as with the Tax Administration requirements.

This project does not include ongoing operations and maintenance of the software. Only internal personnel may be used for this project. Additionally, the project is not to exceed $125,000 in spending. Assumptions for this project are that support will be provided by the Project Sponsor and all department managers and that adequate internal resources are available for the successful completion of this project.

Work Breakdown Structure

To effectively manage the work required to complete this project, it will be subdivided into individual work packages which will not exceed 40 hours of work, allowing the Project Manager to more effectively manage the project's scope as the project team works on the tasks necessary for project completion. The project is broken down into five phases: analysis, design, installation, testing, and implementation phase. Each of these phases is then subdivided further down.

Even though one person can often develop most of the tasks determined as work packages, the time constraint in the project made it imperative to have pairs working on the tasks to ensure there would be a timely completion of the necessary activities to comply with the plan.

The failure of the companies to adjust to the use of the electronic invoice system entails sanctions to the company; thus making the time constraint a priority during the project development.

Table 2 Work Breakdown Structure

1	**Electronic Invoice System**
1.1	**Analysis**
1.1.1	Collect Requirements
1.1.2	Company current situation analysis
1.1.3	Analysis of current document process and control
1.1.4	Report on System status
1.1.5	System Requirement document
1.2	**Design**
1.2.1	Design Database
1.2.2	Design Network
1.2.3	Design Software
1.3	**Installation**
1.3.1	Database installation
1.3.2	Software installation
1.3.3	Hardware Installation
1.3.4	Create programming Document
1.4	**Testing**
1.4.1	Create a testing plan
1.4.1.1	Database and Software Testing
1.4.1.2	Network and Hardware testing
1.4.2	Record Testing Results
1.5	**Implementation**
1.5.1	Software implementation for use company-wide

Source: Author, 2018

Work Breakdown Dictionary

To clearly define the work necessary for project completion, the WBS Dictionary is used. The WBS Dictionary includes an entry for each WBS element. The WBS Dictionary consists of a detailed description of work for each component and resource needed. The project team will use the WBS Dictionary as a statement of work for each WBS element.

Table 3, *WBS Dictionary*

Work Breakdown Dictionary	
1.1 Analysis	To create the necessary documents to design and implement the electronic invoice system, the Project Manager and the project team will conduct an analysis of the existing elements related to the project as well as a collection of requirements based on end user feedback, system reviews, and information provided by the tax administration.
1.1.1	**Collect Requirements**
Description	Identify Project needed requirements based on the legal mandate of the Tax Administration, the stakeholders, and the project
Activities	
● Meeting with the stakeholders and the Project Sponsor. ● Review of information and requirements set by the Tax Administration. ● Collect functional requirements. ● Collect non-functional requirements. ● Document the collection of requirements to present to the project sponsor.	
Duration	15 days
Responsible	Project Manager and Project Team
1.1.2	**Company Current Situation Analysis**
Description	Perform a SWOT analysis of the Company's situation in regards to the existing processes, network, software, hardware, and system.
Activities	
● Define a schedule to proceed with the analysis of the different elements. ● Review historical data regarding the elements to be analyzed when available.	
Duration	5 days
Responsible	Project Manager and Project Team
1.1.3	**Analysis of current document process and control**
Description	Analyze the way document process and control happens between the sales and the financial department of the Company.
Activities	
● Collect information from the users regarding the process. ● Review the software in place. ● Identify possible system deficiencies and possibilities for improvement.	
Duration	5 days
Responsible	Project Manager and Project Team
1.1.4	**Elaborate the report of the system status**
Description	Create a document that collects the current status of the system as well as the deficiencies and the opportunities for improvement.
Activities	
● Document the system status report.	
Duration	3 days

Responsible	Project Manager and Project Team
1.1.5	**Create the system requirement document**
Description	Based on the initial collection of requirements and the status report, the Project Manager along the project team will create the system requirements document.
Activities	
● Document the information system requirements. ● Present requirements to Project Sponsor. ● Get approval of the system requirement document.	
Duration	3 days
Responsible	Project Manager and Project Team
1.2 Design	Compare and combine the information obtained during the analysis phase as well as the collection of requirements to create the baseline to work all the designs necessary for the electronic invoice system.
1.2.1	**Design database**
Description	Design the database using the requirements provided by the Tax Administration and the stakeholders.
Activities	
● Analyze and design the requirements provided by the tax administration and the end users. ● Evaluate the viability of the proposed database design. ● Define access permits to view, add, modify, or delete information from the database. ● Control the consistencies and redundancies in the database. ● Create a database model to be used in the project.	
Duration	10 days
Responsible	Project Manager and Project Team
1.2.2	**Design the Network**
Description	Determine and define the physical structure of the network that will provide support to the electronic invoice system.
Activities	
● Create a diagram of the physical location of the network implementation. ● Consider software and hardware interconnectivity needs regarding devices and information processes. ● Determine design viability. ● Present final diagram outline of the network.	
Duration	8 days
Responsible	Project Manager and Project Team
1.2.3	**Design the Software**
Description	Design the software based on the Tax Administration and end-user requirements.
Activities	
● Analyze the activities the software applications should perform. ● Create the logical apps that will allow the user to perform specific tasks within the system. ● Create the interface. ● Define the user profile and information access levels (privileged, standard, restricted). ● Test profile access restrictions to ensure functionality of security protocols in the information system.	
Duration	20 days
Responsible	Project Manager and Project Team

1.3 Installation	Based on the requirements collected and the products designed in the previous phases, the Project Manager along with the Project Team will proceed to install the elements that compose the electronic invoice system.
1.3.1	**Database installation**
Description	Once the database has been reviewed and completed to ensure all necessary information has been included, the database will be migrated to the second network for installation and testing
Activities	
● Database migration to secondary network. ● Database installation in the server. ● Testing of the database engine to ensure installation was successfully. ● Database redundancies are eliminated.	
Duration	15 days
Responsible	Project Manager and Project Team
1.3.2	**Software Installation**
Description	Implementation of the software in the existing server network.
Activities	
● Verify the installation steps of the software. ● Install the software on the hardware. ● Verify the successful installation of the software. ● Verify the compatibility of the system with the software application.	
Duration	15 days
Responsible	Project Manager and Project Team
1.3.3	**Hardware Installation**
Description	Physically install all the components of necessary hardware.
Activities	
● Verify the hardware complies with the requirements. ● Installation of the devices as proposed in the network diagram. ● Installation of the new server as suggested in the network diagram. ● Test the installed equipment individually and as part of the network.	
Duration	5 days
Responsible	Project Manager and Project Team
1.3.4	**Create the Programming Document**
Description	The programming document defines the application programming guidelines, the configuration of hardware and software, and database implementation in the server.
Activities	
● Create the programming document with the technical details and programming information to use within the Company. ● Generate a report of all the installations performed for the implementation of the electronic invoice system.	
Duration	5 days
Responsible	Project Manager and Project Team
1.4 Testing	Before the electronic invoice system can be deployed company-wide, the Project Manager along with the project team needs to conduct the necessary testing in the secondary server.

1.4.1	**Create a testing plan**
Description	Create a guideline that allows the Project team to test and document the functionality of all the components.
Activities	
● Collect the requirements for testing every element involved. ● Verify every aspect of the system. Create a schedule for the tests to be conducted individually and as a whole system.	
Duration	● 3 days
Responsible	Project Manager and Project Team
1.4.1.1	**Network and hardware testing**
Description	Review and testing of the network connectivity
Activities	
● Confirm network functionality. ● Verify the connectivity response times. ● Perform a security check of the network. ● Perform a security check of the server. ● Perform a security check on the equipment – factory security characteristics. ● Perform a security check of the user profile access. ● Perform a test on the registration of information. ● Perform an analysis on the submittal of information to the tax administration. ● Record results and verifies against network design.	
Duration	8 days
Responsible	Project Manager and Project Team
1.4.1.2	**Database and software testing**
Description	Verification of database and software functionality.
Activities	
● Verify the database version. ● Input information manually to verify its functionality. ● Test the user profile access levels and permits. ● Review, verify, and confirm the results of the database functionality. ● Perform a security check of the database. ● Document the test results.	
Duration	8 days
Responsible	Project Manager and Project Team
1.4.2	**Record Testing results**
Description	Document all functionality and security assessments done to the database, software, network, and hardware for future implementations that need to be made to the system.
Activities	
● Collect the results from each component testing with the corresponding backup documentation. ● Present the results of the trial to the Project Sponsor. ● Approval of the testing phase prior final system implementation.	
Duration	2 days
Responsible	Project Manager and Project Team
1.5 Implementation	Once the network, database, software, and hardware have been tested and the results validated and approved by the Project Sponsor, the Project Manager with the assistance of the project team will proceed to the installation of the electronic invoice system Company wide.

1.5.1	Software implementation for use company-wide
Description	Install the system company-wide for use and to start reporting to the Tax Administration in compliance with the legal requirements established for large taxpayers.
Activities	
• Assign the user identifications to access the system to each employee according to their level of clearance. • Inform the employees of the start date of the new system. • Present to the project sponsor the closing document for approval to finalize the project.	
Duration	7 days
Responsible	Project Manager and Project Team

SOURCE: AUTHOR, 2018

Glossary of Terms

- Level of Effort: Level of Effort (LOE) is how much work is required to complete a task.
- WBS Code: A unique identifier assigned to each element in a Work Breakdown Structure to designate the hierarchical location of elements within the WBS.
- Work Package: A Work Package is a deliverable or work component at the lowest level of its WBS branch.
- WBS Component: A component of a WBS which is located at any level. It can be a Work Package or a WBS Element as there is no restriction on what a WBS Component is.
- WBS Element: A WBS Element is a single Work Breakdown Structure component and its associated attributes located anywhere within a WBS. A WBS Element can contain work, or it can include other WBS Elements or Work Packages.

Sponsor Acceptance

Approved by the Project Sponsor:
Marco Hernandez B
TRANSFESA CEO

Figure 14 Electronic Invoice Implementation Scope Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/scope-management-plan.html#axzz5C7L8yn7a

4.2 Project Schedule Management Plan

The second specific objective is the Project Schedule Management Plan, which includes the process required for timely completion of the project. As the PMBOK indicates, on some projects especially those of smaller scope, some aspects such as defining activities, sequencing activities, estimating activity resources, estimating activity durations, and developing the schedule model are so tightly linked that they are viewed as a single process that can be performed in a relatively short period of time (PMI, 2013, p. 142).

Given that the scope of this project is small, and it is not based on a direct need of the company but in a legal mandate of the Tax Administration, the schedule management is a process that is performed directly by the Project Manager with the aid of the Project Manager Assistant.

When the project was presented, both the Project Sponsor and the Project Manager indicated to the project team that the period of development of the project was the primary constraint to observe, since the company has to comply by legal mandate or face fines.

For the company, it is of the utmost importance to be able to comply with the requirement of the Tax Administration, not only to avoid the payment of fines, but also to maintain their customer service up to date. Since they have made sure to characterize their business as efficient, effective and client service oriented.

The time constraint is the most important aspect for the Project Sponsor over scope and cost; thus, a template to create the Schedule Management Plan was used and the document will be adjusted as needed during the project life cycle to ensure process happens within the time constraint.

SCHEDULE MANAGEMENT PLAN
IMPLEMENTATION OF
ELECTRONIC INVOICE SYSTEM

TRANSFESA
SAN JOSÉ
COSTA RICA

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SCHEDULE MANAGEMENT APPROACH.
SCHEDULE CONTROL.
SCHEDULE CHANGES AND THRESHOLDS.

Introduction

The project schedule is the roadmap for how the project will be executed. Schedules are an essential part of any project as they provide the project team, sponsor, and stakeholders a picture of the project's status at any given time. The purpose of the Schedule Management Plan is to define the approach the project team will use in creating the project schedule. This plan also includes how the Project Manager will monitor the project schedule and manage changes after the baseline schedule has been approved; it involves identifying, analyzing, documenting, prioritizing, accepting or rejecting, and publishing all schedule-related changes.

Schedule Management Approach

Project schedules will be created using MS Project 2013, starting with the deliverables identified in the project's Work Breakdown Structure (WBS). Activity definition will define the specific work that must be performed to complete each deliverable. Activity sequencing will be used to determine the order of work packages and assign relationships between project activities. Activity duration estimating will be used to calculate the number of work periods required. Resource estimating will be used to designate resources to work packages to complete schedule development.

Once a preliminary schedule has been developed, it will be reviewed by the project team and any resources tentatively assigned to project tasks. The project team and resources must agree to the proposed work package assignments, durations, and schedule. Once this is achieved, the Project Sponsor will review and approve the schedule and it will then be baselined.

The following will be designated as milestones for the project schedule:

Table 1. Summary Milestone

Summary Milestone Schedule	
Project Milestone	**Target Date**
▪ Project Start	01/Dec/17
▪ Collect requirement	01/Dec/17
▪ Complete Design Phase	17/Jan/18
▪ Complete Hardware and Software Installation	23/Feb/18
▪ Complete Testing	19/Mar/18
▪ Deploy Electronic Invoice system	22/Mar/18
▪ Project Complete	29/Mar/18

Source: Author, 2018

Roles and responsibilities for schedule development are as follows:

The Project Manager will be responsible for facilitating work package definition, sequencing, and estimating duration and resources with the project team. The Project Manager will also create the project schedule using MS Project 2013 and validate the schedule with the Project Team, Stakeholders, and the Project Sponsor. The Project Manager will obtain schedule approval from the Project Sponsor and he will approve the baseline schedule.

The Project Team is responsible for participating in work package definition, sequencing, and duration and resource estimating. The project team will also review and validate the proposed schedule and perform assigned activities once the schedule is approved.

The Project Sponsor will participate in reviews of the proposed schedule and approve the final schedule.

Schedule Control
The project schedule will be reviewed and updated as necessary on a weekly basis with actual start/ finish and completion percentages, which will be provided by task owners.

The Project Manager is responsible for holding weekly schedule updates/reviews, determining impacts of schedule variances, submitting schedule change requests, and reporting schedule status by the project's communications plan.

The project team is responsible for participating in biweekly schedule updates/reviews, communicating any changes to actual start/finish dates to the Project Manager, and participating in schedule variance resolution activities as needed.

The Project Sponsor will maintain awareness of the project schedule status and review/approve any adjustments to the schedule to ensure that resources focus on completing the work on time.

Schedule Changes

If any member of the project team determines that a change to the schedule is necessary, the Project Manager and Project Team will meet to review and evaluate the change. The Project Manager and Project Team must determine the tasks that will be impacted, the variance as a result of the potential change, and any alternatives or variance resolution activities that they may employ to see how they would affect the scope, schedule, and resources.

