

**PROJECT MANAGEMENT**

**IN-COURSE ASSESSMENT – GROUP ASSIGNMENT**

**CT050-3-3**

**Names:** BALRAM A/L KRISHNA KUMAR (TP035446)

MUHAMMAD IZZAT BIN MOHD JAMIL (TP035719)

ANG CHEE SIAH (TP038259)

YEO ZHI YIN (TP035402)

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**Lecturer’s Name:** MS. HASLINA HASHIM

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# Acknowledgement

For this project, we would like to send our gratitude to ……

# Workload Matrix

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *PROJECT MEMBERS* | **Balram A/L Krishna Kumar (TP035446)** | **Ang Chee Siah**  **(TP038259)** | **Muhammad Izzat Bin Mohd Jamil (TP035719)** | **Yeo Zhi Yin**  **(TP035402)** |
| **GROUP COMPONENTS** | | | | |
| **Project Methodology** | - | 100% | - | - |
| **Project Charter** | 25% | 25% | 25% | 25% |
| **Scope Statement** | - | - | - | 100% |
| **Issue Mapping** | 100% | - | - | - |
| **Gantt Chart & Network Diagram** | - | - | 100% | - |
| **Cost Budgeting** | - | - | - | 100% |
| **Quality Management** | - | 100% | - | - |
| **Cutover Strategy and Transition Plan** | - | 100% | - | - |
| **INDIVIDUAL COMPONENTS** | | | | |
| **Human Resource Management** | - | - | 100% | - |
| **Procurement Management** | 100% | - | - | - |
| **Communication Management** | - | 100% | - | - |
| **Risk Management** | - | - | - | 100% |
| **SIGNATURE** |  |  |  |  |

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# 1. INTRODUCTION

## Project Methodology Definition

Project methodology is a necessary system that would be normally used when conducting a **project-based activity**, especially of those in a tremendously large scale. The system involves consideration of every aspect possible from skillsets, milestones to quality standards using various tools and techniques to create an efficient **working flow** for all individuals and departments in charge of the project developments, with the aim of **meeting the scope of project requirements**. The project usually requires the deliverables to be able to address any needs and concerns from all stakeholders.

Depending on the project’s content and workload, different types of methodology could be applied to suit the project best, but all of them ultimately ties to the following ‘ground rules’ (Cockburn, 2000):

* The **larger** a project is, the **larger** its **methodology** should be.
* More critical or important aspects of the project require **more attention** and ‘*publicly visible correctness in its construction’.*
* Any **small increase** in methodology size or density would **drastically increase** the project cost.
* **Face-to-face interaction** is the most effective communication method in conveying ideas and concepts.

## Selected Project Methodology

The project methodology applied to complete the project based on the case study scenario is the **Waterfall Model**. Waterfall model, at its core, is a **series of main phases** being arranged in a **sequential development model** (S. Balaji, 2012), as shown in the diagram in ***FIGURE 1.1***:



***FIGURE 1.1: Waterfall Model Basic Outline***

Waterfall model is an infamous development methodology for having the project scopes identified in advance, and having the project to **progress according the pre-defined phases** made from the identified scopes. In order to advance to certain phase, any phases before the said phase must be completed and verified.

Despite it being a rigid structure with low flexibly level, waterfall model is a nice methodology to refer with when working on similar **projects that has been attempted before**, or one that people has been familiar with its milestones entirely. The ISCMP, according to the case study, is a project where other countries such as China and Thailand have developed with years ago, and thus enabled a clear milestone reference in the current situation based on their attempts as well.

Also, due to the 4-month time restriction from the failure of previous management, the team would be in low levels of morale where most participants would lose motivation to continue with the project. Therefore, waterfall model would serve as a guideline for each participating unit so all of them would be **clear on their respective responsibilities in the shortest time possible**.

In exchange of low level of team coordination and synchronization, there is a **lower level of risk** of failing this project based on waterfall model, as conflicts between project teams and external organizations would be reduced to a minimum.

## Methodology Implementation

In this Integrated Supply Chain Management Project, the tasks would be divided into phases that would be formed into a hierarchy, where the priority of each project has been identified beforehand. Although creating a hand-written waterfall model as a project development guideline in this situation is applicable, the lack of time would make such process time-consuming for preparation alone.

Therefore, a suggestion of using the online-available software ***SpiraTeam***, where it provides a project overview, activities and lists of tasks along with risks in web application environment, which means the project model could be viewed and modified by using web-browser. The progress of each processes could be updated directly via such means, as shown in ***FIGURE 1.2***



***FIGURE 1.2: SpiraTeam Waterfall Model Sample***

Based on the progress report, the coverage and priority level of each tasks could be identified easily among all departments and ensures an easier approach of follow-up to the waterfall model to complete the project.

## Project Management Process

The project management is divided into 5 phases according to their respective processes, which are **Initiating**, **Planning**, **Executing**, **Monitoring** **and** **Controlling**, and **Closing**.

1. **INITIATING**

In initiation process, the organization is required to **identify the project**, its content including objectives and phases. Once all elements of the project have been identified, the project will start on the Project Manager’s cue, in most situations.

The activities conducted in this phase normally involves **creating a project charter** to understand the key information and project specifics (Kerzner & Kerzner, 2017), while **identifying the stakeholders** of the project to determine everyone’s influence on the project’s development.

1. **PLANNING**

Planning is when the project is in the stage of writing a **guide for project executions**. All available resources would be accounted for to devise an efficient plan to complete the project and meet its requirements.

That includes the process of creating a proper **Work Breakdown Structure** (WBS), project **scope statements**, **project** **schedules** (usually in Gantt Chart format), and list of **potential risks** during the development (Kerzner & Kerzner, 2017).

1. **EXECUTING**

The project officially begins during the execution phase, where all units of the project development team are **producing the output of the project**. In the meantime, the project manager would take the role of coordinating all departments and resolve all challenges arose during the process.

While creating the **project deliverables** is usually the output from this process, **milestone reports** tend to be accompanied along with the output to ensure a brief description on the deliverables from each team during progress checking (Kerzner & Kerzner, 2017).

1. **MONITORING AND CONTROLLING**

While all the planned processes have been set in motion, the progress checking on those actions are vital to ensure the project not to be derailed via **correction actions**.

Several changes in requests or updates might occur while creating project deliverables, and thus **performance reports** and **update requests** are essential as output from this process (Kerzner & Kerzner, 2017).

1. **CLOSING**

When all the processes have been completed and corrected, the **project output would be delivered to all stakeholders** and/or potential consumers to review the product, provide feedback, and determine if the output is suitable for public release.

Regardless of the acceptance of the project deliverables, this process should produce a **completed project documentation**, **self-reflection reports** and relevant **presentation aids** as a wrap-up of a project being closed entirely (Kerzner & Kerzner, 2017).

## Knowledge Areas

The applicable knowledge areas regarding the project management on this assessment includes the following elements:

1. **Project Integration Management**

Project integration is a segment where any changes that occur during the project’s life cycle must be identified, evaluated and resolved by **coordinating all knowledge areas involved** in it (Fuller, et al., 2017).

1. **Project Scope Management**

In scope management, all objectives required by the project are determined and **devise required deliverables of the project** to ensure the process successfully addresses all the work needed for it (Fuller, et al., 2017).

1. **Project Time Management**

As the title suggests, time management is a section that deals with estimating time needed to complete the project, it’s relevant processes and create a **working schedule** that could utilize all departments in project development (Fuller, et al., 2017).

1. **Project Cost Management**

Like time management, cost management estimates the capital the project has been allocated to and determines the suitable **amount of budget** allocated to each department to ensure a smooth workflow of each processes (Fuller, et al., 2017).

1. **Project Quality Management**

While all the processes in a project must be completed within allocated periods, quality management is necessary to **make sure the deliverables from every processes meet its requirements** that was from the scope management segment (Fuller, et al., 2017).

1. **Project Human Resource Management**

**Allocating people to their respective roles** in project development comes into the responsibility of the human resource management, where each participating individuals’ skillsets and interests are analyzed to make sure highest level of efficiency could be achieved from the process (Fuller, et al., 2017).

1. **Project Communication Management**

Planning, managing and controlling the communications within the project teams is a vital aspect in managing a smooth development flow, where **project information can be collected, stored, and relayed** to desired departments in an appropriate and timely manner (Fuller, et al., 2017).

