CARGO TRACING
AND
BUSINESS ANALYSIS

Group Id- 23

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SOFTWARE PROJECT MANAGEMENT PLAN

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1 INTRODUCTION

1.1 Project Overview

Today's world is growing at a very faster rate with the help of Technology. A lot of different industries are using the latest technology to increase their growth, thus boosting globalization. The sellers are producing goods in one country and selling the same in other country, thus making huge profits. As huge quantity of cargo is shipped everyday by different sellers, people tend to lose some of it. Besides, such a huge transport of material from once place to another can also be studied thoroughly and the trade can be modified to maximize profit. Thus to help the sellers, we are proposing a Cargo Tracing and Business Analysis System.

1.2 Project Deliverables

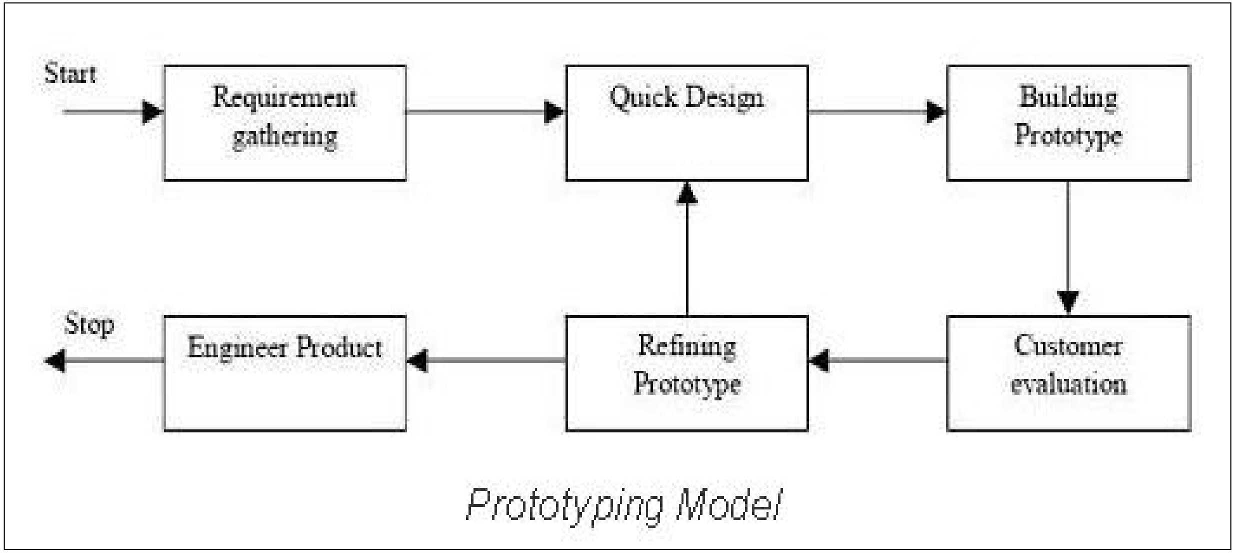
Deliverables	**Description**	**Delivery Date**
Software Project Management Plan	A complete formal project plan, including technical and managerial processes that will be implemented in the development and delivery of the system	30/09/2018
Software Requirements Specification	A formal document detailing the functional and non-functional requirements of the system	30/09/2018
Software Design Specification	A formal document detailing the component designs as well as the relationships among components	05/10/2018
Software Test Document	Formal documentation detailing scenarios that must be followed in order to ensure that the product software is satisfactorily tested.	14/10/2018
Implementation of frontend and hardware components.	Software files to form the backbone of the system and their integration into the hardware used	14/02/2019
Final Presentation	A demonstration of the product software and a presentation of the project experience	March 2019

2 PROJECT ORGANIZATION

2.1 Software Process Model

The process model used is Prototype Process Model Prototype is a working model of software with some limited functionality. The prototype does not always hold the exact logic used in the actual software application and is an extra effort to be considered under effort estimation. Prototyping is used to allow the users evaluate developer proposals and try them out before implementation. It also helps understand the requirements which are user specific and may not have been considered by the developer during product design.

Figure 1: Prototype Model



2.2 Roles and Resposibilities

Roles	Responsibilities
Project Co-ordinator	Motivate the team members to perform their tasks in a organized manner Help the team in allocating deadlines
Project Guide	Works with the team to help formulate the application strategy Approves the project documents Helps the team in analysing the project from every perspective and set the goals
Project Manager	Plans, organizes, and coordinates the team project Schedules and prepares team meetings Resolves conflicts Works as a link between team members Monitors and reports the weekly status of the team Ensures that project deliverables are met
Application Designer	Designs a web application to the problem statement that satisfies the requirements Assists the Technical Writers in documenting the design
Application Developer	Develops the android application Determines the data needs for the solution Determines what hardware and tools are necessary Fixes bugs found by the Testers
Database Developer	Develops and populates Databases Ensures proper operation and interaction with entire system application
Tester	Tests all the application modules
Technical writer	Coordinates the project documents and their review by all team members Collects, proofreads, and integrates document parts Generates the final version of all the documents

2.3 Tools and Techniques

- LATEX for SRS, SPMP, SDD, STD
- Gantt project for planning and to prepare the time-line chart
- Rational rose for UML diagrams
- Microsoft powerpoint for presentation for the users and project personnel
- Python-based kivy framework
- MATLAB to implement the image-processing algorithms
- Python-based image processing libraries

3 PROJECT MANAGEMENT PLAN

3.1 Tasks

3.1.1 Task 1 - Requirement analysis

Description
Definition of the different requirements which will help the users get a good gist of the project. It provides the basic understanding of the problem and nature of the solution.