The submittal of a schedule change request to the Project Sponsor for approval will be required if either of the two following conditions is true:

- The proposed change is estimated to reduce the duration of a work package by 10% or more, or increase the duration of an individual work package by 10% or more.
- The change is estimated to reduce the duration of the overall baseline schedule by 10% or more, or increase the duration of the overall baseline schedule by 10% or more.

Once the change request has been reviewed and approved by the Project Sponsor, the Project Manager is responsible for adjusting the schedule and communicating all changes and impacts to the Project Team. If the change is rejected, the Project Manager will take the necessary actions to ensure the activities are completed within the existing schedule.

The Project Manager Assistant must also ensure that all change requests are archived in the project records repository.

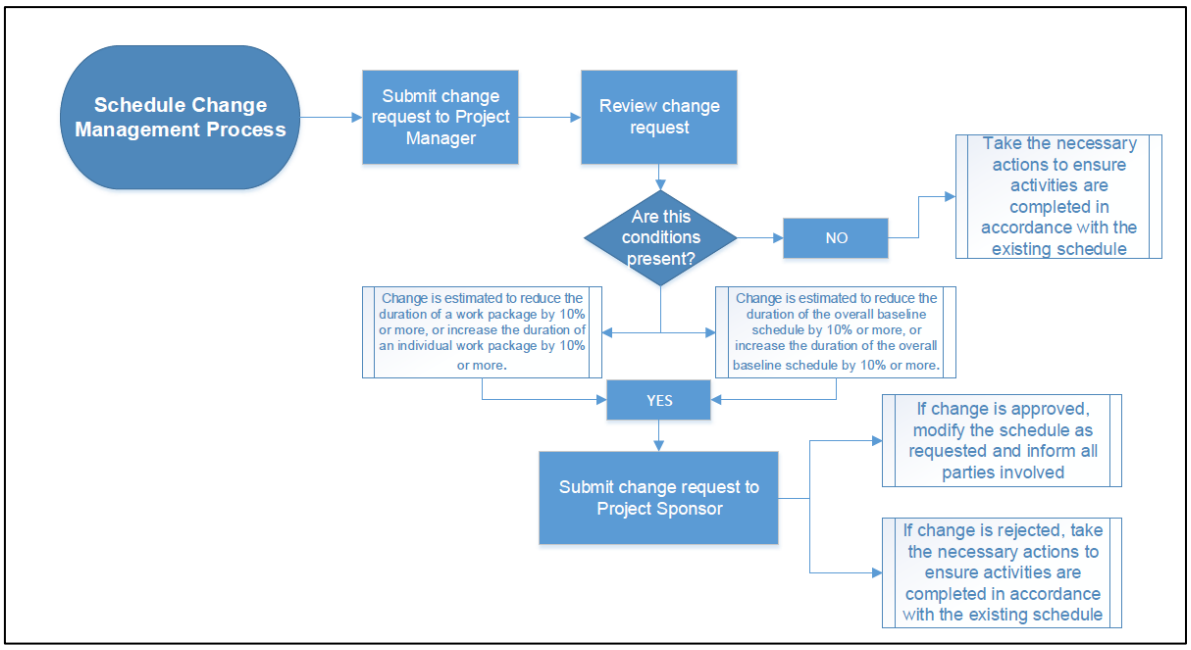


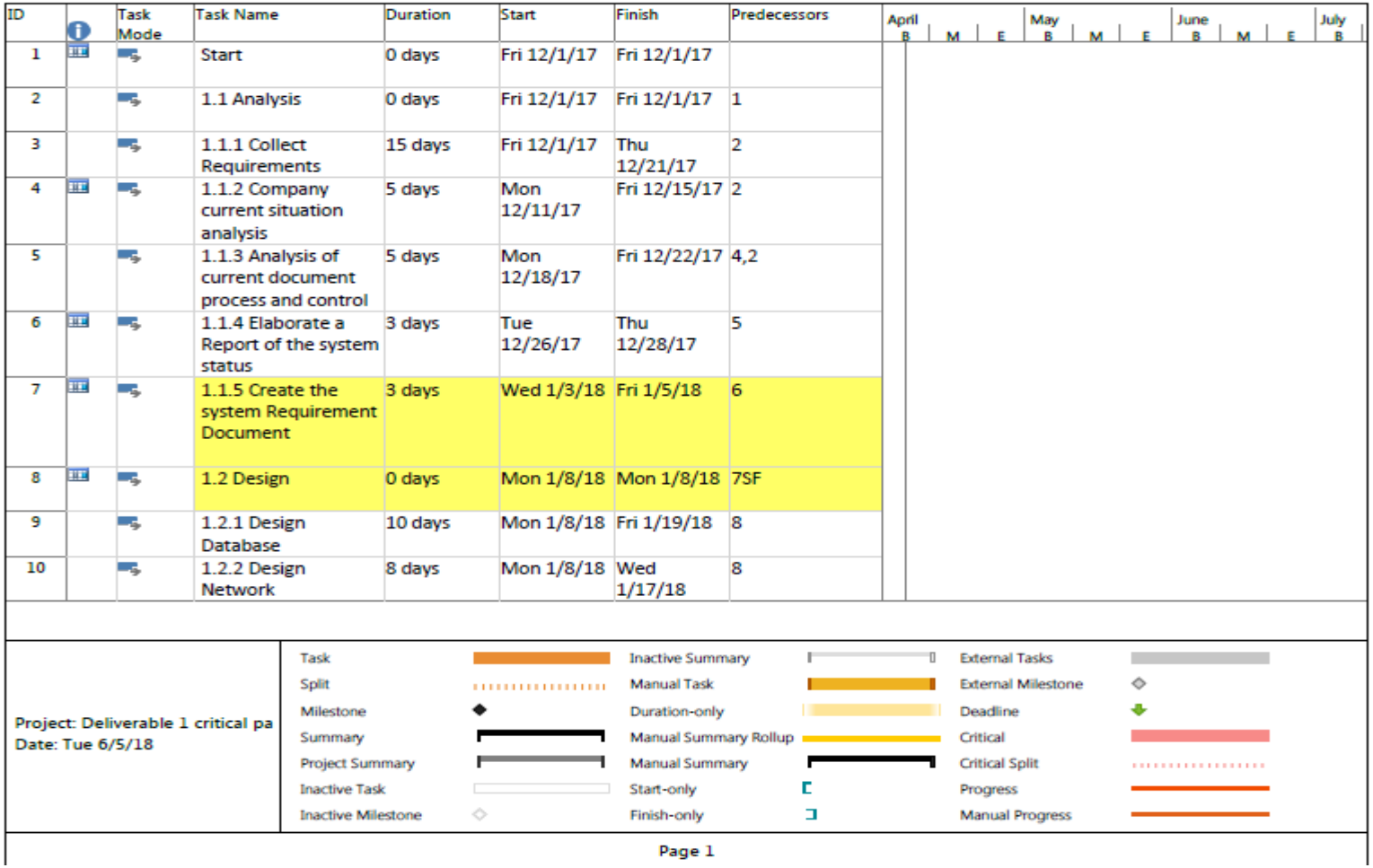
Figure 1 Schedule Change Request Process
Source: Author, 2018

SPONSOR ACCEPTANCE
Approved by the Project Sponsor:
Marco Hernandez B
TRANSFESA CEO

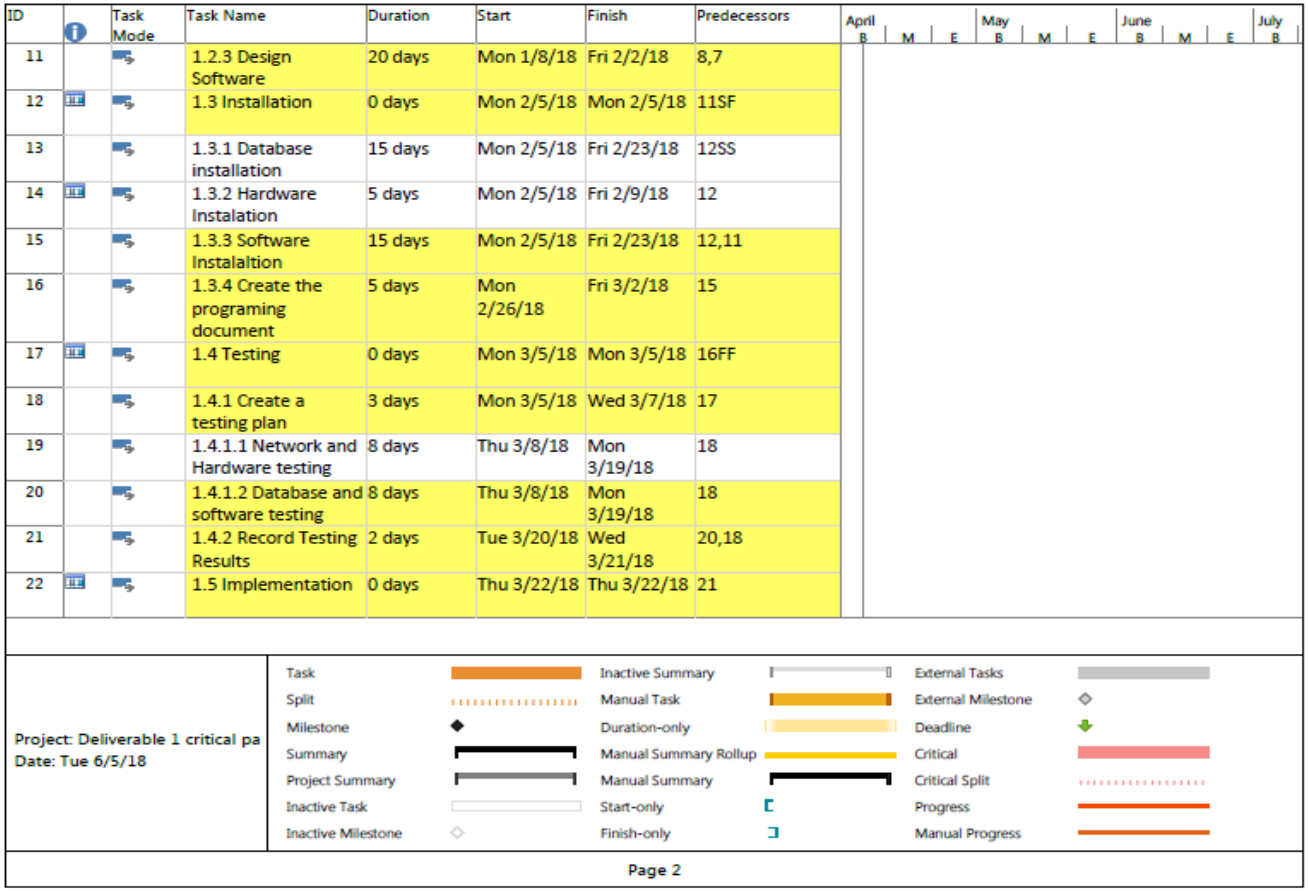
Figure 15 Electronic Invoice Implementation Schedule Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/schedule-management-plan.html#axzz5C7L8yn7a

Once the activities were identified and defined, they were sequenced by "identifying and documenting relationships between project activities" (Project Management Institute, 2013, p. 153). The Schedule Management Plan, activity list, milestone list and project scope statement found in the Scope Management Plan were used as inputs to this process. Finally, a schedule was developed and presented as a Gantt chart that identified the critical activities to the project. The inputs to this process were the Schedule Management Plan, project scope statement, risk register, and resource requirements. The project schedule can be seen in figure 16 below.

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		Start	0 days	Fri 12/1/17	Fri 12/1/17	
2		1.1 Analysis	0 days	Fri 12/1/17	Fri 12/1/17	1
3		1.1.1 Collect Requirements	15 days	Fri 12/1/17	Thu 12/21/17	2
4		1.1.2 Company current situation analysis	5 days	Mon 12/11/17	Fri 12/15/17	2
5		1.1.3 Analysis of current document process and control	5 days	Mon 12/18/17	Fri 12/22/17	4,2
6		1.1.4 Elaborate a Report of the system status	3 days	Tue 12/26/17	Thu 12/28/17	5
7		1.1.5 Create the system Requirement Document	3 days	Wed 1/3/18	Fri 1/5/18	6
8		1.2 Design	0 days	Mon 1/8/18	Mon 1/8/18	7SF
9		1.2.1 Design Database	10 days	Mon 1/8/18	Fri 1/19/18	8
10		1.2.2 Design Network	8 days	Mon 1/8/18	Wed 1/17/18	8



ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
11		1.2.3 Design Software	20 days	Mon 1/8/18	Fri 2/2/18	8,7
12		1.3 Installation	0 days	Mon 2/5/18	Mon 2/5/18	11SF
13		1.3.1 Database installation	15 days	Mon 2/5/18	Fri 2/23/18	12SS
14		1.3.2 Hardware Instalation	5 days	Mon 2/5/18	Fri 2/9/18	12
15		1.3.3 Software Instalaltion	15 days	Mon 2/5/18	Fri 2/23/18	12,11
16		1.3.4 Create the programing document	5 days	Mon 2/26/18	Fri 3/2/18	15
17		1.4 Testing	0 days	Mon 3/5/18	Mon 3/5/18	16FF
18		1.4.1 Create a testing plan	3 days	Mon 3/5/18	Wed 3/7/18	17
19		1.4.1.1 Network and Hardware testing	8 days	Thu 3/8/18	Mon 3/19/18	18
20		1.4.1.2 Database and software testing	8 days	Thu 3/8/18	Mon 3/19/18	18
21		1.4.2 Record Testing Results	2 days	Tue 3/20/18	Wed 3/21/18	20,18
22		1.5 Implementation	0 days	Thu 3/22/18	Thu 3/22/18	21