1. **Project Risk Management**

While meeting the project scopes, the risk management is a segment that is normally in charge of **identifying and analyzing the potential risks** that might occur to the project development, while respond and **resolve it immediately** when one happens in the process of project execution (Fuller, et al., 2017).

1. **Project Procurement Management**

In several occasions, procurement management is necessary to **acquire goods and services from outside of the project team or organization**, usually with aim of integrating the goods and services into the project development to increase the quality of the project deliverables or reducing the cost of creating one from scratch (Fuller, et al., 2017).

# 2. PROJECT CHARTER

## 2.1 Background

In this scenario, we were assumed the role as project management team from a company named *Good Life Pte. Ltd. (GL),* with the project entitled **‘Integrated Supply Chain Management Project’ (ISCMP)**.

ISCMP is a project aimed to **enhance supply chain operations**. Therefore, ISCMP features **a Supply Chain Management (SCM) software** supported by a centralized data warehouse to manage all users’ respective region’s inventory in a faster pace. While the created system has business intelligence capable of **inventory** management for markets in South East Asia region, the system also covers **transportation** management, **order** management, **yard** management, **labor** management, and **warehouse** optimization.

While the project was scheduled to be completed in 6 months, the previous project manager’s attempt on the project for the first 2 months could be summarized as ‘failure’. Therefore, we as a new management team were instructed to **complete the ISCMP in the next 4 months**, while resolving all issues that arose from the previous management.

## 2.2 Aim and Objectives

**AIM**

To implement a centralized data warehouse that can provide business intelligence services, which allow users to make optimum decisions in their regional inventory management.

**OBJECTIVES**

* Enable production entry by removing raw materials and automatically updating finished goods in the accounting system.
* Able to anticipate the product demand by the amount of item recorded in warehouse, customer sales and other relevant aspects.
* Calculation of manufacturing costs from raw material to labor cost for cost analysis.
* Enable documentation of required raw materials, created product, and labor amount for production
* Include automated demand planning where what materials are needed to be ordered and what products are needed for higher production rate based on anticipated demand
* All market users in the South East Asia region can manage inventory, order, yard, and labor information from a centralized data warehouse.

## 2.3 Scope

### 2.3.1 Product Deliverables

* Inventory management system
* Product management system
* Order management system
* Yard management system
* Labor management system
* Warehouse optimization system

### 2.3.2 Project Scope

* Complete a supply chain management system that is integrated for users in South East Asia markets
* The management system must contain common functions of a typical supply chain management software.

## 2.4 Constraints

1. Some of the budget was used in the first 2 months, and therefore the leftover budget is limited for the recovery effort
2. The deadline is set to 4 months later, which is a time constraint from the previous 2 months being non-productive
3. The project is currently deemed a failure from the feedback report
4. Several required software development skills were lacking
5. The information of the project stakeholders remains unknown

## 2.5 Estimation Budget

|  |  |
| --- | --- |
| **Estimated Budget** | **$280,000.00** |
| Hardware | $50,000.00 |
| Development Software | $80,000.00 |
| Manpower | $100,000.00 |
| **RESERVE** | **$50,000.00** |

## 2.6 Roles & Responsibilities

| **Role** | **Source / SME-Department** | **Responsibility** |
| --- | --- | --- |
| Project Manager | Internal (GITS – Project Management Centre/PMAC) | * Prepare project management plan and revision(s) as deliverables * Define Project Scope, Aim & Objectives |
| Project Sponsor | Internal (GITS) | * Approving key project deliverables * Initiating and participating in project reviews and providing directions |
| Project Manager Advisor | Internal (GITS – Project Management Centre/PMAC) | * Assist Project Manager in determining the essential plans required for the project * Relay necessary information regarding project updates and changes |
| Software Engineer | Internal (GITS – Application Development Centre/ADC; Data Center Operations/DCO) | * Develop the core mechanics of the software * Fulfil the software requirements as stated in Product Deliverables that could function normally. |
| UI Designer | Internal (GITS – Application Development Centre/ADC) | * Create a user-friendly user interface for the system’s controls |
| Software Tester | External (Market – Human Resources Dept/HR) | * Test-running the software prototype * Uncover bugs from testing and submit relevant reports to the software development teams. |
| Quality Control Manager | Internal (GITS – IT Operations/ITO) | * Compile feedbacks from software tests and generate feedback & improvement report to software developers |
| Technical Assistant | Internal (GITS – IT Security) | * Resolve all errors occurred in the development software and hardware that could prolong the development process |
| Communication Officer | External (Market – Procurement/PROC) | * Contact potential project sponsors for assistance in project development. |
| Procurement Officer | External (Market – Procurement/PROC) | * Identify potential sponsors as stakeholders * Audit available resources of procurement from project sponsors |

## 2.7 High Level Risks

Several high-level risks have been identified for the project to be successful, including:

* Failure of uniform communication means between departments of project.
* Missing of a proper organizational structure that could clearly divide the development team to their respective ‘specialty tasks’.
* Severe lack in specific areas of software development, the network and security section among the areas in question.

## 2.8 Major Project Milestones

|  |  |  |
| --- | --- | --- |
| **Milestones** | **Date** | **Descriptions** |
| Start Project | 11/6/2018 |  |
| Receive Project Approval | 19/6/2018 |  |
| Complete Planning Phase | 13/7/2018 |  |
| Complete ISCMP Requirements | 24/7/2018 |  |
| Complete ISCMP Development | 20/9/2018 |  |
| Complete Testing | 9/10/2018 |  |
| ISCMP Installation | 15/10/2018 |  |
| Functional ICSMP | 22/10/2018 |  |
| Project End | 30/10/2018 |  |

## 2.9 Critical Success Factors

Several success criteria have been identified as critical success factors that would lead to effective completion of the project, in which include:

1. Complete the project within the allocated budget of $280,000.00 with no budget overruns.
2. Efficient usage of capable resources would be selected from the SME-departments as within the organization structure of **Good Life Pte. Ltd.** and **Global IT**.
3. The created system must be able to be supported by current IT infrastructure.
4. It is mandatory for related departments in Global IT Service to provide approval and signoff for system implementation
5. All support staff and users must have access to the developed system with relevant Access Level (ACL) privileges
6. The current system must be replaced in phases by ISCMP.
7. The cutover and transition from the current system with the newly developed system must be in **parallel**

## 2.10 Signature

|  |  |  |  |
| --- | --- | --- | --- |
| **SIGNATURE** | | | |
|  |  |  |  |
| Good Life Pte. Ltd.  Company Executive Officer | Project Manager | Project Manager Advisor | Project Sponsor |

