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| Industrial, Manufacturing, & Systems Engineering College of Engineering  Systems Engineering Project Practicum  Summary |
| |  |  | | --- | --- | | **Project Title:** | NUBAs Requirement and Review Processes | | **Team members:** | 1. Jimena, Porras  2. Carlos, Sandoval  3. Alfredo, Luevano  4. Lorenzo, Olivas  5. Edgardo, Flores | | **Semester, year:** | Spring 2017 | | **Type of project:** | **Individual project at students work ( ) Team project assigned by instructor ( X)**  **Project proposed by team ( )** |   **Insert Individual / team PICTURE HERE**  **List members in the picture from left to right**  Lorenzo Olivas, Edgardo Flores, Alfredo Luevano, Jimena Porras, Carlos Sandoval |
| INTRODUCTION |
| The System Engineering Project Practicum provides the opportunity to apply System Engineering concepts in developing a real system and create documents that formally describe the system. Students review documents and validate them with clients and customers through formal presentations. Teams are self-managed and assign roles to control planning, quality, requirements, design, and implementation.  **System Overview**  Effective management and leadership skills are essential to business-building success, and a lack of either can lead to confusion, conflict and reduced productivity. Equally as important is a proper formal documentation control system, a lack of such practices will also result in confusion, conflict and reduced productivity. NUBA Solutions, a small custom software development company has the essential management and leadership skills for a successful business but lacks a formalized document control system. Without such formalized documents, processes and procedures, effectively developing and managing any product is jeopardized. Many of the important customer needs can easily be replaced by customer wants. Establishing a formal documented process can more effectively aid in the proper identification of the problem and can certainly also aid in the identification of the services that need to be provided and the external entities that will be interacting with the system, thus reducing the possibility of confusion and conflicts while achieving higher productivity yields.  This Systems Engineering project focuses on the creation of two formalized processes: Requirements Process and Review Process.  Proper requirements elicitation techniques are crucial during a project acquisition. It is at this phase where the problem must be identified along with the services needed to address and solve the problem, external identities interfacing with the system are also identified in order to formulate the necessary constraints that will bound the scope of the project.  To validate the understanding of the problem, it is paramount that the right controls are established by setting personal and peer reviews at different phases throughout the entire lifecycle of the project. This practice will identify defects injected throughout the development of the project and most importantly, it will identify defects at early development phases where the cost to address and fix these defects is significantly lower than resolving any issues found during testing and implementation stages, thus improving your overall productivity and customer satisfaction.    **System Description**  The goals and objectives for the NUBA’s requirements and review processes are defined as follows:  **Goal #1: Improve NUBA Customer Requirements Process.** NUBA will implement documents to improve the gathering of requirements.  Objective 1-1: Create customer requirements templates  **Goal #2: Improve NUBA Review Process.** Nuba will implement a review process for requirements and coding phases to improve the functional baseline established and so the system has a reasonable expectation of satisfying the requirement.  Objective 2-1: Generate review process, defect logs, and checklist templates.  **Context Diagrams Level 0 & 1**    Screen Shot 2017-05-11 at 4.29.46 PM.png  Screen Shot 2017-05-11 at 4.29.51 PM.png  **Use Case Scenarios**  Screen Shot 2017-05-11 at 4.13.50 PM.png    Screen Shot 2017-05-11 at 4.13.56 PM.png  List of Actors   * 1. Project Manager   2. Product Owner   3. Author   4. Peer   5. Architect   6. Senior Software Developer   7. Junior Software Developer   8. Customer     List of Services   1. *Define the customer requirements process*(DCRP)*:* Create a requirements process to identify the necessary attribute, capability, characteristic, and quality of the desire system for it to have value to the stakeholder. 2. *Define the review process*(RP)*:* Create a mandatory technical review for NUBA’s systems during the technology maturation & risk reduction (TMRR). To ensure functional baseline is established and that the system has a reasonable expectation of satisfying the requirement   **Activity Diagram**    Screen Shot 2017-05-11 at 4.17.06 PM.png  Screen Shot 2017-05-11 at 4.17.23 PM.png    Screen Shot 2017-05-11 at 4.17.29 PM.png |
| PROJECT OUTCOMES |