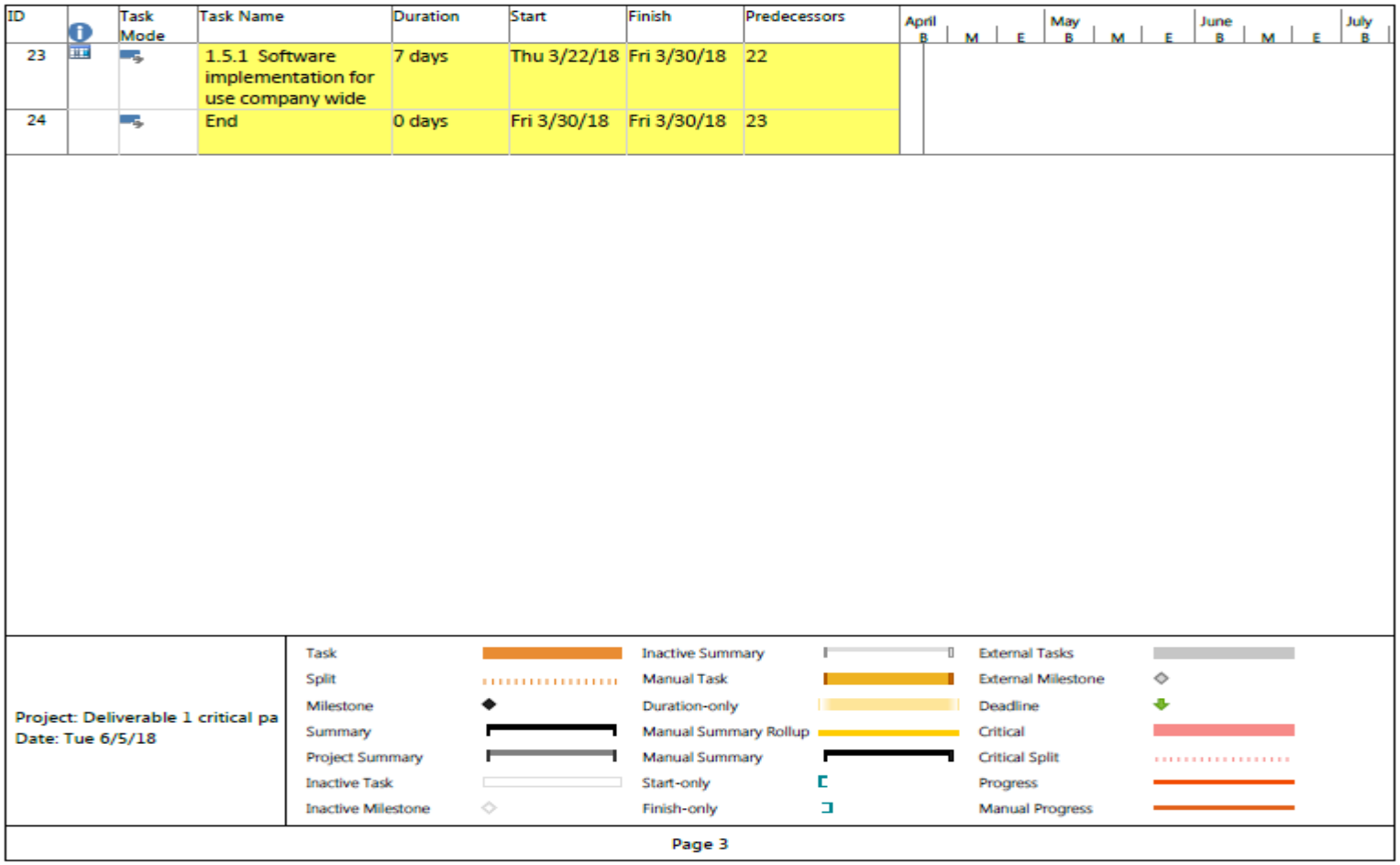


Figure 16 Electronic Invoice System Gantt Chart. (Created in Microsoft Project 2013, January 2018)
Source: Author

4.3 Project Cost Management Plan

In general terms, Cost Management Plan is one of the four main processes of the Project Cost Management. It can be described as the process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs. The key benefit of this process is that it provides guidance and direction on how costs will be managed throughout the project.

As a component of the Project Cost Management, this process interacts with other processes. Once the Cost Management Plan is completed, the project team proceeds to the next stage which is estimate costs, meaning that they develop an approximation of the monetary resources needed to complete project activities.

Previous to the creation of the Cost Management Plan, the company conducted market research on available options to install the electronic invoice with access to cloud services. However, the cost-benefit analysis performed by the IT department led the CEO to the determination of purchasing an off-the-shelf product that could be adapted to the needs of the company and a total of 9 available services were considered:

Chart 6 Service Providers

Provider	Website	Location	Phone	Contact Email
Factura Tributaria S.A.	www.actualidadtributaria.com	Paseo Colón	2256-0682 Ext 115	info@facturatributaria.com
Almamater de Centroamérica	http://facturaelectronicacr.co.cr/	Llorente de Tibás	2297-0662	almamate@racsa.co,cr
AVD Internacional (Representante en Costa Rica de Ekomercio)	www.avdinternacional.com	En la Radial de Pavas	2291-9372	María José Morales: mmorales@avdinternacional.com
Facturación Electrónica S.A. (Facel)	http://www.facelcr.com/	Sabana Sur	2290-9874	Info@facelcr.com
Gestión en Tecnología e Información (GTI)	https://www.facturaelectronica.cr/	Curridabat	2105-4400 2105-4404	ventas@gticr.com
Gosocket Corporation	www.gosocket.net	Escazú	2288-1122	sergio.chaverri@gosocket.net
Intercambio Electrónico de Datos S. A. (Ineldat)	http://www.ineldat.com/	Santa Ana	2203-1694 2203-1695	ineldat@ineldat.com
Logica Digital de Oriente S.A	https://logica.cr/	Curridabat	Central Telefonica: 2224-1510	raraya@logicadigital.net; jrodriguez@logicadigital.net; servicio@logicadigital.net
Softland Costa Rica	http://www.softland.cr/	Barreal de Heredia	800-7638-5263	informes@softland.cr

Source: Author, 2018.

The Project Team provided an approximation of the monetary resources needed to complete project activities to present to the Project Sponsor for the creation of the Project Charter. The Project Cost Management Plan presented here is based on that initial assessment and will be updated as the project moves forward.

In order to create a clear Cost Management Plan, the Project Team proceeded to determine a budget, using the estimated costs of individual activities or work packages to establish an authorized cost baseline. Finally, by using the approved baseline, the team creates a process to monitor the status of the project, to update the project costs, and to determine how modifications to the cost baseline will be done.

Even though cost is part of the regular triple constraint of projects, the Project Sponsor was very clear over the meetings that his primary concern, and thus the main concern for the project development, was to comply with the implementation of the electronic invoice system in accordance with the timeline provided by the Tax Administration legal mandate.

The service selected to proceed with the implementation of the electronic invoice system was *Softland*, since their product is compatible with the electronic resource planning (ERP) already in use at the company; thus making the products offered by *Softland* the ideal software to proceed with the implementation.

Mr. Hernandez, current Project Manager, explained that ERP is a category of business management software, typically a suite of integrated applications, that an organization can use to collect, store, manage, and interpret data; in this case, the ERP is part of the software that allows the interpretation of metalanguage, such as the one required for the electronic invoice system.

The tools and techniques used to develop the Cost Management Plan are expert judgment, analytical techniques (including market research and the information contained in the scope management plan), and the schedule management plan.

COST MANAGEMENT PLAN
IMPLEMENTATION OF
ELECTRONIC INVOICE SYSTEM
TRANSFESA
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COST MANAGEMENT APPROACH
MEASURING PROJECT COSTS
REPORTING FORMAT
COST VARIANCE RESPONSE PROCESS
COST CHANGE CONTROL PROCESS
PROJECT BUDGET

Introduction

The Project Manager will be responsible for managing and reporting on the project cost throughout the project. A report will be presented via email to the Financial Department Director, Mrs. Murillo for funds release approval and cross control of project expenses. During the project status meeting, the Project Manager will meet with the Project Sponsor to present and review the project's cost performance for the preceding stage. The performance will be measured using earned value. The Project Manager is responsible for accounting the cost deviations and presenting the Project Sponsor with options for getting the project back on budget. The Project Sponsor has the authority to make changes to the project to bring it back within budget.

Cost Management Approach

Costs for this project will be managed at the second level of the Work Breakdown Structure (WBS). Control accounts (CA) will be created at this level to track costs. Earned value calculations for the CAs will measure and manage the financial performance of the project. Although activity cost estimates are detailed in the work packages, the level of accuracy for cost management is at the second level of the WBS. The credit for work will be assigned at the work package level. The percentage of credit granted to each work package will be calculated based on the amount of work completed in a particular period, compared to the total cost project for the work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary; thus, those values will be changed to yellow in the project status reports. Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage; therefore, those values will be changed to red in the project status reports, which will require corrective action from the Project Manager to bring the cost and schedule performance indexes below the alert level. Corrective actions will need a project change request and must be approved by the Project Sponsor, since they may imply a change in the schedule or the cost of the project.

Measuring Project Costs

Performance of the project will be measured using earned value management. The following four earned value metrics will be used to measure project's cost performance:

a) Schedule Variance (SV)
b) Cost Variance (CV)
c) Schedule Performance Index (SPI)
d) Cost Performance Index (CPI)

If the schedule performance index or cost performance index has a variance between 0.1 and 0.2, the Project Manager must report the reason for the exception. If the SPI or CPI has a variance greater than 0.2, the Project Manager must report the reason for the exception and provide a detailed corrective plan to bring the performance of the project back to acceptable levels.

Chart 1 Performance Measure

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

Source: Project Management Documents, 2018

Reporting Format

Reporting for cost management will be done using a report of work progress and costs that will be sent to the Financial Department Director, Mrs. Murillo, and a report presented to the Project Sponsor. The project status report will include a section labeled "cost management." This section will contain the earned value metrics identified in the previous section. All cost variances outside of the thresholds defined in this Cost Management Plan will be reported, including any corrective actions which are planned. Change requests, which are triggered based upon project cost overruns, will be identified and tracked in this report.

Cost Variance Response Process

The control thresholds for this project are a CPI or SPI of less than 0.8 or greater than 1.2. If the project reaches one of these control thresholds, a cost variance corrective action plan is required. The Project Manager will present the Project Sponsor with options for corrective actions within five business days from the day the cost variance is first reported. Within three business days from the time the Project Sponsor selects a remedial action option; the Project Manager will present to the Project Sponsor a formal cost variance corrective action plan. The cost variance corrective action plan will detail the actions necessary to bring the project back within budget and the means by which the effectiveness of the actions in the plan will be measured. Upon acceptance of the cost variance corrective action plan, it will become a part of the project plan and the project will be updated to reflect the corrective actions.

Cost Change Control Process

The cost change management process will be used to define the process for controlling and managing costs related changes to the project. If any member of the team determines that a change to the budget is necessary, the project manager and project team will meet to review and evaluate the change. The project manager and project team will determine how the change in costs will impact schedule, scope, quality, and by large timely execution of project deliverables. After this evaluation is completed a formal change request is completed and submitted to the change control board (composed of the Project Sponsor, the Project Manager and the Financial Department Director). The authorized stakeholder will then make the decision to determine if the change is accepted or rejected. Figure 1 below shows the cost change management process which will be used.

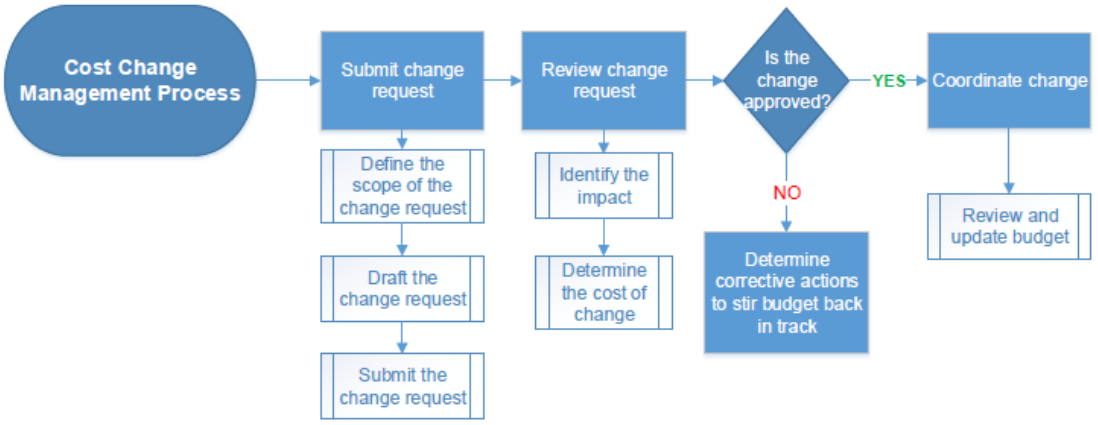

Figure 1 Cost Change Management Process
Source: Author, 2018

Project Budget

The budget for this project is detailed below. Costs for this project are presented in various categories.

Chart 2 Project Budget

Project Component	Component Cost
Personnel Resources – exclusive dedication to the project	$45,000
Hardware	$15,000
Software and Licensing	$65,000
Total	$125,000

Source: Author, 2018

SPONSOR ACCEPTANCE

Approved by the Project Sponsor
Marco Hernandez B.
TRANSFESA CEO

Figure 17 Electronic Invoice Implementation Cost Management Plan. Adapted from Project Management Documents (2018).. Retrieved from http://www.projectmanagementdocs.com/project-planning-templates/cost-management-plan.html#axzz5C7L8yn7a

4.4 Quality Management Plan

The creation of the Quality Management Plan was the fourth specific objective of this project. The electronic invoice system is a mandatory requirement of the Tax Administration, and thus the Tax Administration provides the quality requirements for the electronic invoice system that TRANSFESA needs to implement. The main idea behind this new obligation is to transmit information in a direct and precise manner to avoid tax evasion. Initially, it applied only to large taxpayers such as TRANSFESA; however, the system has become mandatory for all regular taxpayers.

The electronic invoice system allows the user to issue electronic invoice files which are generated, expressed, and transmitted when selling goods or services in XML format. These files must comply with the legal requirements established by the Tax Administration to give them the same legal effectiveness and probative force as an authorized physical voucher.

The XML format that the Tax Administration requires for the electronic invoice system is a universal format for documents and structured data on the internet, which allows the exchange of information between different platforms. For the use of the format, the electronic receipts must comply with the technical specifications and formats provided by the Tax Administration.

TRANSFESA chose to purchase the off-the-shelf product to develop their system to generate the electronic invoices based on the compatibility of EPR because the ability to create the invoices using the XML format is the main quality requirement that the plan needs to reflect.

The type of documents that electronic invoice system includes are the following:

- Electronic invoice: It supports the sale of goods and the provision of services.
- Electronic ticket: The electronic voucher supports the sale of goods and services, authorized only for operations with final consumers.

- Electronic Credit Note and Debit Note: It allows canceling or modifying the accounting effects of the electronic invoice or electronic ticket without altering the information of the source document.

The quality requirements that the company needs the project to generate are detailed in the Quality Management Plan below.

Quality Management Plan
Electronic Invoice system implementation
TRANSFESA
SAN JOSÉ
Costa Rica

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Introduction.
Quality Management Approach
Quality Requirements / Standards.

Introduction

The Quality Management Plan for the implementation of the electronic invoice system project will establish the processes and procedures for ensuring a quality product upon the conclusion of the project. The purpose of this plan is to:

- Define how quality will be managed.
- Define acceptable quality standards.

Quality Management Approach

The quality management approach for the electronic invoice system project will ensure that quality is planned for the end product. To be considered successful, this project will meet its quality objectives by utilizing an integrated quality approach to define quality standards, measure quality, and continuously improve quality.