# 3. WORK BREAKDOWN STRUCTURE

|  |
| --- |
| **Integrated Supply Chain Management Project (ISCMP)** |
| **1 Initiating** |
| **1.1 Identify Stakeholders** |
| **1.2 System Proposal** |
| **1.3 Feasibility Studies** |
| 1.3.1 Technical Feasibility Study |
| 1.3.2 Schedule Feasibility Study |
| 1.3.3 Financial Feasibility Study |
| 1.3.4 Resource Feasibility Study |
| **1.4 Develop Project Charter** |
| 1.4.1 Determine Project Aim & Objectives |
| 1.4.2 Determine Project Scope |
| 1.4.3 Determine Project Budget |
| 1.4.4 Determine Project Roles |
| 1.4.5 Determine Project Risks |
| 1.4.6 Determine Project Milestones |
| **2 Planning** |
| **2.1 Develop Project Plan** |
| 2.1.1 Identify Phases & Activities |
| 2.1.2 Create Project Planning Schedule |
| **2.2 Develop Resource Plan** |
| 2.2.1 Identify Types of Tasks |
| 2.2.2 Identify Number of Staff |
| 2.2.3 Identify Needed Equipment |
| 2.2.4 Identify Equipment Types & Quantity |
| **2.3 Develop Financial Plan** |
| 2.3.1 Identify Labour Costs |
| 2.3.2 Identify Equipment Costs |
| 2.3.3 Identify Miscellaneous Costs |
| **2.4 Develop Quality Plan** |
| 2.4.1 Identify Customers Requirements |
| 2.4.2 List Project Deliverables |
| 2.4.3 Define Quality Standards for Deliverables |
| 2.4.4 Customer Approval for Set Targets |
| **2.5 Develop Risk Plan** |
| 2.5.1 Identify Project Risks |
| 2.5.2 Categorize & Prioritize Risks |
| **2.6 Develop Communication Plan** |
| 2.6.1 List Communications Stakeholders |
| 2.6.2 Define Communication Needs |
| **2.7 Develop Procurement Plan** |
| 2.7.1 Determine Procurement Requirements |
| 2.7.2 Identify Needed Procurement |
| 2.7.3 Create Financial Justification |
| **3 Execution** |
| **3.1 Requirement Gathering** |
| 3.1.1 Client Interview |
| 3.1.2 Construct Use Case |
| 3.1.3 Prototyping |
| **3.2 Procurement** |
| 3.2.1 Compare Supplier Prices |
| 3.2.2 Negotiate Prices |
| 3.2.3 Obtain Hardware |
| 3.2.4 Obtain Software |
| **3.3 Staff Management** |
| 3.3.1 Recruits Interview |
| 3.3.2 Allocate Human Resources |
| 3.3.3 Labour Tracking |
| 3.3.4 Training Tracking |
| 3.3.5 Time Tracking |
| **3.4 Development** |
| 3.4.1 Functional Development |
| 3.4.2 Technical Development |
| 3.4.3 Application Development |
| **3.5 Testing** |
| 3.5.1 Application Development Centre Testing |
| 3.5.2 IT Regression Testing |
| 3.4.3 User Acceptance Testing |
| **3.6 System Setup** |
| 3.6.1 Hardware Installation |
| 3.6.2 System Installation |
| **4 Monitoring & Controlling** |
| **4.1 HR Management** |
| 4.1.1 Control Man Days |
| 4.1.2 Monitor Staff Progress |
| **4.2 Procurement Management** |
| 4.2.1 Quantity Control |
| 4.2.2 Quality Control |
| **4.3 Quality Deliverables** |
| 4.3.1 Testing Reports |
| **5 Closing** |
| **5.1 Documentation** |
| 5.1.1 Procurement Report |
| 5.1.2 Financial Report |
| 5.1.3 Project Documentation |
| 5.1.4 Stakeholders Approval & Signature |
| **5.2 Formal Acceptance & Information** |
| 5.2.1 Inform Stakeholders |
| 5.2.2 Stakeholders Approval & Signature |
| 5.2.3 End Staff Employment |
| 5.2.4 End Supplier Contract |

# 4. SCOPE STATEMENT

## 4.1 Project Scope Description

The scope of this project is to restore the order and maintain morale of the developing team and make sure the product is produced with quality within deadline.

## 4.2 Acceptance Criteria

The conditions of the acceptance criteria are that the system should be able to provide the common functions that can be found in typical SCM software, supported by centralized data warehouse log which provides business intelligence capacities for user to make quicker decision in managing such as inventory managing. The system should be covering features like transportation management, yard management, labor management and warehouse optimization.

## 4.3 Project Deliverables

The end product of this project would be a software designed specialized for Supply Chain Management. The end product provides the common functions that can be found in any SCM. Other than that, the system is also supported by a huge centralized data warehouse which provides business intelligence capabilities in facilitating users to make quicker decision in managing inventory in their own region. The system also covers transportation management, order management, yard management, labor management and warehouse optimization.

## 4.4 Project Exclusions

Stakeholders can expect a completed bug-free software by the end of the project period, excluding:

1. Lack of advanced security services on database protection.
2. Capped logs duration.
3. System access limited to high-ranked staffs only.
4. Lack of multi-language support to non-English users

## 4.5 Project Constraints

* **Time frames**: The project need to be done with 4 months left.
* **Resources**: The hardware technical specifications are not up to date.
* **Activity performance**: Team members are focusing more on their daily operation support rather than task assigned.

## 4.6 Project Assumptions

* The project team might need an experienced advisor to advise the project manager on leadership and interpersonal skills.
* Better hardware might be needed to speed up developing progress.
* Time management might need to be implemented to manage the efficiency of the team members.

# 5. TABLE OF ISSUES

|  |  |  |  |
| --- | --- | --- | --- |
| **Integration Management** | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 4 | The PC and server hardware technical specifications were constantly being changed to suit new or added requirements. | Planning | **Expert Judgement**:  Get the latest and most powerful hardware technical specifications so the requirement to go for higher specifications would be very small change. |
| 5 | Requirements keep coming in from users almost daily where the GITS-ADC Team Lead keeps on accepting them without hesitation. | Execution | **Negotiations**:  Keep the requirements update monthly and inform the Team Lead to not take requirements when the team is already full of work. |
| 15 | Technical skills were especially lacking in the network and security areas. | Planning | **Group Decision-Making Techniques**:  Hiring a professional technical team to ensure all technical problems to assist with. |

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| **Human Resource Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 6 | There was redundancy of work performed as the Work Breakdown Structure (WBS) was done separately by each respective department and the Project Manager did not review and then consolidate those WBSs into one wholistic WBS | Initiation | **Pre-Assignment**:  Assigning teammates to work on tasks following the WBS and provide regular updates to the project manager. |
| 7 | Most of the team members have been focusing more on their daily operation support rather than tasks being assigned by the Project Manager or their respective Team Lead | Execution | **Performance Reviews**:  Conduct a daily check routine to ensure the project plan is being followed and ensure the team members are doing their task as provided. |
| 13 | There was no clear project organizational structure to manage the project. | Planning | **Organization Chart**:  With organization chart, clear organizational structure is developed start from the highest management till the individual responsibility. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Communication Management** | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 1 | The steering committee (which consist of the board of directors, CEO and Senior Managers of the organization) do not recall of being presented the project feasibility study by the Project Sponsor or the Project Manager to them. | Initiation | **Communication Requirement Analysis**:  Determine all stakeholders means of communications, calling intervals and recommended timing plus the duration |
| 6 | There was redundancy of work performed as the Work Breakdown Structure (WBS) was done separately by each respective department and the Project Manager did not review and then consolidate those WBSs into one wholistic WBS | Initiation;  Planning | **Meetings**:  Gathers the stakeholders for a face to face deliver more on the working requirements for a complete and centralized WBS.  **Issue Logs**:  Identify all issues that the project has and delegate manpower easier based on the problem-solving strategies’ comparison |
| 7 | Most of the team members have been focusing more on their daily operation support rather than tasks being assigned by the Project Manager or their respective Team Lead | Execution | Performance Reporting:  Conduct a daily-to-monthly check routine to ensure the project plan is being followed and ensure the team members are doing their task as provided. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 11 | The testing plan was not developed yet | Planning | **Benchmarking**:  Pre-plan for 2 types of testing such as white-box testing and black-box testing. Also have phases on test on such as alpha phase, beta phase and so on. |
| 12 | There was not even a clear designated sponsor (or sponsors) for the project. | Planning | **Communication Technology**:  Ensure the stakeholders for the project before the project starts. |
| 15 | Technical skills were especially lacking in the network and security areas. | Planning | **Group Decision-Making Techniques**:  Hiring a professional technical team to ensure all technical problems to assist with. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 8 | Tasks are performed without prioritizing other dependent tasks. | Monitoring & Controlling | **Meetings**:  Perform constant checking on employees and keep up with the progress for all department head managers. |
| 15 | Technical skills were especially lacking in the network and security areas. | Planning | **Group Decision-Making Techniques**:  Hiring a professional technical team to ensure all technical problems to assist with. |
| 18 | The hardware and software delivery were still being negotiated with some potential vendors while there were only four (4) months to complete the project. | Planning | **Resource Optimization Techniques**:  Without any delay, employees are to start work with what they have |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Procurement Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 9 | IT assets acquisition and spending were through PROC Manager with suppliers without going through a proper tendering process. | Execution | **Inspections and Audits**:  Having inspections and audits to confirm supplies from suppliers. |
| 10 | Purchasing of IT assets without a proper tendering process has led to overrun by budget. | Planning | **Expert Judgement**:  Get the latest and most powerful hardware technical specifications so the requirement to go for higher specifications would be very small change. |
| 18 | The hardware and software delivery were still being negotiated with some potential vendors while there were only four (4) months to complete the project. | Planning | **Performance Reporting**:  Performance updates need to be provided to the project manager, the project manager will be able to handle the issues and updates needed to be provided to the stakeholders and the suppliers for the supplies. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Quality Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 9 | IT assets acquisition and spending were through PROC Manager with suppliers without going through a proper tendering process. | Execution | **Process Analysis**:  Conduct testing and checking the status to ensure the quality is top-notch. |
| 15 | Technical skills were especially lacking in the network and security areas. | Planning | **Group Decision-Making Techniques**:  Hiring a professional technical team to ensure all technical problems to assist with. |
| 18 | The hardware and software delivery were still being negotiated with some potential vendors while there were only four (4) months to complete the project. | Planning | **Design of Experiment**:  Testing is expected in the process, thus planning out the hardware and software that would be of use. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Scope Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 2 | The project approval was not formally documented. | Initiation | **Alternatives Identifications**:  Use multiple ways to confirm all approval and document them in hard copy as well as soft copy. |
| 3 | There is no evidence that a proper project management process was followed. | Initiation | **Inspection**:  Check all department and confirm all with evidence. Double confirm them if necessary. |
| 14 | The Project Manager’s authority was constantly overridden by the department head managers. | Controlling & Monitoring | **Variance Analysis**:  Keep all the department head managers under control, as well as keep them under monitor if there were anything wrong to happen. |