Deliverables and milestones
The task provides a lis0t of the various requirements and their analysis for paving the path of design phase.

Resources needed
Effort, time and knowledge about the software.

Dependencies and constraints
The requirements must be documented , testable and related to the needs and defined to a level sufficient for system design.

Risks and contingencies
If the team does not have knowledge about the software, then it can gather the informationby communicating with the experts in that field.

3.1.2 Task 2 - Software requirement specification

Description
Description of the behaviour of the system to be developed and the features in the scope of the project.

Deliverables and milestones
SRS delineates the features of the project and serves as a guide to the developers.

Resources needed
Latex

Dependencies and constraints
SRS should be documented in a way understandable to other developers to identify the aspects of the system.

Risks and contingencies
There is a high amount of risk if the SRS is not well documented as the features of the system will not be clear.

3.1.3 Task 3 - Software design document

Description
The structure of the software to satisfy the requirements. It specifies the software structure, components, interfaces and data necessary for implementation.

Deliverables and milestones
Architecture design, data design, interface and procedural design.

Resources needed
Latex for documentation and IBM Rational Rose for designing purposes

Dependencies and constraints
SDD is developed according to the SRS, so the SRS should provide an entire overview of the system

Risks and contingencies
Risk is involved if the design does not follow the requirements . The design can be revised by proper communication among the development team.

3.1.4 Task 4 - System Test Document

Description
Specifies the approach that ensures that the features are adequately tested.

Deliverables and milestones
The document includes all the test cases with results done after finishing the development.

Resources needed
Latex and software test plan

Dependencies and constraints
STD should give entire description about features to be tested, amount of testing in order to save time of the testing team

Risks and contingencies
The risk is when the STD does not cover the entire system as this might cause major problem in the future which can be avoided by developing test cases for entire section wise coverage.

3.1.5 Task 5 - Coding and Hardware Integration

Description
Actual programming and functionalities of the application

Deliverables and milestones
The different modules and components of the system.

Resources needed
Arduino, RFID tags and sensors.

Dependencies and constraints
Coding phase depends on the SRS and SDD and should be flexible.

Risks and contingencies
Developers may have insufficient amount of knowledge.

3.2 Risk Table

Risks	**Category**	**Probability**	**Impact**	**Preventive measures**
Server Crash	TI	10%	1	Maintain a distributed server system
Computer crash	TI	20%	3	Powerful computers capable of handling high load
Late delivery	BU	30%	2	Implementation of basic functionality first and parallelism in work
Deviation from Software Engineering Standards	PI	50%	2	Proper design standards and principles must be followed
Poor Quality Documentation	BU	50%	2	Proper understanding of the requirements
Lack of Database Stability	TI	40%	2	Update DB Structure as the traffic grows
Software failure	TI	20%	1	Maximize portability
Staff is inexperienced	ST	40%	3	Self-learning using various resources providing correct knowledge
No internet Connection	TI	10%	1	Maintain a backup hotspot/tethering service
Conflict with other traffic	TI	10%	1	Shield the high frequency signals from external noise
Failure of Scanner	TI	30%	2	Facilities of updating the database manually.
Damage of RFID	TI	20%	2	Attach the RFIDs in such a way they aren't easily accessible.

Impact Values:
1 – Catastrophic
2 – Critical
3 - Marginal
4 - Negligible

3.3 Risk Template

Risk information sheet			
Risk ID: 1	**Date: September 30, 2019**	**Probability: 40%**	**Impact:2**
Description: The database maintained may not be stable which may lead to Database Instability.			
Refinement/Context: **Sub-condition 1:** The information gathered was misinterpreted.			
Mitigation/Monitoring: 1. Re-gather the information from the user. 2. Understand with modules are improper and correct them.			
Management/Contingency plan/Trigger: Contact the team leader and make a new increment with all the respective changes needed.			
Current status: Mitigation steps have been initialized.			
Originator:		**Assigned:**	

3.4 Risk Template

Risk information sheet			
Risk ID:2	**Date:September 30, 2019**	**Probability:10%**	**Impact:1**
Description: The internet connection fails.			
Refinement/Context: **Sub-condition 1:** Connection fails due to fault at the ISP. **Sub-condition 2:** There is some lose contact of cables to the modem.			
Mitigation/Monitoring: 1. Contact the ISP provider and resolve the issues. 2. Fix the cable properly			
Management/Contingency plan/Trigger: Provide some alternative solution for internet like hotspot. Or make a provision for offline data storage.			
Current status: Mitigation steps have been initialized.			
Originator:		**Assigned:**	