Product quality for the electronic invoice system project will be defined by the ability of the system to transmit the XML files to the Tax Administration system in compliance with the requirements established for the electronic invoices.

The Project Team will work to define and document all project specific quality standards for the product. All quality documentation will become part of the project management plan and will be transitioned to operations upon the successful completion of the project.

Quality Requirements

Product Quality:
The Project Team will determine the product quality standards and requirements following the information contained in the various decrees issued by the Tax Administration. These standards will primarily be based on the criteria established by the Tax Administration.

The invoice has to comply with the requirements, to this end, the system will be tested on a secondary network to ensure that the product is compliant with quality standards (determined by the Tax Administration requirements of issued documents).

Each invoice that is issued using the electronic invoice system must contain the following aspects:

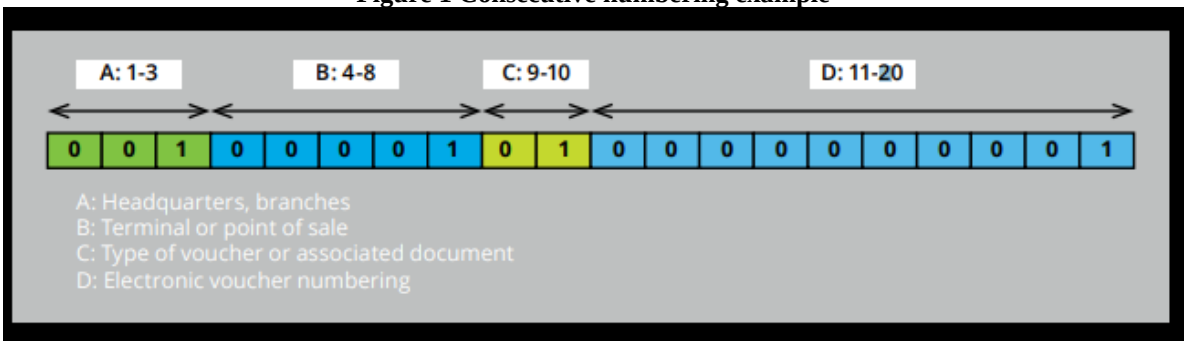
a) A version of the document.
b) Identification of the taxpayer using full name of the business, corporate legal identity number, complete business address (Province, Canton, District, Neighborhood, and other signs), and email address.
c) The name of the type of document must include the word "electronic"; the type of document will be consigned with the denomination "electronic invoice," "electronic ticket," "electronic credit note", and "note of electronic debit. "
d) Consecutive numbering: The system for issuing electronic vouchers must be assigned in an automatic and consecutive numbering for each type of electronic document and key number.
e) Date of issue of the electronic document: The system must indicate the corresponding date on which the electronic vouchers are issued, without being susceptible to modifications.
f) Time of issue of the electronic document: The system must indicate the time at which it was issued and delivered according to the time zone of Costa Rica.
g) Conditions of sale or service: credit, cash, section, consignment, among others.
h) Means of payment: The card, cash, check, transfer - bank deposit collected by third parties or any other means, need to be stated on the invoice.
i) Current Regulations (Resolution): For purposes of graphic representation, the legend "Authorized by resolution No. DGT-R-48-2016 of October 7, 2016. " has to be included in every invoice issued
j) The electronic vouchers must be written in Spanish.
k) Detail of the merchandise or service provided: the quantity sent, unit price expressed in national currency or foreign currency, unit of measure, product code, description of the product or service, and amount of the operation shown in national currency or foreign currency.
l) Discounts granted with the indication of their nature and amounts.
m) Subtotal of the invoice in national currency or foreign currency or amount of the selective consumption tax (when the seller is also taxpayer of the indicated tax) and the amount of any other tax imposed on the taxed goods or services.
n) The value of the services rendered expressed in national currency or foreign currency, separating the taxed ones of the exempt ones.
o) The value of the goods expressed in national currency or foreign currency, separating the taxed and exempt.
p) Net Cost of the sale expressed in national currency or foreign currency, excluding the general tax on the sales.
q) Amount of the tax equivalent to the rate applied to the net sale price, with the indication "tax of sales."
r) In case the client requires this information in the electronic ticket to support the credit, the system must be able to break down the tax.
s) The total value of the invoice in national currency or foreign currency and when the electronic voucher is expressed in foreign currency, the currency in which it is issued must be indicated.

At the time that the Tax Administration receives the XML files, it shall forward the confirmation of receipt. Once the message of confirmation is received it shall be delivered to the electronic receiver.

From the time of submission of the file, the Ministry of Finance will have a maximum of 3 hours to validate and send the message of acceptance or rejection of the file. The acceptance message constitutes the endorsement of the voucher or, in case of rejection, the indicated inconsistencies must be corrected.

When there is a cancellation or modification for the accounting effects of the electronic invoices or tickets, a note of electronic credit or debit is included to keep the original document and consecutive number and prevent it from being reused.

Figure 1 Consecutive numbering example



Source: The ABC of Electronic Invoices, Deloitte, 2018

Quality Assurance

The quality assurance of the project focuses on the ability of the system to issue the electronic invoice following the requirements of the Tax Administration. An iterative quality test will be conducted throughout the project lifecycle ensuring that the software allows the issuance of the necessary documents and the transmission of information without losing data or system failures.

Sponsor Acceptance

Approved by the Project Sponsor:
Marco Hernandez B
TRANSFESA CEO

Figure 18 Electronic Invoice Implementation Quality Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/quality-management-plan.html#axzz5C7L8yn7a

4.5 Human Resource Management Plan

The fifth specific objective of this project was the creation of the Human Resource Management Plan. As it was stated, this project will be developed in-house, making the Human Resource Management Plan an essential tool to develop the project.

TRANSFESA is a large taxpayer due to the volume of their sells; however, their commitment to exceptional service to their clients includes the protection of sensitive data. Along with the market research and cost-benefit analysis, the company focused its efforts on using only internal assets for the project development.

To ensure an orderly schedule of work that would allow the company to rotate correctly the employees that need to be involved in the project, a template of Human Resource Management Plan was used. To create it, the information collected for the project charter, as well as the work break down structure, and the available budget were used.

HUMAN RESOURCE PLAN
IMPLEMENTATION
OF ELECTRONIC INVOICE SYSTEM

TRANSFESA
SAN JOSÉ
COSTA RICA

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INTRODUCTION

The human resource management plan is a tool, which will aid in the management of this project's human resource activities throughout the project until its closure. The human resource management plan includes:

- Roles and responsibilities of team members throughout the project.
- Project organization charts.
- Staffing management plan includes:
    - How resources will be acquired.
    - Timeline for resources/skill sets.
    - How performance reviews will be conducted.
    - Recognition and rewards system.

The purpose of the Human Resource Management Plan is to achieve project success by ensuring the appropriate human resources are available with the necessary skills to execute the project.

ROLES AND RESPONSIBILITIES

The roles and responsibilities for the electronic invoice system implementation project are essential to project success. All team members must clearly understand their roles and responsibilities to perform their portion of the project. Therefore, the following project team roles and responsibilities have been established:

Project Manager (PM), (1 position): responsible for the overall success of the electronic invoice system implementation project. The PM must authorize and approve all project expenditures. The PM is also responsible for approving that work activities meet established acceptability criteria and fall within acceptable variances. The PM will be accountable for reporting project status by the communications management plan. The PM will evaluate the performance of all project team members and communicate their performance to the Project Sponsor. The PM must possess the following skills: leadership/management, budgeting, scheduling, and effective communication.

IT Programmer (ITP), (3 positions): They are part of the project team and are responsible for gathering the system requirements, both regarding hardware and software needs. The ITPs are responsible for all upgrade of hardware and network, databases migration, and testing of the new invoice system. The ITPs will be responsible for timely status reports to the PM as required by the communications management plan. The ITPs may not authorize any project expenditures nor allocate any resources without PM approval. The PM will monitor ITP's performance.

Financial Manager (FM), (1 position): The FM is responsible for the supervision of the financial teamwork to update the client database and the review of the project expenses to support the Project Manager. The FM is also responsible for working with the ITPs to ensure the electronic invoice system reflects the correct information.

Financial Assistant (FA), (2 positions): They are part of the project team. They are responsible for updating the client database and supporting the ITPs in the process of testing the database and verifying that the system is working correctly.

PROJECT ORGANIZATIONAL CHARTS

The following RACI chart shows the relationship between project tasks and team members. Any proposed changes to project responsibilities must be reviewed and approved by the Project Manager. As changes are made, all project documents will be updated and redistributed accordingly.

Chart 1: RACI Matrix

	Project Manager	IT Programmers	Financial Manager	Financial Assistant
Analysis	R	A	I	A
Design	R	A	I	
Installation	R	A		A
Testing	R	A		A
Implementation	R	A	I	A

Key:
R – Responsible for completing the work
A – Accountable for ensuring task completion/sign off
C – Consulted before any decisions are made
I – Informed of when an action/decision has been made

Source: Author, 2018

STAFFING MANAGEMENT

Staff Acquisition:
For the electronic invoice system implementation project, the staff will consist entirely of internal resources. There will be no outsourcing/contracting performed within the scope of this project. The Project Manager will negotiate with department managers to identify and assign resources based on the project needs. The appropriate department manager must approve all resources before they begin any project work. The project team will not be co-located for this project and will remain in their current workspace.

Performance Reviews:
The Project Manager will review each team member's assigned work activities at the onset of the project and communicate all expectations of work to be performed. The Project Manager will then evaluate team members throughout the project to assess performance and how adequately they completed the assigned task.

The performance reviews will help the Project Manager to determine possible team composition changes, determining rewards and recognition and adjusting staffing assignment when necessary. If it's determined by the Project Manager along with the team member evaluated that their skills are insufficient at the time, an alternate solution will be discussed with the Human Resources Office, for example, assigning another employee to the task or to assist. If it's not possible to solve the performance issue internally and a third party contractor is needed the Project Sponsor must grant approval.

Staff Release Plan
The staff release plan addresses the release of resources at any point throughout the project. It also helps to mitigate human resource risks that may occur during or at the conclusion of the project (Heldman & Mangano, 2018). The proposed work schedule to the Human Resource Office should allow the staff to reincorporate to their regular functions full time swiftly at the end of the project.

For the staff release, the Project Manager will communicate to the Human Resource Office of the completion of the tasks supported by the project team member, so they can be reincorporate to regular functions.
It is important to note that when a staff member is released, they are no longer linked to the project as part of the project team, but rather as internal stakeholders.

Chart 2: The proposed work schedule for the staff

Employee	MON	TUES	WED	THUR	FRI	SATS	SUN
Project Manager	DAY	DAY	DAY	DAY	DAY	HALF-DAY	OFF
Financial Director	DAY	HALF-DAY	HALF-DAY	HALF-DAY	OFF	OFF	OFF
IT Staff	DAY	DAY	HALF-DAY	DAY	DAY	OFF	OFF
Financial Assistants	DAY	HALF-DAY	HALF-DAY	HALF-DAY	OFF	OFF	OFF

Source: Author, 2018

Recognition and Rewards:
Although the scope of this project does not allow time to provide cross-training or potential for monetary rewards, there are several planned recognition and reward items for project team members.

- Upon successful completion of the project, any team member who satisfactorily completed all assigned work packages on time will receive a certificate of thanks from the CEO.

- Team members who complete all of their assigned tasks will have their photo taken for inclusion in the company newsletter.

SPONSOR ACCEPTANCE
Approved by the Project Sponsor:
Marco Hernandez B
CEO TRANSFESA

Figure 19 Electronic Invoice Implementation Human Resources Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/human-resource-plan.html#axzz5C7L8yn7a

4.6 Communication Management Plan

The sixth specific objective for the FPG was the elaboration of a Communication Management Plan. In order to create a plan that could adjust to the company and its already existing structure, a previous meeting with the Project Sponsor and company CEO served to determine the preferred methods of communication and the existing protocols of communication between offices. Taking all of this into consideration and using a template and the Project Charter, the communication management plan was created.

It is important to note that even though this company is classified as a large taxpayer, the number of employees is significantly small, which means a lot of informal and direct communication happens outside of the meetings.

The company culture has reinforced this type of communication where employees do not wait for formal stances to express concerns or issues regarding the functioning of systems or other situations in the day- to-day work. There is a culture of direct communication with all parties involved, and this project was no exception. When particular circumstances happened, an email to the Project Manager would be enough to call his attention to the issue and start an immediate communication with the reporter to work on a solution as a team. Weekly meetings were used more for formal reporting purposes that actual communication about actions to be taken during the project development.

Proper communication records were available using the SharePoint site since the project team would record the observations, recommendations, and other essential data shared during the project life.

Communications Management Plan
Electronic Invoice System Implementation

TRANSFESA
SAN JOSÉ
Costa Rica

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Stakeholder Communication Requirements.
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Communications Matrix.
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Glossary of Communication Terminology.

Introduction

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

Communications Management Approach

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

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

Communications Management Constraints

All project communication activities will occur within the project's approved budget, schedule, and resource allocations. The Project Manager is responsible for ensuring that communication activities are performed by the project team and without external human resources, which will result in exceeding the authorized budget. Communication activities will occur by the frequencies detailed in the communication matrix to ensure the

project adheres to schedule constraints. Any deviation of these timelines may result in excessive costs or schedule delays and require approval by the Project Sponsor.

Stakeholder Communication Requirements
As part of identifying all project stakeholders, the Project Manager will communicate with each stakeholder to determine their preferred frequency and method of communication. The Project Manager will maintain this feedback in the project's stakeholder register. Standard project communications will occur by the communication matrix; however, depending on the identified stakeholder communication requirements, individual communication is acceptable and within the constraints outlined for this project.

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

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

Roles

Project Sponsor
The project sponsor is the main promoter of the project and authorized the project by signing the project charter. Mr. Hernandez Sr. is responsible for providing the final authorization for funding and he will also approve the final product delivered by the project At the executive level communications should be presented in summary format unless more detailed communications are required.

Project Manager
The Project Manager, Mr. Marco Hernandez Jr. has overall responsibility for the execution of the project; he manages the day-to-day resources and provides project guidance. As the person responsible for the implementation of the project, he is the primary communicator for distributing information according to this communications management plan.

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

Key Stakeholders
Stakeholders usually include all individuals and organizations who are impacted by the project. For this project, we need to point out that the key stakeholders are the financial and sells department since they are the two main users of the system. While IT department is in charge of the creation and implementation of the system, they are not the end user.

Project Team Directory
The following table presents contact information for all people identified in this communications management plan. The email addresses in this table will be used to communicate with these people.