# 6. GANTT CHART AND NETWORK DIAGRAM

## 6.1 Gantt Chart

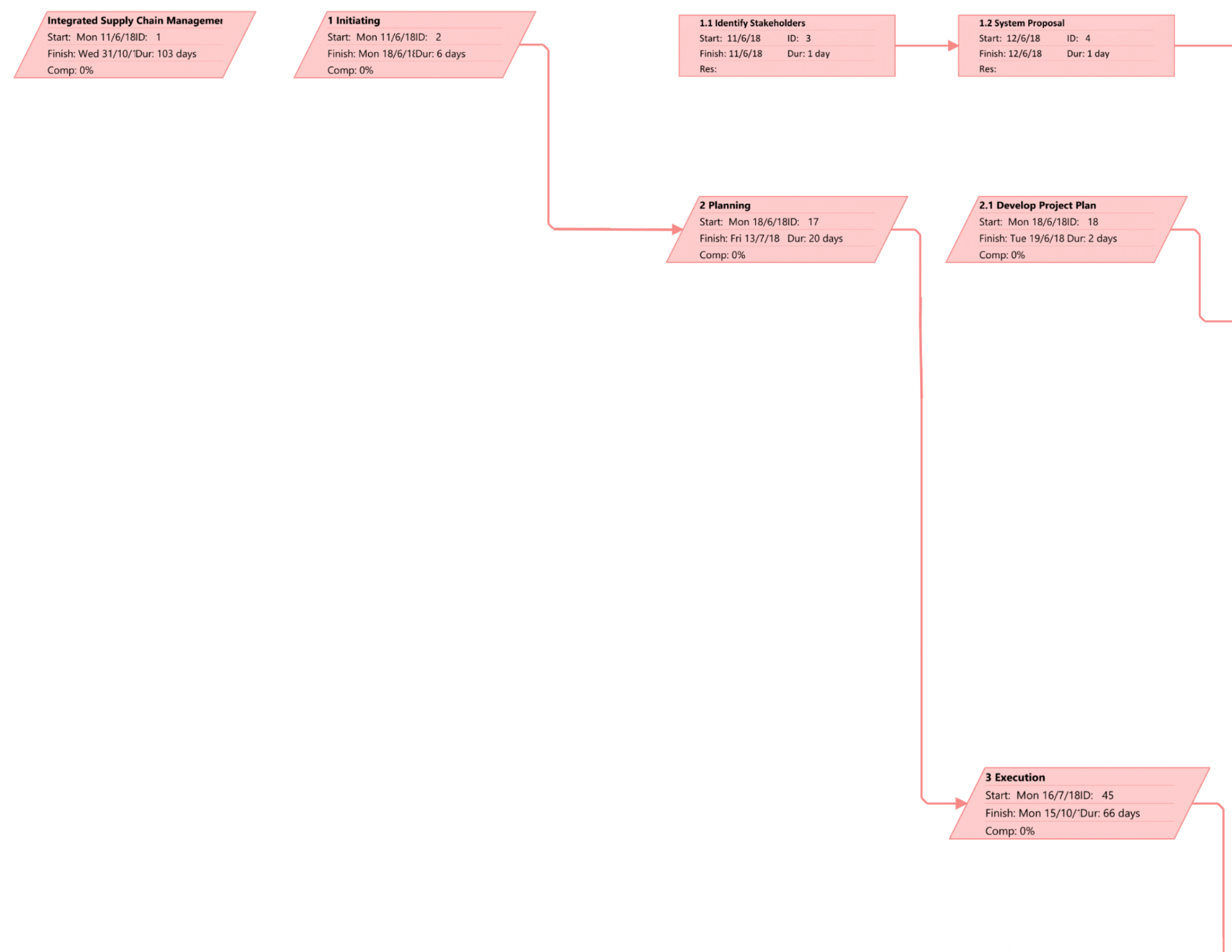


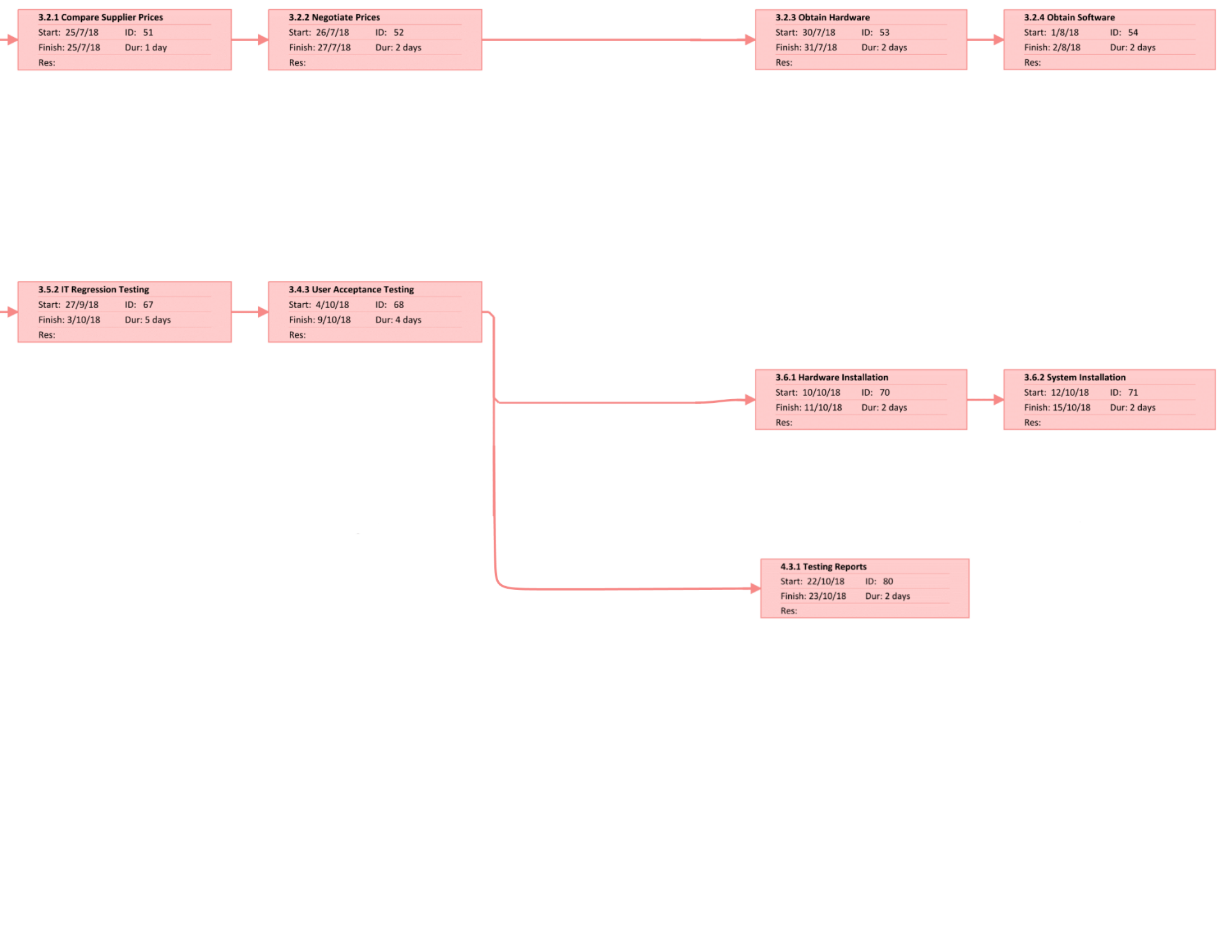