| The purpose of the proposed system is to help NUBA implement a requirement process and a review process. The new system will implement formal procedures and templates for customer requirements definition and review process.  The system will be the implementation of a customer oriented requirements process and a verification process based on review.  The proposed system will be implementing formal standard templates for customer requirements definition and review process. These procedures will include formal controlled documents such as checklists and templates that will be used when defining customer requirements, establish and define project member roles and expectations, define review processes for requirements and coding phases, and establish acceptance criteria for final delivery of product/services to customer.  The quality of this project is good because all defects are being address at time, so when the project is delivered to the customer there will be no defects. All phases will be completed adequately to accomplish a non defect project.    Screen Shot 2017-05-11 at 4.30.08 PM.png   1. **To Have Confidence ourselves:** spending a few minutes trying to remember we felt as the piece of work kicked off and how we have progressed since then. It improved our confidence a world of good to realize that we have come a long way since the beginning. 2. **How to Lead a Team:** How we divide and prioritize tasks, check timelines, take any necessary emergency measures and stay alert. Also we learned Certain intelligent behaviors important for successful project work (e.g. curiosity, openness, reality orientation, objectivity, precision, confidence, responsibility, consensus and collaboration). When we undertake a project, we should focus on not only what we know, but also how we behave when we don’t know. It is only when we are confronted with questions and problems for which we do not know the immediate answer that we develop intelligent behaviors which include persistence, decreasing impulsivity, listening to others, cooperative thinking, flexibility in thinking, a sense of humor, drawing on past knowledge and applying it to new situations, and risk taking. 3. **The Importance of Planning:** Cutting corners in project planning is a recipe for disaster, no matter what the reason. The initiation phase is critical to the success of the project as it establishes its core foundations. Effective project planning takes into consideration all aspects of planning including stakeholder engagement, benefits mapping, risk assessment, as well as the actual plan (schedule) itself. The three most cited factors for project failure are:   lack of stakeholder engagement, lack of communication, and lack of clear roles and responsibilities.   1. **How to Deal with Stakeholders:** establish a strong bond with the stakeholders. These people play a huge role in getting the piece of work completed successfully and you will want to learn how to treat them as soon as you can. |
| MASTERS OF SCIENCE IN SYSTEM ENGINEERING PROGRAM ASSESSMENT |
| Systems Engineering program at The University of Texas at El Paso provides in-depth knowledge and technical skills in the field of systems engineering and systems of systems, and prepares students for careers within industry and government. This systems-centric program addresses the needs of engineers and scientists engaged in all aspects of analysis, design, integration, production, and operation of modern systems.  The systems engineering process coordinates and leads the translation of an operational need into a system designed to meet that need. It integrates the inputs of all the required technical disciplines into a coordinated effort that meets established performance, cost, and schedule goals. Systems engineers provide the leadership and coordination of the planning, development, and engineering of technical systems, including hardware and software components.  Instructors are practicing systems engineers who incorporate real-world problem solving activities and case studies into discussion topics. Whether they study online or in campus students learn how to develop complex systems.  Upon completing the degree program, students will:   1. Apply technical knowledge in mathematics, science, and engineering to lead the realization and evaluation of complex systems and systems of systems. 2. Demonstrate the ability to conceive of, gather user needs and requirements for, design, develop, integrate, and test complex systems by employing systems engineering thinking and processes, within required operational and acquisition system environments. 3. Understand and utilize the life cycle stages of systems development from concept development through manufacturing and operational maintenance. 4. Lead and participate in interdisciplinary teams to manage the cost-effective systems. 5. Communicate complex concepts and methods in spoken and written format. 6. Demonstrate awareness and capability in employing tools and techniques in the systems engineering process.   After graduation, Master of Science in Engineering in System Engineering graduates will:   1. Attain programmatic or technical leadership roles in systems engineering or the management of complex systems. 2. Employ systems engineering methods and tools throughout the lifecycle of complex systems. |