Chart 1. Project Team Directory

Role	Name	Title	Email
Project Sponsor	MA. Hernández	CEO	Mhernandez@transfesacr.com
Project Manager	MV Hernández	Project Manager	mhs@transfesacr.com
Financial Department Director (Key Stakeholder)	J. Murillo	Financial Director	Jmurillo@transfesacr.com
Sell Department Director (Key Stakeholder)	F. Hernández	Sells Director	Fhernandez@transfesacr.com
IT Programmers & Financial Assistants (Project Team)			Request information to HR once the personnel has been identified

Source: Author, 2018

Communication Methods and Technologies

The project team will determine the communication methods and technologies based on several factors to include:

- Stakeholder communication requirements.
- Available technologies (internal and external).

Given the size of the company, email is the selected method to establish communication, as well as an internal SharePoint where the Project Manager Assistant will upload special communications. The Project Manager is responsible for ensuring that all project communications and documentation are copied to the SharePoint platform. All project communication and documentation, in addition to the SharePoint platform, will be archived on the internal shared drive at senior management level.

Communications Matrix

The following table identifies the communication requirements for this project.

Chart 2, Communication Matrix

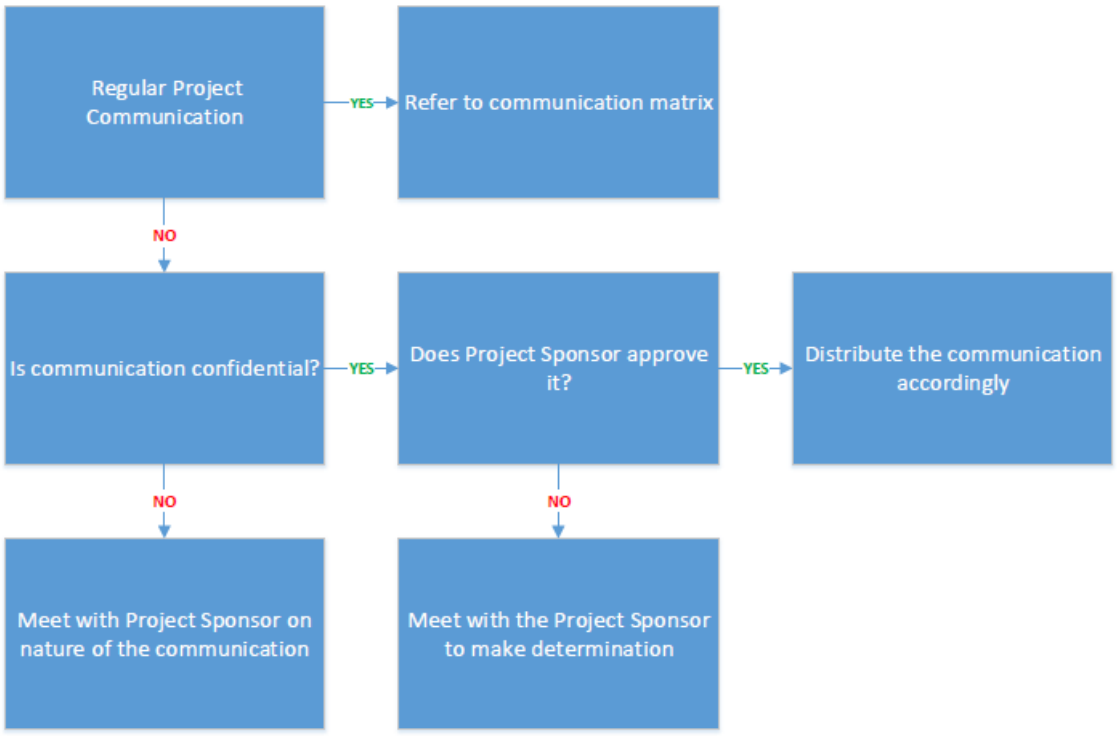
Communication Type	Objective of Communication	Medium	Frequency	Audience	Owner	Deliverable	Format
Kickoff Meeting	Introduce the project team and the project. Review project objectives and management approach.	Face to Face	Once	Project Sponsor Project Team Stakeholders	Project Manager	Agenda Meeting Minutes	Agenda has been previously emailed to all participants. Soft copy archived on project SharePoint site.
Project Team Meetings	Review status of the project with the team.	Face to Face Conference Call	Weekly	Project Team	Project Manager	Agenda Meeting Minutes Project schedule	Agenda is previously emailed. Soft copy archived on project. SharePoint site and meeting minute is emailed after meeting.
Monthly Project Status Meetings	Report on the status of the project to management.	Face to Face	Monthly	CEO/Project Sponsor Project Manager Project Manager Assistant Project Team	Project Manager	Slide updates Project schedule	Agenda previously emailed. Soft copy archived at SharePoint site. Meeting minute is emailed after meeting.
Project Status Reports	Report the status of the project including activities, progress, costs, and issues.	Email	Biweekly	CEO/Project Sponsor Project Team Stakeholders	Project Manager	Project Status Report Project schedule	Soft copy archived on project SharePoint.

Source: Author, 2018

Communication Flowchart

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

Figure 1 Communication Flowchart



Source: Author, 2018

Guidelines for Meetings

Meeting Agenda
Meeting agenda will be distributed five business days in advance of the meeting. The agenda should help the presenter to identify each topic along with a time limit for that topic. The first item on the agenda should be a review of action items from the previous meeting. They are provided to all participates via email.

Meeting Minutes
Meeting minutes will be distributed within two business days following the meeting. Meeting minutes will include the status of all items from the agenda along with new action items and the parking lot list. All meeting minutes are sent to the participants via email and uploaded to the share site

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

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

Note Taker and Time Keeper
The note taker is responsible for documenting the status of all meeting items, maintaining a parking lot item list, and taking notes of anything else of importance during the meeting. The note taker will give a copy of the notes to the chairperson at the end of the meeting and the chairperson will use the notes to create the meeting minutes.

Glossary of Communication Terminology

Term	Definition
Communication	Actively sending and receiving information. Ideally, the information received should match the information sent. It is the responsibility of the sender to ensure this takes place.
Stakeholder	Individuals or groups involved in the project or whose interests may be affected by the project's execution or outcome.
Communications Management Plan	A portion of the overall project management plan which details how project communications will be conducted, who will participate in communications, the frequency, and methods used for it.

Sponsor Acceptance
Approved by the Project Sponsor:
Marco Hernandez B
TRANSFESA CEO

Figure 20 Electronic Invoice Implementation Communication Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/communications-management-plan.html#axzz5C7L8yn7a

4.7 Risk Management Plan

The creation of the Risk Management Plan is the seventh specific objective of this project and the last Knowledge Area of the planning phase. Initial identification of risk was made for the creation of the Project Charter and those initially identified have been used through the project development.

As indicated in the Project Charter, the primary constraint of the project is the time in which the project needs to be developed, since the Tax Administration has provided the users with a deadline that cannot be extended. Any situation that affects the implementation time of the project becomes a high priority risk that needs to be managed.

Given that the company has no previous experience developing projects following the Project Management Institute or the PMBOK guidelines, the Project Manager

Assistant helped the Project Manager to create a risk management plan. This plan allowed the team to identify the project risks, perform a qualitative analysis, and a response plan for each one.

In order to create the Risk Management Plan, the Project Charter and the stakeholder register were used as inputs of the process. The tools and techniques to process the risk assessment were analytical techniques and meetings. A template was adapted to the needs of the company.

RISK MANAGEMENT PLAN
ELECTRONIC INVOICE SYSTEM
IMPLEMENTATION

TRANSFESA
SAN JOSÉ
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Risk Mitigation and Avoidance

Introduction

The analysis of risks in an Information Technology oriented project, such as the implementation of the electronic invoice system project, is a process that includes the identification of computer assets, their vulnerabilities and threats, as well as their probability of occurrence and the impact thereof. To determine the appropriate controls to accept, decrease, transfer, or avoid the occurrence of risk, a risk management plan is created.

Through the following risk analysis, it will be possible to identify the threats of the project and in this way establish strategies to mitigate them. Each risk can be analyzed to evaluate the potential impact and the steps to be taken to avoid this event or the contingency measures in case the event occurs.

Risk Management Approach

The approach taken to manage risks for this project included a methodical process by which the project team identified, scored, and ranked the various risks. The Project Manager along with the Project Manager Assistant will provide status updates on the risks that are classified as high threats in the biweekly project team meetings. Upon completion of the project, during the closing process, the Project Manager will analyze each risk as well as the risk management process. Based on this analysis, the Project Manager will identify any improvements that can be made to the risk management process. These improvements will be captured as part of the lessons learned.

Risk Identification

For this project, risk identification was conducted in the initial project risk assessment meeting using as a guideline the project charter, where an initial identification of risks had occurred. The method used by the Project Team to identify risks was brainstorming. The Project Manager chaired the risk assessment meeting and allowed 10 minutes for all team members to record as many risks as possible. The risks identified during this meeting were added to the project plan and risk register.

Risk Qualification and Prioritization

Once risks are identified, it is essential to determine the probability and impact of each risk to allow the Project Manager to prioritize the risk avoidance and mitigation strategy. The determination of the severity of the risks identified by the team is done using a probability and impact factor assigned to each risk. This process allowed the Project Manager to prioritize risks based upon the effect they may have on the project. The Project Manager Assistant utilized a probability-impact matrix to facilitate the team in moving each risk to the appropriate place on the chart.

Risk Breakdown Structure

1. **Electronic invoice system**
   - 1.1 **Project Management**
     - 1.1.1 Scheduling
     - 1.1.2 Cost
   - 1.2 **Network & Software**
     - 1.2.1 Technology
   - 1.3 **Internal**
     - 1.3.1 Quality
   - 1.4 **External**
     - 1.4.1 Tax administration system failure

Probability and impact scale

The electronic invoice system project will utilize the probability and impact scale to assess risk events for their probability and impact using a five-point scale ranging from very low to very high. The results of this assessment will be used to prioritize the risks and determine the most critical or least critical regarding ranking. This ranking will give the Project Manager the insights as to where resources may be needed to manage or mitigate the probability of these risks to affect the project scope, schedule, budget, and overall result. The probability scale contemplates how likely is the occurrence of an event within the period of the electronic invoice system project.

Table 1 Impact Scale

Impact Scale	Event Occurrence Impact
1- Very low	*Risk occurrence will have Impact of <5% increase in the overall cost/time of the project*
2- Low	*Risk occurrence will have Impact of 5 - 10% cost increase in the overall cost/time of the project*
3- Moderate	*Risk occurrence will have Impact of 10 – 20 % Cost increase in the overall cost/time of the project*
4- High	*Risk occurrence will have Impact of 20 – 30% Cost increase in the overall cost/time of the project*
5- Very high	*Risk occurrence will have Impact of >30% Cost increase in the overall cost/time of the project*

Source: Author, 2018

Table 2 Probability Scale

Probability Scale	Event Occurrence Probability
1- Very low	The event is very unlikely to occur in the next five months
2- Low	The event is unlikely to occur in the next four months
3- Moderate	There is moderate chance the event will occur in the next four months
4- High	The event is likely to occur in the next three months
5- Very high	The event is most likely to occur in the next two months

Source: Author, 2018

Probability and impact matrix

The electronic invoice system project will utilize the Probability Impact Matrix (PIM) which will provide a snapshot of the risks the project faces along with their risk rating ranked from low to high. The model affords the project the opportunity to use the risk rating to prioritize risks by the impact they will have on the project and the probability of their occurrence.

Table 1.3 depicts the color-coded PIM for this project. The cells highlighted in red are considered high risk. Therefore, the project manager must ensure that prevention and mitigation strategies for these risks are planned and implemented well in advance. The yellow cells are considered moderate risks and can be addressed as they

occur. The low risks are highlighted in green and although these risks are low priority, they must not be ignored and steps are taken to monitor these risks, thereby preventing any negative impact they can have on the project objective.

Table 3 Pxl Scale.

Probability		Impact Rating				
		1 Very Low	2 Low	3 Moderate	4 High	5 Very High
	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

Low Risk Moderate Risk High Risk

Source: Author, 2018

RISK REGISTER

The risk register for this project is a log of all identified risks, their probability and impact to the project, the category they belong to, the mitigation strategy, and the probability of the risk to occur. The register was created through the initial project risk management meeting led by the project manager. During this meeting, the project team identified and categorized each risk. Additionally, the team assigned each risk a score based on the probability of it to occur and the impact it could potentially have. The risk register also contains the mitigation strategy for each risk. The risk register will be maintained as an appendix to the risk management plan.

RBS Code	Cause	Risk	Consequence	Probability	Impact	PxI Score	Trigger	Strategy
1.4.1	Failure of the reception system of the Tax Administration.	Failure of the Tax Administration System to receive the information.	The disparity between the records the Tax Administration has of the company and the actual records kept by the company.	3	5	15	Overload of the Tax Administration system once it becomes mandatory for all taxpayers.	**Mitigate:** Keep electronic records in the company to be able to report back to the Tax Administration when the system is re-established.
1.1.1	Scheduling	Procurement, staffing, or funding delays.	Electronic invoice system may not be functional by the requirement of the Tax Administration.	2	5	10	Late approval to start the procurement, staffing, or funding decisions.	**Avoid:** Pre-implementation of a fast track procurement process in place for the project.
1.3.1	Quality	Electronic Invoice presents problems when the invoice is issued – information missing, wrong or repeated serials issued.	Invoices that fail to comply with the data are considered void, affecting the tax report to the Tax Administration.	2	4	8	Glitches in the electronic invoice system or database.	**Mitigate**: when a system failure happens, the company can use manually issued invoices by the Tax Administration regulation while the error is fixed.
1.2.1	Technology	The server does not have enough capacity to support the client's database and electronic invoice system.	Lack of functionality due to server support capacity failure.	2	5	10	Database migration failure.	**Avoid:** The company will use a cloud server to ensure space and appropriate support.
1.1.2	Costs	Miscalculation of software characteristics necessary to create the electronic invoice system for the company, which increases the cost of the product.	Delay in the compliance of issuance of electronic invoices.	1	5	5	EPR incompatibility.	**Avoid:** Review the characteristics of the system currently in place versus those that will be used for the development to guarantee EPR compatibility.

Chart 1 Risk Register
Source: Author, 2018

Figure 21 Electronic Invoice Implementation Risk Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/risk-management-plan.html#axzz5C7L8yn7a

4.8 Procurement Management Plan

The eight specific objective for the project is the creation of the Procurement Management Plan, which is needed to purchase the necessary equipment for the installation of the electronic invoice system.

The specifications for the equipment and the software are provided by system requirements of the Tax Administration since the electronic invoices are generated, expressed, and transmitted in XML format, which is a universal format for documents and structured data on the internet that allows the exchange of structured information between different platforms.