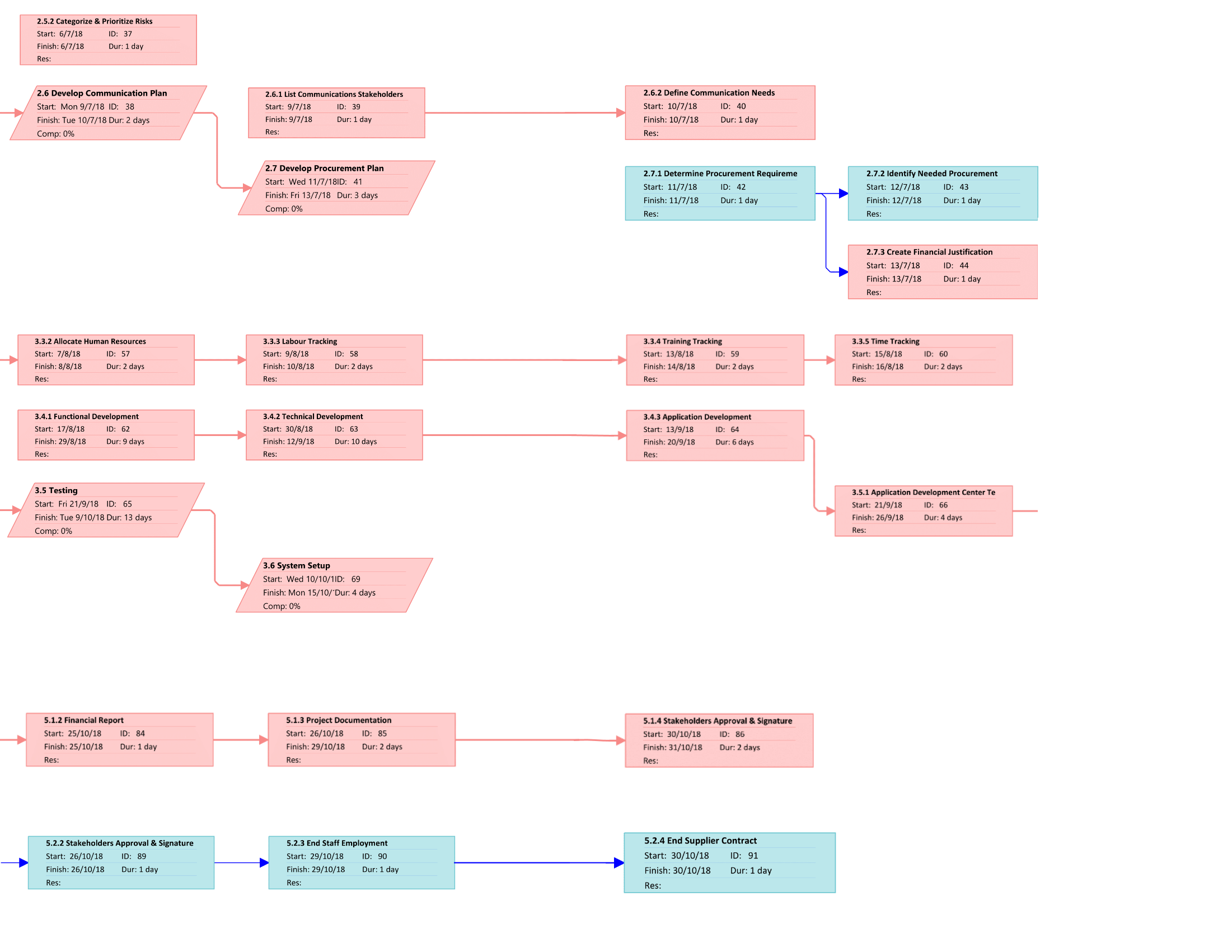
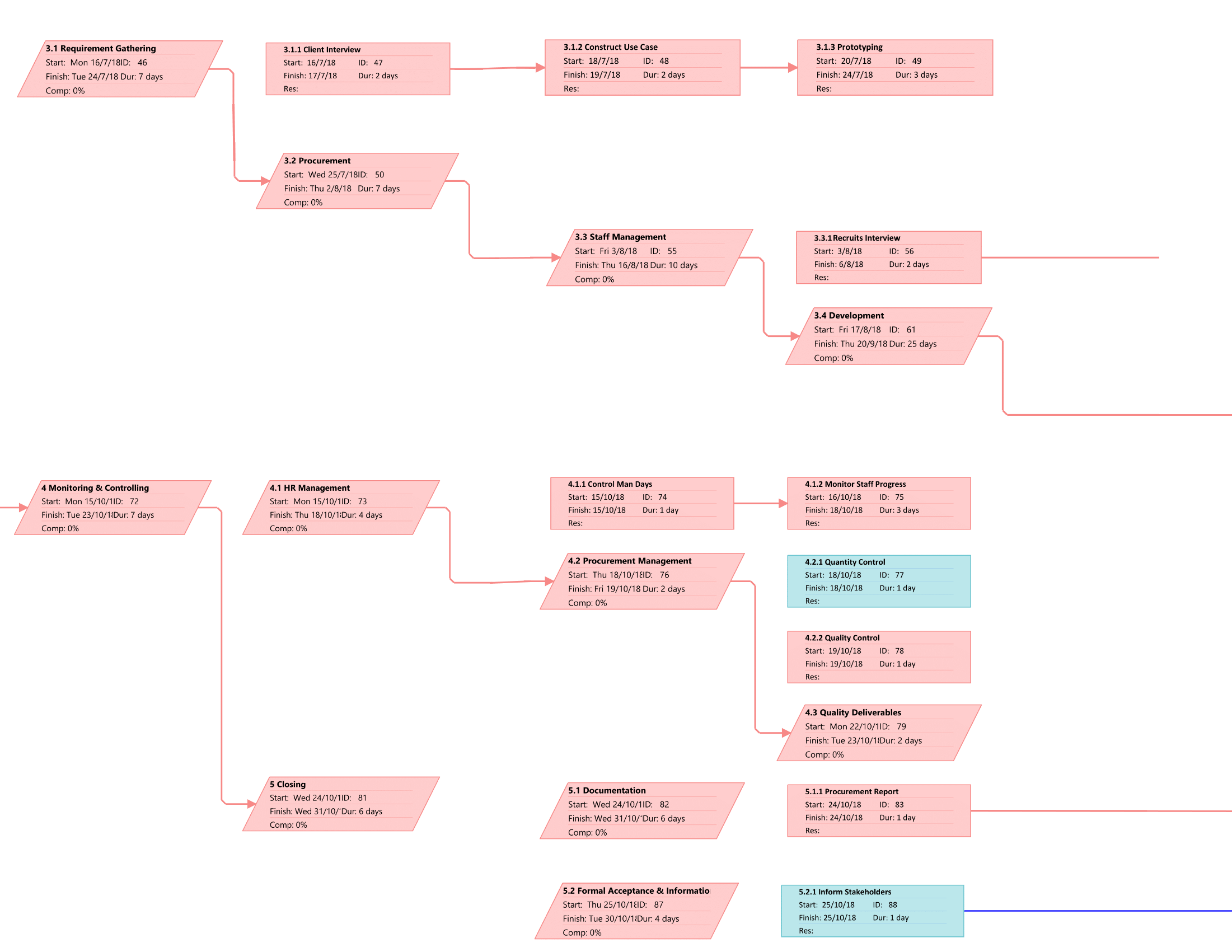
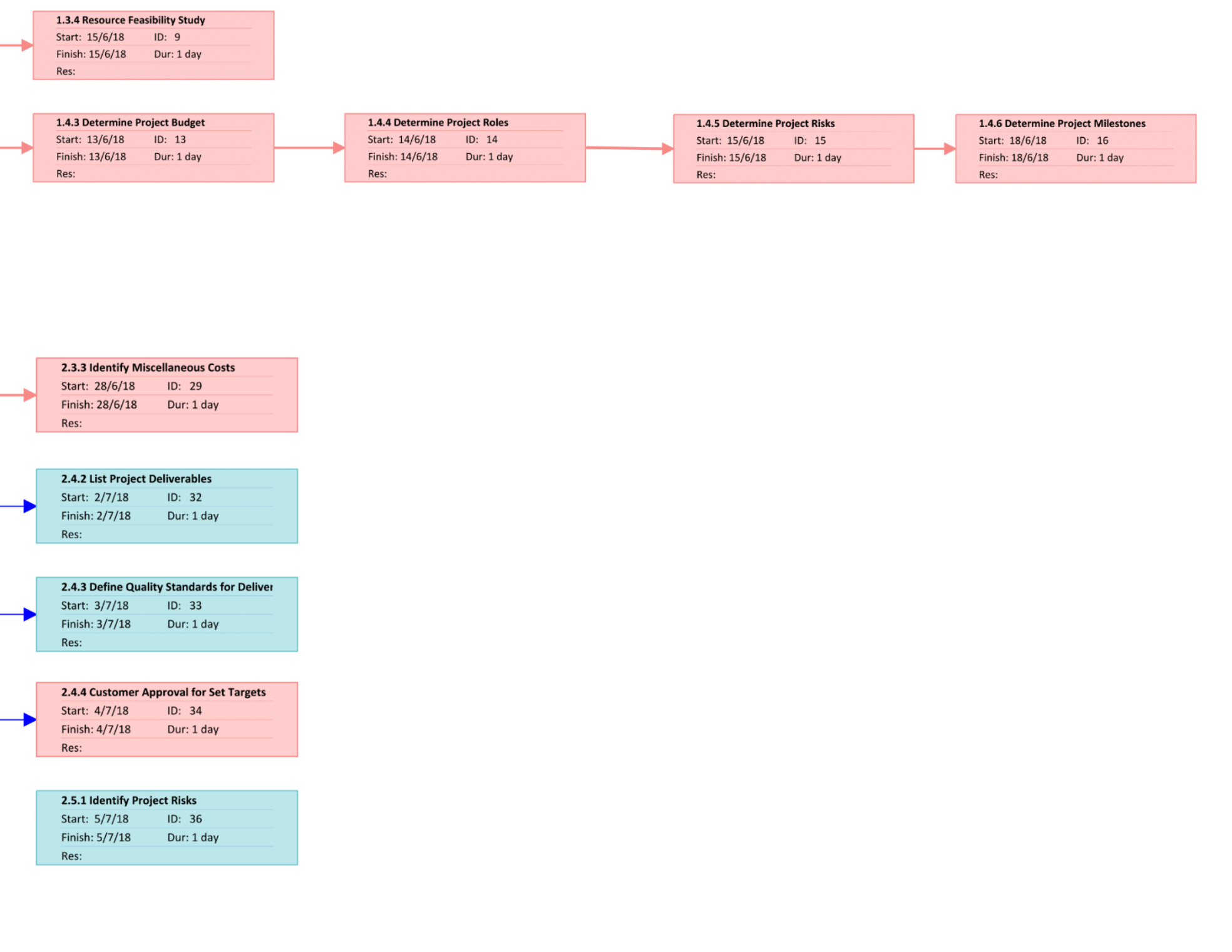
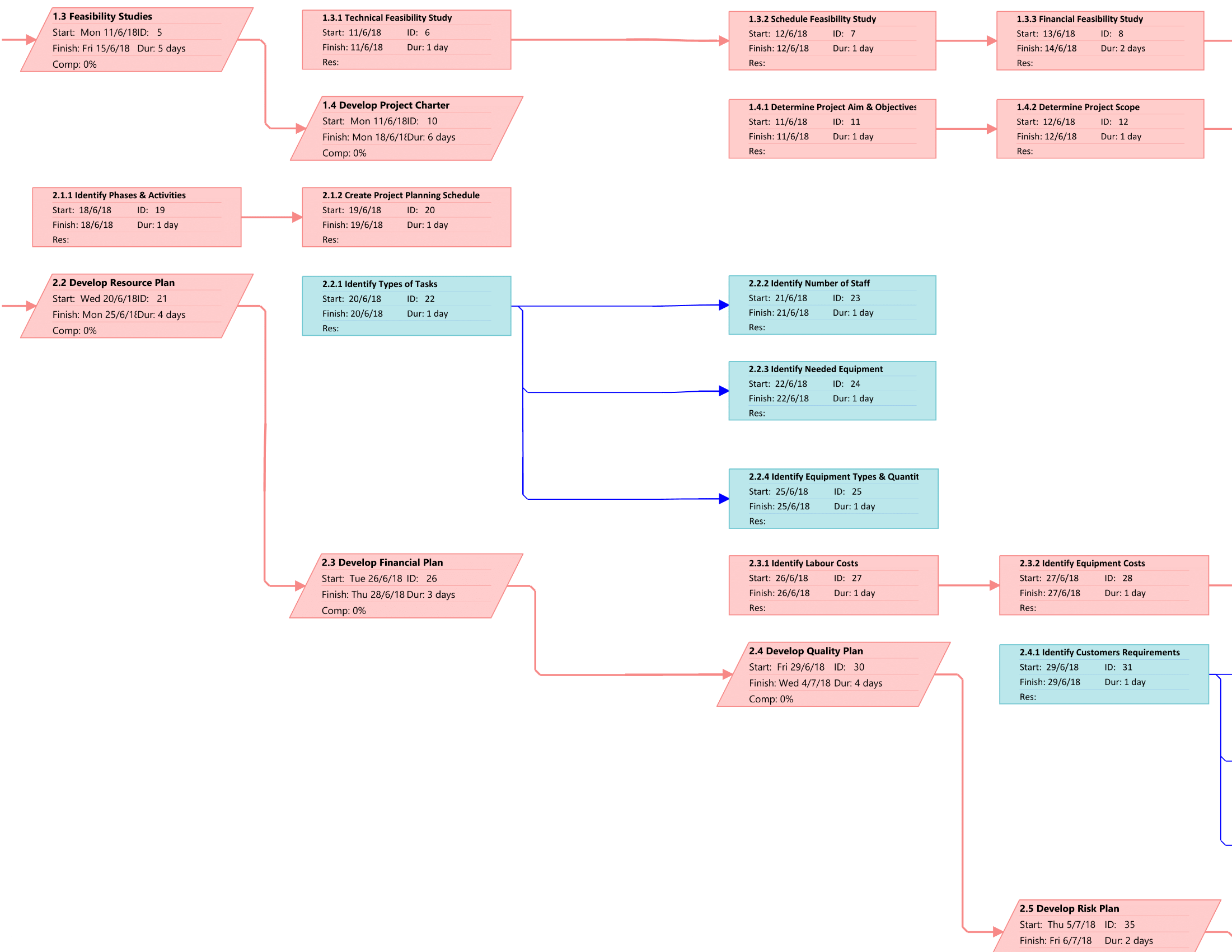