3.5 Risk Template

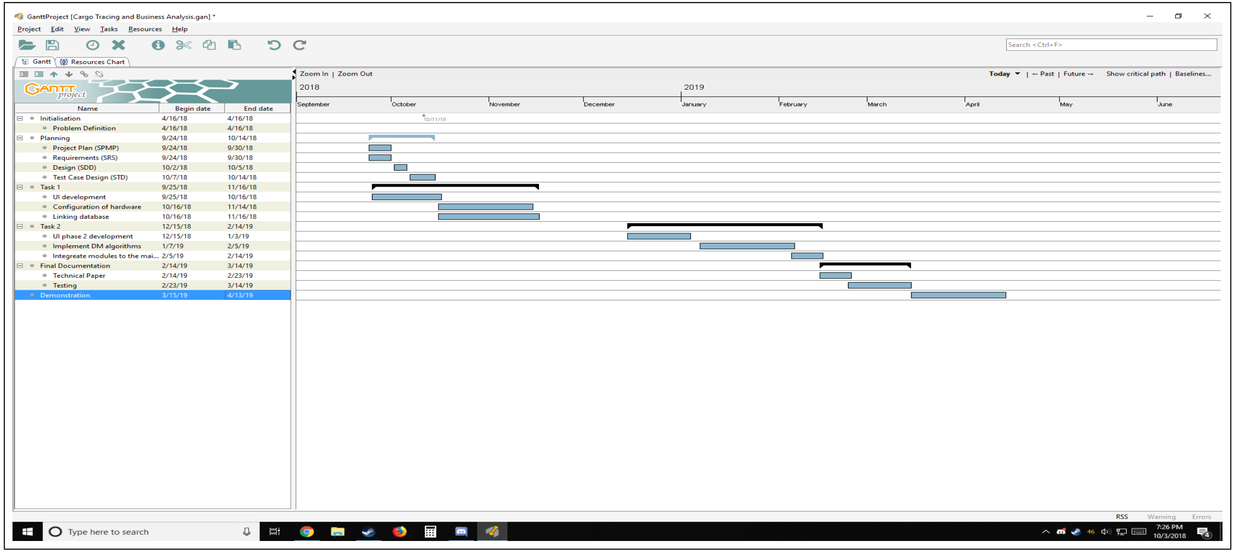
Risk information sheet			
Risk ID:3	**Date:September 30, 2019**	**Probability:30%**	**Impact:2**
Description: The scanners fail to read the RFIDs.			
Refinement/Context: **Sub-condition 1:** RFID / Scanner interface is tampered. **Sub-condition 2:** Incompatible scanner and RFIDs			
Mitigation/Monitoring: 1. Make sure the interface is clean. Check if the RFID is not damaged. 2. Try scanning the same RFID on another sensor or scan another RFID on the sensor.			
Management/Contingency plan/Trigger: Get technical assistance as soon as possible. Find out the problem location (Scanner or RFID) and take actions accordingly			
Current status: Mitigation steps have been initialized.			
Originator:		**Assigned:**	

3.6 Risk Template

Risk information sheet			
Risk ID:4	**Date:September 30, 2019**	**Probability:20%**	**Impact:2**
Description: RFID tag gets damaged.			
Refinement/Context: **Sub-condition 1:** The RFID tag is missing from a cargo when it reaches a scanner. **Sub-condition 2:** The tag is damaged due to weather conditions / mishandling, etc.			
Mitigation/Monitoring: 1. . Try to identify the cargo with the marking on it. 2. Wait for the user to raise a ticket when he notices that one of his cargo containers has not reached the desired destination yet. The cargo can then be linked with the ticket and the right identity of it can be found. A new RFID can be associated to it at this point and the tracing can continue as before.			
Management/Contingency plan/Trigger: Have spare RFIDs at all counters.			
Current status: Mitigation steps have been initialized.			
Originator:		**Assigned:**	

4 TIMETABLE

Figure 2: Gantt Chart



GanttProject [Cargo Tracing and Business Analysis.gan] *

Name	Begin date	End date
Initialisation	4/16/18	4/16/18
Problem Definition	4/16/18	4/16/18
Planning	9/24/18	10/14/18
Project Plan (SPMP)	9/24/18	9/30/18
Requirements (SRS)	9/24/18	9/30/18
Design (SDD)	10/2/18	10/5/18
Test Case Design (STD)	10/7/18	10/14/18
Task 1	9/25/18	11/16/18
UI development	9/25/18	10/16/18
Configuration of hardware	10/16/18	11/14/18
Linking database	10/16/18	11/16/18
Task 2	12/15/18	2/14/19
UI phase 2 development	12/15/18	1/3/19
Implement DM algorithms	1/7/19	2/5/19
Integreate modules to the mai...	2/5/19	2/14/19
Final Documentation	2/14/19	3/14/19
Technical Paper	2/14/19	2/23/19
Testing	2/23/19	3/14/19
Demonstration	3/15/19	4/13/19