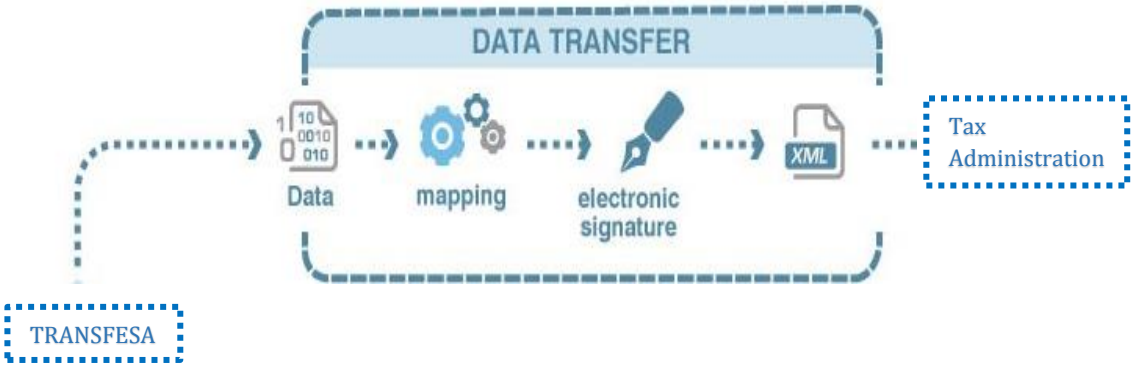

Figure 22 XML format data transfer.
Source: Author, 2018.

For the company to be able to proceed with the implementation of the system and the correct transfer of information, they need to purchase the software as well as the necessary hardware to support the new system.

The project team analyzed the conditions required by the Tax Administration and determined the need to acquire an off-the-shelf software they could use to tailor their system and adjust it to the actual needs of the company. A server was initially considered for the project; however, as the project moved forward, the company

determined that cloud services would reduce possible risks related to space, failure, or downtime of the server for updates and such.

Other hardware equipment will be purchased to allow employees easy and fast access to the system, since there are employees on the sales department that work outside the company, they need to ensure the equipment that is procured can support connectivity and information transition as required.

The Procurement Management Plan was created using as supporting documents the project charter, the cost and schedule management plan, and the human resource management plan.

Procurement Management Plan
Electronic Invoice System Implementation

TRANSFESA
San José
Costa Rica

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Cost Determination.
Procurement Constraints.
Decision Criteria.
Sponsor Acceptance.

Introduction

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

Procurement Management Approach

The Project Manager will provide oversight and management for all procurement activities under this project. The Project Manager will work with the Project Team to identify all items to be procured for the successful completion of the project. The Project Sponsor will then review the procurement list before submitting for the signature of the contracts and purchasing.

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

Item/Service	Justification	Needed By
Hardware • Computer with Dual Core Processor of 1.8 GHz, or superior • 1 GB of RAM or superior • 2 Routers	Needed for effective communication of information between the company and the Tax Administration.	31st January, 2018
Software and licensing for electronic invoice issuance capable of working with XML format	Needed for the issuance of electronic invoices.	20th of January, 2018
Cloud server service for database and electronic invoice system	Third-party clouds enable organizations to focus on their core businesses instead of expending resources on computer infrastructure and maintenance.	20th of January, 2018

Type of Contract to be Used
All items and services to be procured for this project will be solicited under firm-fixed-price contracts. The project team will work to define the item types, quantities, functions, and required delivery dates. The IT department will then seek bids from various vendors to procure the items within the required timeframe and at a reasonable cost under the firm fixed price contract once the vendor is selected.

Procurement Risks
All procurement activities carry some potential for risk which must be managed to ensure project success. While the project's Risk Management Plan will handle all risks, there are specific risks which pertain specifically to procurement which must be considered:

- Unrealistic schedule and cost expectations for vendors.
- Manufacturing capacity capabilities of vendors.
- Conflicts with current contracts and vendor relationships.
- Configuration management for upgrades and improvements of purchased technology.
- Potential delays in shipping and impacts on cost and schedule.
- Possibility that final product does not meet required specifications.

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

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

Additionally, any decisions regarding procurement actions must be approved by the Project Sponsor before implementation. Any issues concerning procurement actions or any newly identified risks will immediately be communicated to the Project Manager as well as the Project Sponsor.

Procurement Constraints
Several constraints must be considered as part of the project's procurement management plan. These constraints will be communicated to all vendors to determine their ability to operate within these constraints. These constraints apply to several areas which include schedule, cost, scope, and resources.

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

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

Scope: All procurement activities and contract awards must support the approved project scope statement. Any procurement activities or contract awards which specify work which is not in direct support of the project's scope statement will be considered out of scope and disapproved.

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

Decision Criteria
The criteria for the selection and award of procurement under this project will be based on the following decision criteria:

- The ability of the vendor to provide all items by the required delivery date.
- Quality.
- Cost.
- Expected delivery date.

The IT and finance department will measure these criteria along with the Project Manager. The ultimate decision will be made based on these criteria as well as available resources.

Sponsor Acceptance
Marco A Hernández
CEO TRANSFESA

Figure 23 Electronic Invoice Implementation Procurement Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-planning-templates/procurement-management-plan.html#axzz5C7L8yn7a

4.9 Stakeholder Management Plan

Part of the initiation process group is to identify the stakeholders that will influence the project. Correct identification of stakeholder allows the company to inform all possible affected people to make decisions about the electronic invoice system implementation to keep them engaged and receive feedback when necessary to ensure a successful project process.

In this particular case, the project is being developed as an imposition of the Tax Administration and those companies that are not compliant with the new regulations are exposed to a monetary sanction; this has forced the project team to look for the easiest less disruptive way to proceed with the project implementation. Part of the overall strategy was ensuring the correct communication with all parties involved.

Having a certain level of familiarity with the upcoming change allows the employees to feel comfortable explaining to clients how the new system benefits their regular activities with the company, even when it was an imposition of the Tax Administration, where they had no authority to refuse the modification.

Part of the communication with the stakeholders included the Project Manager Assistant highlighting the advantages of using the new system as well as clarifying the legal implications of the project to the company, given the legal background the Project Manager Assistant has.

A template to detail the Stakeholder Management Plan and charts like the one below were presented to highlight the benefits of the system that was being implemented and used to develop this subsection of the project.

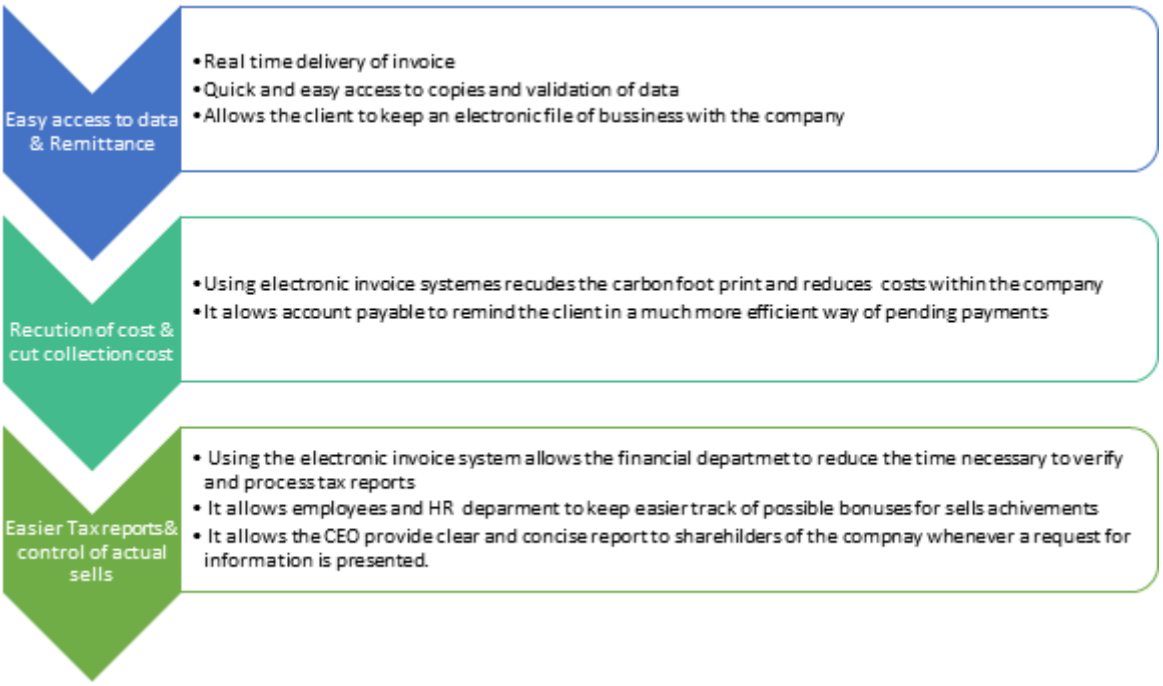

Chart 7 Benefits of the electronic invoice system company-wide
Source: Author, 2018.

Stakeholder Management Strategy
Implementation
of Electronic Invoice System

TRANSFESA
SAN JOSÉ
COSTA RICA

Table of Contents

Introduction.
Identify Stakeholders.
Key Stakeholders.
Stakeholder Analysis.

Introduction

The stakeholder management strategy for the implementation of the electronic invoice system project will be used to identify and classify project stakeholders, determine stakeholder power, interest, and influence, and analyze the management approach and communication methodology for project stakeholders. By facilitating the identification of vital influential stakeholders to solicit input for project planning and gain support as the project progresses, will benefit the project by minimizing the likelihood of encountering competing objectives and maximizing the resources required to complete the project.

Identify Stakeholders

The electronic invoice system project team will conduct a brainstorming session to identify stakeholders for the project. The brainstorming session will be done in two parts with the primary Project Team. The first part will focus on internal stakeholders (employees who will be affected by the project). The second part of the session will focus on external stakeholders. These may include suppliers, trial customers, partner organizations, and others.

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

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

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

Key Stakeholders

As a follow-on to identify stakeholders, the project team will identify key stakeholders who have the most influence on the project or who may be impacted the most by it. These key stakeholders are those who also require the most communication and management which will be determined as stakeholders are analyzed. Once identified, the Project Manager will develop a plan to establish an effective communication plan that allows the project team to address any concerns or conflicting interests they have.

	Organization/Name
1.	TRANSFESA CEO
2.	TRANSFESA IT Department
3.	TRANSFESA HR Department
4.	TRANSFESA Financial Department
5.	TRANSFESA Sales Department
6.	Customers

Based on the analysis done regarding the stakeholder's interest and needed level of engagement to ensure the project success, the chart below reflects the primary concerns of the stakeholders as well as the proposed strategy to ensure their concerns are addressed and considered during the project development, maintaining a proper engagement and acceptance during the project development. The stakeholder analysis matrix will be reviewed and updated throughout the project's duration to capture any new information or concerns.

Stakeholder	Concerns	Strategy
TRANSFESA CEO	Work is completed on time and within budget. Prevent payment of penalties to the Tax Administration.	Communicate project advances and completion of milestones. Present mitigation plans for key/ sensitive processes.
TRANSFESA IT Department	Compliance with scheduled work for the new system installation. Transition to the new system with minimal disruption to daily operations.	Frequent communication and addressing concerns are imperative with these stakeholders since it falls under their tutelage to provide the human resource to proceed with the new system implementation.
TRANSFESA HR Department	Ensuring that human resources are assigned to the project stages as necessary.	Communicate project schedule requirements ahead of time to ensure staff rotation is done according to project execution needs.
TRANSFESA Financial Department	Ensure that all financial requirements are fully included in the invoices. Be able to collect the necessary information to report to the Tax Administration without delays.	Review that all requirements needed are included in the system for electronic invoice issuance. Ensure the existence of an alternative plan in case there are issues with the emission of the electronic invoices.
TRANSFESA Financial Department	Once the product is in place, all sale reports will be done using the new system to allow the financial department to have the information in real time.	Communicate test and performance results and obtain feedback on known customer requirements to ensure needs and concerns are adequately addressed during the project development.
Customers	Concerns regarding how invoices will be provided once the new system is in place.	Provide information to company POC to ensure the information is updated in the database.

Source: Author, 2018

Approved by the Project Sponsor:
Marco Hernandez B
TRANSFESA CEO

Figure 24 Electronic Invoice Implementation Stakeholder Management Plan. Adapted from Project Management Documents. Retrieved February 2018 from http://www.projectmanagementdocs.com/project-initiation-templates/stakeholder-management-strategy.html#axzz5C7L8yn7

5. CONCLUSIONS

- To create the Project Management Plan for the electronic invoice system, the Project Charter was created as a previous process to the Project Management Plan. Given the lack of experience of the company with project implementation, a template was used as a guide to capture and organize the business project needs and objectives, project description, preliminary scope statement, initial project risks, project deliverables, summary milestones, and project budget. The project charter also included approval of the Project Manager and the Sponsor's authorization for the project to commence.

- To create the output for the first specific objective of the project, which is the Scope Management Plan, the decrees issued by the Tax Administration as well as the meetings held with the Project Sponsor were used to outline the project scope, WBS, and WBS dictionary. The output was generated using a template that facilitated capturing the information.

- Regarding the specific objective number two, Schedule Management Plan, some projects, especially those of smaller scope like the electronic invoice system implementation, are so tightly linked that they are viewed as a single process that can be performed in a relatively short period. The information established in the Scope Management Plan was the base for the creation of the project Gantt chart to identify and orchestrate each project activity to ensure the project's completion within the time constraints that were deemed as the priority of the Project Sponsor.

- The output from specific objective number three, the Project Cost Management Plan, was created using the market research performed by the IT Department and the analysis of work needed was used to develop the project's budget. A template was used to capture the cost management for the project.

- To develop the Quality Management Plan, the output from specific objective number four, a template was used to collect the information available to taxpayers in the decrees and regulations issued by the Tax Administration. That information was used to define the project's quality management approach, quality requirements/standards, quality assurance, quality control that will be used throughout the project.

- For the specific objective number five, the Human Resource Management Plan, the human resources needed to complete the project were identified and classified based on their roles and responsibilities. Moreover, the project organization chart, the staffing management approach, and details identifying how the human resources will be managed throughout the project are detailed in the plan. It's important to note that the project will be developed "in house", making the staff release a flexible process. Once a staff member completes their role in the project development they incorporate back to their regular functions.

- To accomplish specific objective number six, the Project Communications Plan, a template was used along with a list of Project Team members and their roles and responsibilities. It is important to note that the Communications Management Plan had the intention of serving as the official communication approach. However, the company's communication culture is one where formalities and plans such as the one proposed are the exceptions and not the rule, thus this plan was established as a formality of compliance, but not as a real need/ functional tool for the project development.

- The deliverable for specific objective number seven, the Risk Management Plan, was created using a template. Additionally, to capture and classify project risks, so that effective risk responses could be planned, a risk register was developed along with a qualitative risk analysis. Quantitative risk analysis was not performed during this process as the tools were not available for use.