## 6.2 Network Diagram





# 7. COST ESTIMATION AND BUDGETING

## 7.1 Task Cost Breakdown

## 7.2 Resources Cost Breakdown

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Resource Name** | **Amount** | **Std. Rate** | **Working Duration** | **Calculation** | **Cost** |
| Project Manager | 1 | $3000/mon | 4 Months | 7000 x 4 | $28,000 |
| Software Engineer | 3 | $2200/mon | 4 Months | 2200 x 4 x 3 | $26,400 |
| UI Designer | 1 | $1800/mon | 4 Months | 1800 x 4 | $7,200 |
| Software Tester | 1 | $1000/mon | 1 Month | 1000 | $1,000 |
| Quality Control | 1 | $1700/mon | 4 Months | 1700 x 4 | $6,800 |
| IT Security | 1 | $1800/mon | 4 Months | 1800 x 4 | $7,200 |
| Technical Assistant | 1 | $1800/mon | 4 Months | 1800 x 4 | $7,200 |
|  |  |  |  | **Total:** | **$83,800** |

# 8. QUALITY MANAGEMENT PLAN

Quality management is an element that was introduced since the early stages of project management’s definition, sharing the same status as cost and time (Atkinson, 1999). It is an important aspect in project management where the performance of the product – the Integrated Supply Chain Management System in this scenario – is matching the required quality as mentioned in the project’s scope. For ensuring the quality of the product in development, actions and policies would be undertaken in form of three major processes:

* **Plan Quality Management**;
* **Performing Quality Assurance**; and
* **Performing Quality Control**

And in those three processes, some tools and techniques would be applicable in managing the project’s output quality, where it includes quality metrics, checklists, Pareto Charts, quality control charts, fishbone diagrams, maturity models and many others (Marchewka, 2014).

**Issues Involved**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Quality Management** | | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 9 | IT assets acquisition and spending were through PROC Manager with suppliers without going through a proper tendering process. | Execution | **Process Analysis**:  Conduct testing and checking the status to ensure the quality is top-notch. |
| 15 | Technical skills were especially lacking in the network and security areas. | Planning | **Group Decision-Making Techniques**:  Hiring a professional technical team to ensure all technical problems to assist with. |
| 18 | The hardware and software delivery were still being negotiated with some potential vendors while there were only four (4) months to complete the project. | Planning | **Design of Experiment**:  Testing is expected in the process, thus planning out the hardware and software that would be of use. |

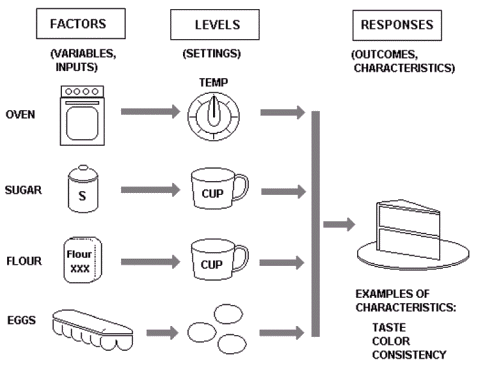
## 8.1 Plan Quality Management

Planning would be the focus of this process. The content of planning includes **identifying which quality standards** are relevant to the project, and **methods required** to meet those standards. This is done to anticipate situations and prepare appropriate actions to bring out the needed outcome.

To devise a plan to an overall quality management, it is required to have a project management plan, stakeholder register, environmental factors and other available assets to deliver not only a **quality management plan**, but also **quality metrics**, **checklists** and relevant **updates to the project’s documentation** such as process improvement plan (Kima, et al., 2012).

While producing the deliverables, several tools and techniques could be adapted, in which **cost-benefit analysis** would be among the main methods to determine the capital required to create a system with high enough performance. Since the system in question has already developed by other regions, **benchmarking** techniques are applicable to compare for most suitable practices such as the database design (Cooper, et al., 2010). **Design of experiments** technique is also applicable to produce list of factors for the product in development (Gyung-Jin, 2007).

To solve **ISSUE NO. 18** where despite of the lack of time, negotiations with hardware and software delivery for the project is still undergoing, the **design of experiments** technique would assist in resolving the issue. In design of experiments, the 3 components of the project include *Factors*, *Levels* and *Response* as per illustrated in ***FIGURE 8.1.1***:



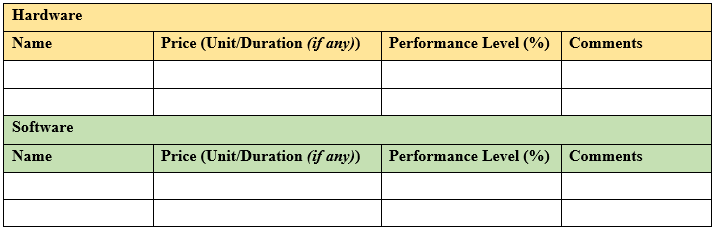
***FIGURE 8.1.1: Components of Design of Experiments (Example: Baking a Cake)***

For typical experiment designs, *Factors* would be inputs for the process; *Levels* being the weight and value set to each factor; and *Responses* being its output. While for the case in **ISSUE NO. 18**, the components in the design of experiments would be as follows:

* *Factor(s)*: Hardware & Software
* *Level(s)*: Performance (Hardware & Software); Price (Hardware & Software)
* *Response(s)*: Quality of Product (Integrated Supply Chain Management Software)

Based on the layout of the design of experiments, it could be found that the hardware and software used to develop the Integrated Supply Chain Management Software would be the main factor affecting the output, while their respective performance and price would be weighed.

To conduct a proper comparison for this experiment of *‘comparing hardware and software performance relative to pricing in ISCMP’*, a template should be made to collect each target’s data, as displayed in ***FIGURE 8.1.2***.



***FIGURE 8.1.2: Template of Hardware & Software Comparison for ISCMP***

While the names of each hardware and software are necessary, the **price** of these development assets would be considered by the price per duration, if any is mentioned. For example, the price of a Cloud subscription to Visual Studio Enterprise on monthly basis would take *$250/Month*. The **performance level** would determine how useful would it be in form of percentages. In this case, the performance of Visual Studio Enterprise would be considered 80% since most software developers would be using the system for coding the core mechanics. **Comments** serves more as a post script to mention any additional information regarding the target’s pricing or performance level. Using Visual Studio Enterprise as example, the comments may include ‘*inclusion of Azure Cloud service to share codes and track workloads’*.

## 8.2 Perform Quality Assurance

As the project is progressing, quality assurance is required to be performed to ensure all processes of the project can meet the relevant quality standards, in the meantime able to **achieve continuous quality improvement besides satisfying the minimum requirements** (Wandersman, et al., 2012).

While this process requires the input of most outputs from the planning process of quality management such as the quality management plan, process improvement plan and quality metrics, the process should be able to deliver a complete list of **change requests**, **updates on project management plan and its documentation**, including required **improvements on the available assets** (Taylor, 2018).

The deliverables of this process could be created with **quality management and control tools** like from the planning phase, such as leaning and benchmarking to maximizing output efficiency and minimizing waste, while ensure a compete-able quality with potential competitors (Larson & Gray, 2013). **Quality audits** are necessary too to measure how well is the monitoring of the project development matches the standard as per the project requested, identifying any lessons learned that could further improve the project’s output (Taylor, 2018). In the same time, **process analysis** would be conducted to examine the development processes so that in case of sidetracking, the processes could be tailored to align with the project requirements (Vergidis, et al., 2008).

To solve **ISSUE NO. 9** where the spending of IT assets passed through Procurement Management (PROC) without any tendering processes carried out. For solving this issue, the **process analysis** technique could be applied to create the tendering process. From this technique, the tendering process could be classified into several steps, in following order:

1. **Determine Tendering Types**
   * Selecting preferred format of tendering process such as:
     1. *Open Tendering*: Tender by public advertisements
     2. *Select Tendering*: Tenders selected via shortlisting from open tender(s)
     3. *Multi-stage Tendering*: Compare tenders from multiple stages featuring specific requirements
2. **Prepare Request for Tendering**
   * Prepare invitations to suppliers for competitive offer to win contract with ISCMP:
   * Must include description of the procured products; conditions to tender; relevant evaluation criteria, required submission content and format.
3. **Inviting Tenders**
   * Identify potential tenders who would likely respond to invitation
   * Contact project team regularly to find any future tender opportunities
4. **Response from Suppliers**
   * Receive all required documents from the suppliers
   * Hosting pre-tender briefing sessions to clarify any uncertainties
5. **Evaluation & Selection**
   * Check for compliance of each tender based on the evaluation criteria
   * Select tender(s) meeting the mandatory and technical requirements
6. **Notification & Debriefing**
   * Advice session for winning tenderer & debriefing
7. **Establish & Manage Contracts**
   * Form formal agreements between project team and the tenderer

According to the process analysis, there would be 7 steps where the PROC should follow to devise a proper tendering process to ensure all potential suppliers would be able to follow through the details the project team required tenderers to understand, while managing the standards of the supplier so the quality of Integrated Supply Management Chain Software would not suffer.

## 8.3 Control Quality

Quality control is a set of procedures that **verifies the quality of the project’s output**, determining that it is reaching the desired standards of the project scopes. This process is a vital aspect to measure the total quality of the project output, while identify any issues that needs to be resolved to meet the requirements set by the project stakeholders (Larson & Gray, 2013).

In this process, all data obtained from the planning and quality assurance processes would be inspected and further analyzed, and delivered not only **quality control measurements**, but also the **validated changes** and **updates on the project output**, along with **feedback on work performance** and **approved change requests**. In some occasions, **updates on the organizational process assets** would be conducted as well (Marchewka, 2014).