- In order to complete the specific objective number eight, The Procurement Management Plan, the project team performed market research of available off-the-shelf services to determine the one with a compatible EPR. Once this step was completed, the plan was developed using a template to identify the project's procurement management approach, types of contracts, and contract approval process and possible risks and risk contingencies in the procurement processes.

- The Stakeholder Management Plan, developed for specific objective nine, was also prepared using a template. The identification of the stakeholders and their primary concerns were used as a guide to help the project team to create a list of ways to manage those concerns to maintain engagement, such as, using the analysis phase of the project to include improvements or proposed solutions to the end product.

- For this particular project, the scope, quality, and schedule management were mainly determined by the Tax Administration and not the company directly. Based on the information provided by the different decrees, the Project Manager Assistant prepared initial drafts of the plans using templates and discussing with the Project Manager the necessary adjustments before presenting the plans for the Project Sponsor approval.

- Although TRANSFESA is a small company regarding staffing level, they have the economic structure of a large taxpayer that is implementing new technologies to improve their client service. In the future, they will require proper planning to ensure upgrades and additional modifications to their systems can be done without interrupting operations, thus having a real use of the documents created during the development of this project.

6. RECOMMENDATIONS

- TRANSFESA should formally establish a project management division within the company to oversee their future projects development. As a company that intends to really as much as possible on technology to provide outstanding attention to their clients, they need to prepare accordingly using the lessons learned during the implementation of the electronic invoice system as base line to start the process.

- TRANSFESA should create a document management and storage system to organize and store documents created in every project execution for future use, review, and collection of lessons learned. Also, this database serves the purpose of providing information that is necessary for project development according to the PMBOK® Guide. Furthermore, they can obtain data to create baselines and measure the success of their project implementation in the short, medium and long term.

- TRANSFESA had an immediate need to complete the project within schedule, making the Project Schedule Management Plan and all the related processes vital. For future projects, they need to work further on the definition of project priorities to produce a well-balanced Project Management Plan.

- TRANSFESA is a company that has adapted to the rapid changing market to remain competitive, however, they have failed to integrate project management formally to their daily activities due a misconception of what are the purposes and use of Project Management. They should take advantage of this opportunity to introduce Project Management formally to their process and as part of their company culture.

- TRANSFESA should determine values to measure the project implementation impact within the company to review the effectiveness and

the compliance with the quality requirements in the short and long term. For this particular case they could measure the time it takes to process financial reports, reduction of human error in the reports creation, customer satisfaction, etc. Projects end with the delivery of the final product or service, but the company can gain feedback for future reference.

- TRANSFESA should develop the standard project management initiation and planning documents to ensure those in charge of future project execution to have the tools to prepare the project correctly since the start and develop each subsidiary plan of the Project Management plan ensuring methodical and accurate application for each Knowledge Area.

- TRANSFESA should study, if available to them, how other companies faced challenges after the electronic invoice system implementation, in order to prepare for future. The implementation of the electronic invoice system is one step in a new direction the company will have to adapt to.

- TRANSFESA should consider a training in the use of the electronic invoice system for all the staff for two important reasons, one it allows non users to be familiarized with it and transmits that confidence in the system to clients and other companies. Two because it can be seen as an incentive to those employees seeking to grow within the company.

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APPENDICES

Appendix 1: FGP Charter

PROJECT CHARTER Formalizes the project start and confers the Project Manager with authority to assign company resources to the project activities. Benefits: it provides a clear start and well-defined project boundaries.	
Date	**Project Name:**
November 18th, 2017	Project Management Plan for the implementation of electronic invoice system
Knowledge Areas / Processes	**Application Area (Sector / Activity)**
Knowledge areas: Project Integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Human Resource Management, Project Communication Management, Project Risk Management, Project Procurement Management, Project Stakeholder Management **Process groups:** Initiating, Planning, Execution, Monitoring & Control & Closing	Planning, information technology, Commercial
Start date	**Finish date**
November 18th, 2017	February 14th, 2018
Project Objectives (general and specific)	
General objective To create a project management plan compliant with the standards of the Project Management Institute for the electronic invoice system project to guide its implementation. **Specific objectives:** 10. To develop a project charter that formally describes the project objectives to authorize the project and provide the Project Manager with authority to apply organizational resources to the project to produce the project management plan. 11. To create a scope management plan to ensure the work necessary to comply with the objectives is completed. 12. To create a schedule management plan to support the development and management of the project schedule and complete the work packages as proposed. 13. To create a cost management Plan for developing and managing the project within the proposed budget. 14. To develop a quality management plan to determine the stakeholder acceptance criteria. 15. To create a human resource management plan for effective assignation and competition of the project on time, cost, and quality constraints. 16. To create a communication management plan to ensure adequate information flow and the proper documentation of the project development. 17. To create a risk management plan to identify possible risks to develop strategies to eliminate or mitigate such risks and ensure the successful project completion. 18. To develop a procurement management plan to ensure the necessary services or goods are acquired as needed to complete the project. 19. To develop a stakeholder management plan to identify the project stakeholders and be able to engage them effectively.	

Project purpose or justification (merit and expected results)

Tax evasion has always been a problem in Costa Rica for the Tax Administration (Ministerio de Hacienda). Starting in 2014, to reduce this problem and have better control of the income that the administration should be receiving from the taxpayers, a pilot program to implement the electronic invoice issuance for the sale of products and services provided was presented via Legal Decree.

Significant taxpayers like TRANSFESA are now proceeding to adjust their invoice systems to align with the new regulations and taking advantage of the opportunity to evaluate the state of the existing database, updated it, and implement a more efficient and effective internal accounting control.

The project to develop the project management plan for the implementation of electronic invoice system is required by the company to ensure they are compliant with Costa Rica's current tax and commercial regulations.

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

The final deliverable of the Project Management Plan for the implementation and use of the electronic invoice system is the compliance of the company with the local tax and commercial regulation

The final project deliverables will be:

1. Project Charter
2. Scope Management Plan
3. Schedule Management Plan
4. Cost Management Plan
5. Quality Management Plan
6. Human Resources Management Plan
7. Communication Management Plan
8. Risk Management Plan
9. Procurement Management Plan
10. Stakeholder Management Plan

Assumptions

It is assumed that the Project Manager would be able to complete the project management plan in time.

It is assumed there will be expert judgment provided by the tutor to guide the development of the FGP.

Constraints

Time: The Final Graduation Project must be developed within the time frame provided by the university.

Preliminary risks

If the student misses the programed deliverables of the course, the FGP will not be approved and the student will not be eligible for graduation.

If communication with the tutor is inadequate, the project management plan may be delayed.

Budget

The cost estimate of the project for the implementation of electronic invoice system is $125.000 US dollars

Milestones and dates

Milestone	Start Date	End Date
Final Graduation Project	13/11/17	11/05/18
FGP Start	13/11/17	13/11/17
1.Graduation Seminar	13/11/17	15/12/17
2.Tutoring process	18/12/17	16/03/18
3. Reading by reviewers	19/03/18	06/04/18
4.Adjustments	09/04/18	04/05/18
5.Presentation to Board of Examiners	07/05/18	11/05/18
FGP End	11/05/18	11/05/18

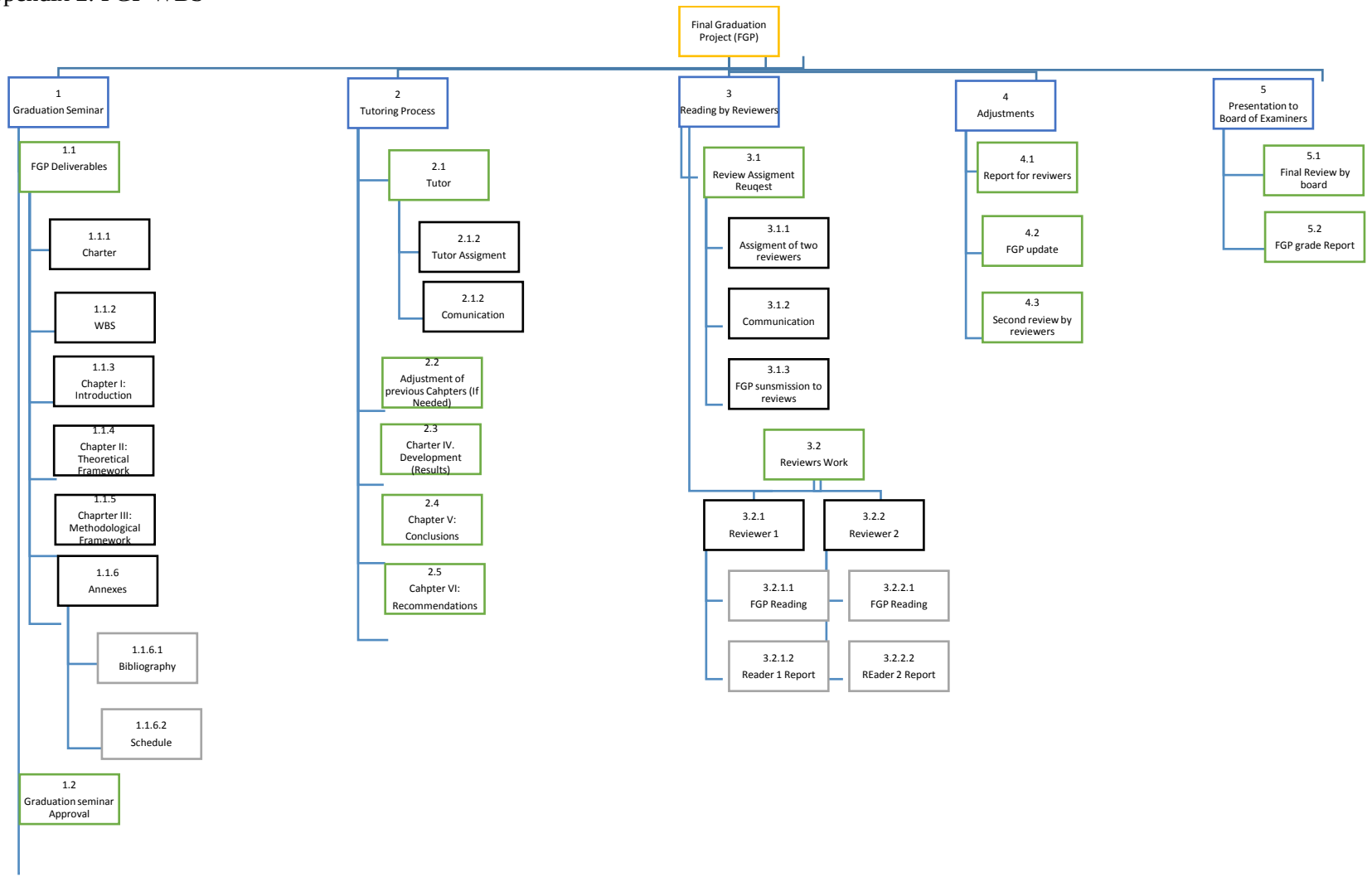
Relevant historical information

Brief basic company information.

Documentation of previous works or similar efforts related to the project.

Stakeholders	
Direct stakeholders: Priscilla Hernandez (Student/Project Manager) TRANSFESA CEO TRANSFESA IT Director Tutor Reviewers **Indirect stakeholders:** Board of Examiners Academic Assitant The family of the Project Manager Coworkers of the Project Manager	
Project Manager: **Priscilla M Hernandez Solano**	**Signature:** *Priscilla Hernandez S*
Authorized by:	**Signature:**

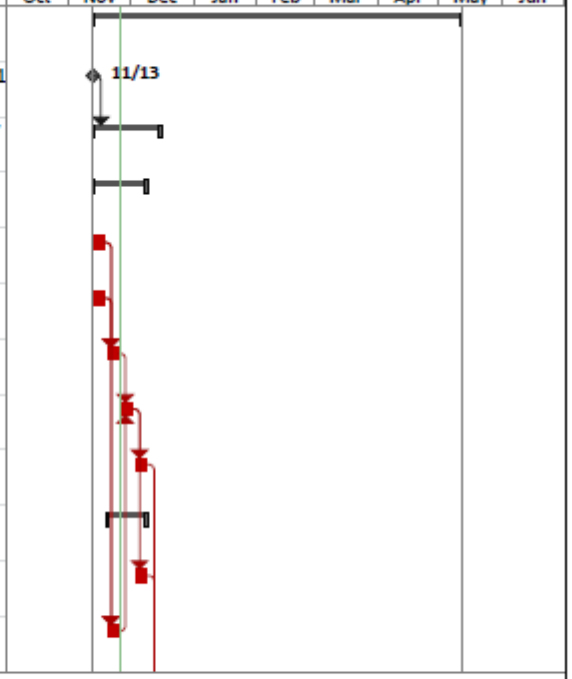
Appendix 2: FGP WBS



Appendix 3: FGP Schedule

FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

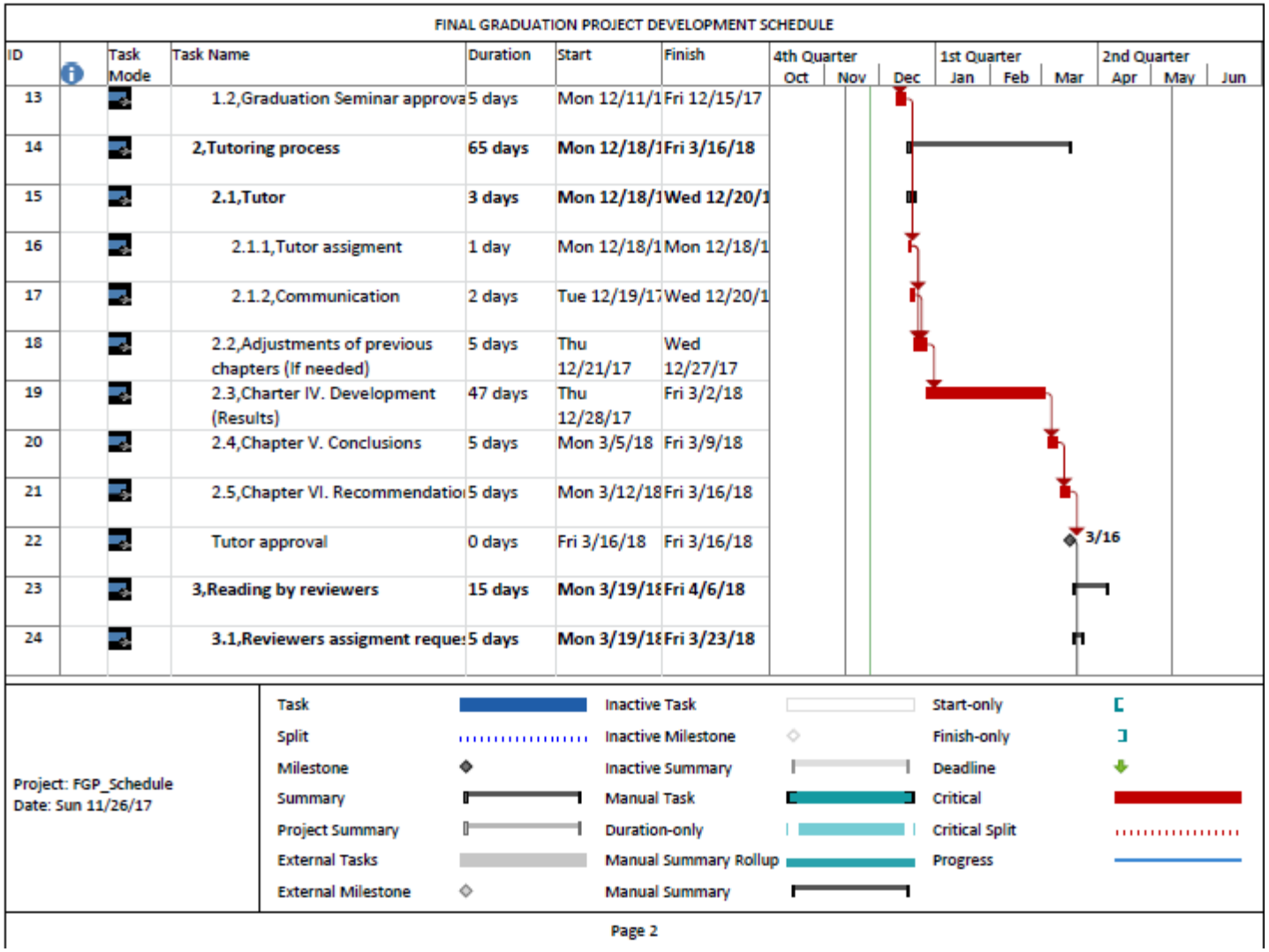
ID	Task Mode	Task Name	Duration	Start	Finish
1		**Final Graduation Project**	**130 days**	**Mon 11/13/17**	**Fri 5/11/18**
2		FGP Start	0 days	Mon 11/13/17	Mon 11/13/17
3		**1,Graduation Seminar**	**25 days**	**Mon 11/13/17**	**Fri 12/15/17**
4		**1.1,FGP Deliverables**	**20 days**	**Mon 11/13/17**	**Fri 12/8/17**
5		1.1.1,Charter	5 days	Mon 11/13/17	Fri 11/17/17
6		1.1.2,WBS	5 days	Mon 11/13/17	Fri 11/17/17
7		1.1.3,Chapter I. Introduction	5 days	Mon 11/20/17	Fri 11/24/17
8		1.1.4,Chapter II. Theoretical framework	5 days	Mon 11/27/17	Fri 12/1/17
9		1.1.5,Chapter III. Methodological framework	5 days	Mon 12/4/17	Fri 12/8/17
10		**1.1.6,Annexes**	**15 days**	**Mon 11/20/17**	**Fri 12/8/17**
11		1.1.6.1,Bibliography	5 days	Mon 12/4/17	Fri 12/8/17
12		1.1.6.2,Schedule	5 days	Mon 11/20/17	Fri 11/24/17



Project: FGP_Schedule
Date: Sun 11/26/17

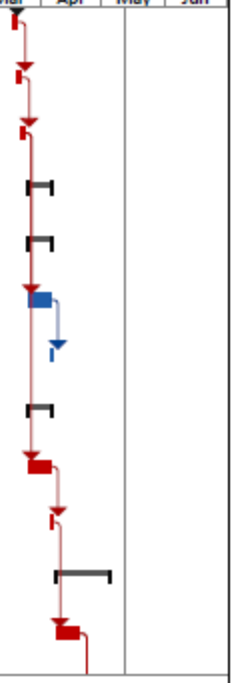
Task	Inactive Task	Start-only	
Split	Inactive Milestone	Finish-only	
Milestone	Inactive Summary	Deadline	
Summary	Manual Task	Critical	
Project Summary	Duration-only	Critical Split	
External Tasks	Manual Summary Rollup	Progress	
External Milestone	Manual Summary		

Page 1


FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE
ID
Task Mode
Task Name
Duration
Start
Finish
4th Quarter
Oct
Nov
Dec
1st Quarter
Jan
Feb
Mar
2nd Quarter
Apr
May
Jun
13 1.2,Graduation Seminar approva 5 days Mon 12/11/1 Fri 12/15/17
14 2,Tutoring process 65 days Mon 12/18/1 Fri 3/16/18
15 2.1,Tutor 3 days Mon 12/18/1 Wed 12/20/1
16 2.1.1,Tutor assigment 1 day Mon 12/18/1 Mon 12/18/1
17 2.1.2,Communication 2 days Tue 12/19/17 Wed 12/20/1
18 2.2,Adjustments of previous chapters (If needed) 5 days Thu 12/21/17 Wed 12/27/17
19 2.3,Charter IV. Development (Results) 47 days Thu 12/28/17 Fri 3/2/18
20 2.4,Chapter V. Conclusions 5 days Mon 3/5/18 Fri 3/9/18
21 2.5,Chapter VI. Recommendatio 5 days Mon 3/12/18 Fri 3/16/18
22 Tutor approval 0 days Fri 3/16/18 Fri 3/16/18
3/16
23 3,Reading by reviewers 15 days Mon 3/19/18 Fri 4/6/18
24 3.1,Reviewers assigment reque 5 days Mon 3/19/18 Fri 3/23/18
Project: FGP_Schedule
Date: Sun 11/26/17
Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Critical
Critical Split
Progress
Page 2

FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
25		3.1.1,Assigment of two reviewers	2 days	Mon 3/19/18	Tue 3/20/18
26		3.1.2,Communication	2 days	Wed 3/21/18	Thu 3/22/18
27		3.1.3,FGP submission to reviewers	1 day	Fri 3/23/18	Fri 3/23/18
28		**3.2,Reviewers work**	**10 days**	**Mon 3/26/18**	**Fri 4/6/18**
29		**3.2.1,Reviewer**	**10 days**	**Mon 3/26/18**	**Fri 4/6/18**
30		3.2.1.1,FGP reading	9 days	Mon 3/26/18	Thu 4/5/18
31		3.2.1.2,Reader 1 report	1 day	Fri 4/6/18	Fri 4/6/18
32		**3.2.2,Reviewer**	**10 days**	**Mon 3/26/18**	**Fri 4/6/18**
33		3.2.2.1,FGP reading	9 days	Mon 3/26/18	Thu 4/5/18
34		3.2.2.2,Reader 2 report	1 day	Fri 4/6/18	Fri 4/6/18
35		**4,Adjustments**	**20 days**	**Mon 4/9/18**	**Fri 5/4/18**
36		4.1,Report for reviewers	9 days	Mon 4/9/18	Thu 4/19/18



Project: FGP_Schedule
Date: Sun 11/26/17

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

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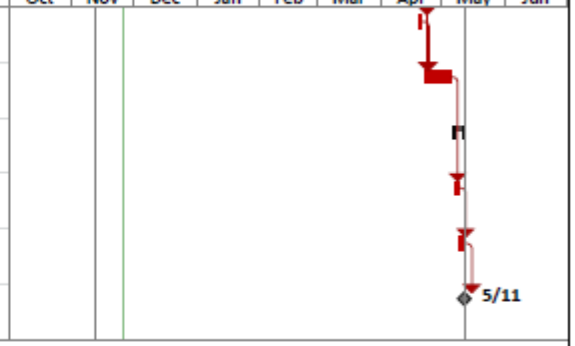
FINAL GRADUATION PROJECT DEVELOPMENT SCHEDULE

ID	Task Mode	Task Name	Duration	Start	Finish
37		4.2,FGP update	1 day	Fri 4/20/18	Fri 4/20/18
38		4.3,Second review by reviewers	10 days	Mon 4/23/18	Fri 5/4/18
39		**5,Presentation to Board of Examin**	**5 days**	**Mon 5/7/18**	**Fri 5/11/18**
40		5.1,Final review by board	2 days	Mon 5/7/18	Tue 5/8/18
41		5.2,FGP grade report	3 days	Wed 5/9/18	Fri 5/11/18
42		FGP End	0 days	Fri 5/11/18	Fri 5/11/18



Project: FGP_Schedule
Date: Sun 11/26/17

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

Appendix 4

PROJECT CHARTER
IMPLEMENTATION
OF ELECTRONIC INVOICE SYSTEM

TRANSFESA
SAN JOSÉ
COSTA RICA

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AUTHORIZATION.

Project Purpose/Justification

Business Need/Case

The project management plan for the implementation of an electronic invoice system has been created as a guide that will allow the Project Manager to engage all interested stakeholders in the process and provide a clear path to the company of how the transition will be conducted successfully. It ensures the company is up to date with the current tax and commercial regulations and still providesa quality service to its clients.

Business Objectives

Currently TRANSFESA does not possess an organizational strategic plan; however, with the implementation of this project, their objectives are:

- To maintain an exceptional client service providing the necessary products in a timely fashion to clients while we implement the electronic invoice system required by law in Costa Rica for large taxpayers.
- Complete implementation the new electronic invoice system by March, 2018.

Project Description

The project management plan for the Implementation of an electronic invoice system intends to provide the company with a guide to allow the transition to an all-electronic invoice system while still offering a quality service to its clients. The project will follow the standard established in the PMBOK since the company has no experience in the implementation of projects using a standardized tool.

Stakeholders List

- Company CEO
- IT Department
- Financial Department
- Human Resources Department
- Sells Department
- Costumers

Measurable Project Objectives and Success Criteria

Requirements

This project must meet the following list of requirements to achieve success:

- The new invoice system must be tested by the IT Department in a secondary network before deployment.
- The new invoice system must be implemented without disruption to operations.
- The system must comply with the requirements of the Tax Administration.

Constraints

- ❖ All hardware and software must be compatible with the IT platforms used by the Tax administration.
- ❖ The project should not exceed the $125.000 (USD) assigned as budget.
- ❖ The system will not regulate financial records of the company; it will only serve the purpose of recording the issuance of electronic invoices.

Assumptions

Upon agreement and signature of this document, all parties acknowledge that these assumptions are true and correct:

- There will be a physical space in the company data center to install the server (hardware).
- This project has the full support of the CEO and all departments of the company.
- The personnel of the company have the skills and necessary knowledge to execute the project.
- The HR office will provide the information to the IT department to create the username and profiles of employees that will have submission profile and submission and edition profiles.
- The finance department will be in charge of updating the database during project development.
- The purpose of this project is only the installation of the system; training is not contemplated.
- The project has an established budget of USD 125.000.
- The IT and the financial manager will provide additional human resources if necessary to complete the project in time.

Preliminary Scope Statement

The project management plan for the implementation of an electronic invoice system will include the design, implementation, testing, and delivery of an electronic invoice system throughout the organization. The Project Manager and the Project Manager assistant will manage all personnel, hardware, and software resources. All project work will be independent of daily and ongoing operations and all required the IT Department using a secondary network to minimize possible adverse effects to the main invoice system.

The Project Manager will manage all project funding, including the allocated amounts in this document. Any additional financing requires a justification and approval from the CEO. This project will conclude when the first invoice report is submitted successfully to the Costa Rican Tax Administration.

Risks

The following risks for the project management plan for the implementation of an electronic invoice system have been identified. The Project Manager will determine and employ the necessary risk mitigation/avoidance strategies as appropriate to minimize the likelihood of these risks:

- ➢ Potential delay in the migration of the databases.
- ➢ Potential issues with the integrated databases.
- ➢ Potential disruption to invoicing operations during new software deployment.
- ➢ Possible cost increase due to delays in project implementation.

Project Deliverables
The following deliverables must be met upon the successful completion of the project management plan for the implementation of the electronic invoice system.
The CEO of the company who serves as project sponsor must approve any changes to these deliverables.

- Project Charter.
- Progress reports on the implementation of the system.
- Fully deployed electronic invoice system.
- Technical documentation for electronic invoice system.

Summary Milestone Schedule
The project summary milestone schedule is presented below. As requirements are more clearly defined, this schedule may be modified. The Project Manager will communicate any changes through project status meetings.

Summary Milestone Schedule	
Project Milestone	**Target Date**
▪ Project Start	01/Dec/17
▪ Collect requirement	01/Dec/17
▪ Complete Design Phase	17/Jan/18
▪ Complete Hardware and Software Installation	23/Feb/18
▪ Complete Testing	19/Mar/18
▪ Deploy Electronic Invoice system	22/Mar/18
▪ Project Complete	29/Mar/18

Summary Budget

The following table contains a summary budget based on the planned cost components and estimated costs required for successful completion of the project.

Project Component	Component Cost
Personnel Resources – exclusive dedication to the project	$45,000
Hardware	$15,000
Software and Licensing	$65,000
Total	$125,000

Project Approval Requirements
Success for the project management plan for the implementation of an electronic invoice system will be achieved when a thoroughly tested invoice system compatible with the tax administration regulations is fully deployed throughout the company within the time and cost constraints indicated in this charter. Success will be determined by the Project Sponsor, Mr. Marco Hernandez Sr., who will also authorize completion of the project.

Project Manager
Mr. Marco Hernandez Jr. is named Lead Project Manager for the duration of the project management plan for the implementation of an electronic invoice system and will be assisted by Mrs. P. Hernandez to develop the project management plan.

Mr. Hernandez responsibility is to manage all project tasks, scheduling, and communication regarding the project. His team, consisting of one human resources assistant, two IT specialists, and three financial specialists help test and standardize the information to use the new electronic invoice system.

Mr. Hernandez will coordinate all resource requirements through the financial department manager, Mrs. Jaimie Murillo who is authorized to approve all budget expenditures, including the allocated budget amounts. Any additional funding must be requested and passed through the Project Sponsor, Mr. Marco Hernandez Sr. The Project Manager Assistant, Miss Hernandez, will collect the information and provide updates to the Project Sponsor or as often as it's required.

Authorization
Approved by Mr. Marco Hernandez Sr.
TRANSFESA CEO

Appendix 5: Philologist credentials

Universidad para la Cooperación Internacional

To whom it may concern

Cristina María Solano, identification number 304470513, Bachelor and Licenciada in English Teaching as Second Language and part of the Colegio de Licenciados y Profesores en Letras, Filosofía, Ciencias y Artes de Costa Rica under the code 64964, hereby states that the project **"Project Management Plan for the Acquisition and Implementation of an Electronic Invoice System for Transacciones Ferreteras S.A"** carried out by the student Priscilla M. Hernández, has been checked.

The project was done to obtain the Master's degree in Project Management. Aspects such as paragraph form, language quirks in written language, orthography, punctuation, and other aspects related to syntax and grammar were checked and proofread. Therefore, taking into account the changes made, the project is ready to be presented.

Sincerely,

Filólogos Costa Rica
filólogos.cr

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