For precise data collection on quality control, **statistical sampling** plays an important role to understand the needs and details of features for the product in development (Martinez, et al., 2017). The **7 basic quality tools** that applies the use of storing collected data such as cause-and-effect diagram, flowcharts, to Pareto charts could help in organizing the data for clear input in data analysis (Soković, et al., 2009) to produce precise quality control measurements. However, in most cases a more direct approach, **inspection** on the workplace, would be taken to be able to provide performance feedback immediately. In the meantime, several **reviews on the change requests** would be conducted to determine those that require approval from high-ups such as project sponsors to be proceed. The change requests would most likely be reviewed via **Group Decision-Making** techniques where the technical aspect could be inspected by the professionals, when required.

To solve **ISSUE NO. 15** where the issue revolves around the severe lack in technical skills regarding network and security areas of the proposed software. In this context, **Group Decision-Making** techniques would be used to determine the requirements of deploying manpower on the network and security fields. While having **expert judgement** from the network and security professionals would help, the format for decision-making is equally vital too. For this case, a method called **Brainstorming**, where people would gather in groups and generate ideas freely. This helps in producing the requirements for the network and security area of the ISCMP. However, since this method focuses more on idea generation and not evaluation, the professional expert would come in play and **provide guidance and evaluation** regarding the proposed ideas.

# 9. CUTOVER STRATEGY AND TRANSITION PLAN

## 9.1 Definition

Cutover strategy is a set of **migration steps** that would be applied in **implementing a new system** and **replace the existing system** in the process. The cutover strategy is also referred as implantation strategy for this reason. While there are multiple types of cutover strategies available, it must include these basic steps, which are to:

1. Design and perform **final system test** and **user acceptance tests**
2. **Transfer system control** to the users of the implemented system

Thus far, there are 4 types of cutover strategies available, in which they are named **Direct Cutover**, **Parallel Operation**, **Pilot Operation**, and **Phased Operation** respectively

## 9.2 Types of Cutover Strategy

**Direct Cutover**



***FIGURE 9.2.1: Direct Cutover Outline***

Direct cutover strategy is a type of cutover strategy that **immediately replaces the old system with the new system** in a simultaneous order, as shown in ***FIGURE 9.2.1***. The old system would be shut down entirely so there would be no transition period where both systems are active.

While it is **less costly** for the system to be implemented, it has a **high-level risk** of the newly implemented system being entirely unusable to the client. The new system users would face many challenges to get used to the newly implemented system as well.

**Parallel Operation**



***FIGURE 9.2.2: Parallel Operation Outline***

In parallel operation strategy, the **new system is implemented while the old system is still available to use**. After a designated duration of time, the old system would be removed entirely, and the new system takes precedence as shown in ***FIGURE 9.2.2***.

Parallel operation is a strategy that could be adapted with **low risk** and **safe approach**, and thus is usually recommended to critical applications. The downside, however, being having two systems run simultaneously for a period of time and led to **high cost** of operation.

**Pilot Operation**



***FIGURE 9.2.3: Pilot Operation Outline***

Pilot operation is a system where **only part of the new system is implemented into the old system** as a means to measure its impact and effectiveness. Once the ‘pilot’ performs in satisfactory level, the replacement of the old system into the new one takes place immediately, as demonstrated in ***FIGURE 9.2.3***.

While pilot operation proves as an effective strategy in **testing new system performance** without much changes to the old system, there might be **risks of system overlap** if the system is of a large scale. Therefore, this strategy is usually applicable to moderately critical systems.

**Phased Operation**



***FIGURE 9.2.4: Phased Operation Outline***

Phased operation is a strategy where the **new system is slowly phased into the operational system**, replacing the old system in regular intervals until the new system is completely implemented as shown in ***FIGURE 9.2.4***. The part of system added in each phase could be referred as subsystems or units.

This cutover strategy is highly recommended for any critical system implementations since it has **relatively safe and conservative approach** compared to parallel and pilot operations. The new system user could be able to gradually get used to the system controls from such operation. The problem, however, lies in the **large amount of time** **required** to implement the new system this way, and the **higher cost** compared to direct cutover approach.

## 9.3 Selected Cutover Strategy

The selected cutover strategy for ISCMP is **Parallel Operation**, where the newly created centralized supply chain management software would be implemented with the old system still operative for a set amount of time until the new system is able to entirely replace the old system. The amount of time is decided by how the new system is tested or how well the new system users are trained.

Although this would be a costly operation strategy, this attempt is recommended since the supply chain management software is classified as a **‘critical application’** as the implemented system has a centralized database system that require high level of maintenance. Besides, since the core feature of the system is totally different than that of the current system (as current system relies on local database instead), it would be proven a difficulty to delegate the system in pilot operation or phased operation.

The **implementation** would carry out in the form where the newly developed system, along with its required software and hardware, are installed firsthand. While the new system is in setup, the old system, along with its local database server, are used as a **placeholder with backups** made in case of new system being corrupted or incompatible to the new system users. The users would then be **provided theory and practical training** by the system trainers until the users are familiar with the system controls.

During the period of training, the system also undergoes **regular performance and user acceptance test** to ensure its performance level and impact to the users. Once the new system reaches the point where the user could master its usage, the cutover process would be ended with approval from the project team and system clients. At that period, the old system would be removed entirely with the backup deleted from the operating system as well.

While there are no strict requirements on the system implementation, the borderline **requirements** need the user to have **matching version of the operating system** with the new system to ensure there would be no errors from version incompatibility. Secondly, a **local client-server** must be prepared along with the new system, so it could be connected to the host server that houses the centralized database for supply chain management process.

# LESSON LEARNED REPORT

Throughout the project management from this scenario, our team has learned the importance of proper management in development-based projects that especially utilized time and resource management. With the lack of sufficient time and resources in the mentioned scenario, the team has learned to organize the tasks required to complete the project based on their respective priorities, whilst identifying suitable approaches to complete the project’s planning and implementations, such as the usage of selecting applicable Project Methodology, Work Breakdown Structure, Cost Breakdowns, and so on. Besides, the team also learnt to consider multifarious aspects in delegating project activities based on not only the stakeholders’ requirements, but also the project development team’s capability and skillsets in overall. That also led to the adaption of analysis in Project Quality Management where identification of several issues required to be resolved via quality planning, assurance and control were recommended for the project plan as well.

## 10.1 Human Resource Management **[Muhammad Izzat Bin Mohd Jamil, TP035719]**

## 10.2 Procurement Management **[Balram A/L Krishna Kumar, TP035446]**

## 10.3 Communication Management **[Ang Chee Siah, TP038259]**

**INTRODUCTION**

In an undergoing project, communications management is a vital element to ensure that information is effectively delivered to and received from every departments of the project team. This element of project management includes roles in managing effective meetings between teams, forming an efficient communication means for all departments, applying appropriate technology usages for ease of interaction, and providing enough templates for formal communication methods. In general, there are 3 processes involved in a project’s communications management: **planning**, **managing**, and **controlling**.

**ISSUES INVOLVED**

|  |  |  |  |
| --- | --- | --- | --- |
| **Communication Management** | | | |
| **Issue No.** | **Issues** | **Project Management Process** | **Tools & Technique** |
| 1 | The steering committee (which consist of the board of directors, CEO and Senior Managers of the organization) do not recall of being presented the project feasibility study by the Project Sponsor or the Project Manager to them. | Initiation | **Communication Requirements Analysis**:  Determine all stakeholders’ means of communications, calling intervals and recommended timing plus the duration |
| 6 | There was redundancy of work performed as the Work Breakdown Structure (WBS) was done separately by each respective department and the Project Manager did not review and then consolidate those WBSs into one wholistic WBS | Initiation; Planning | **Meetings**:  Gathers the stakeholders for a face-to-face deliverance on the working requirements for a complete, centralized WBS  **Issue Logs**:  Identify all issues that the project has and delegate manpower easier based on the problem-solving strategies’ comparison |
| 7 | Most of the team members have been focusing more on their daily operation support rather than tasks being assigned by the Project Manager or their respective Team Lead | Execution | **Performance Reporting**:  Conduct a daily-to-monthly check routine to ensure the project plan is being followed and ensure the team members are doing their task as provided. |

**PLAN COMMUNICATIONS MANAGEMENT**

In this stage, all **stakeholder’s needs** on information and communications are **identified**. An appropriate **communication approach** would be decided based on those communication needs and requirements.

While it is necessary to have a project management plan, registers of stakeholders, enterprise environmental factors and organizational process assets to start on a plan communications management, this process could create a **communications management plan**, along with an **updated project document**.

**Communication Requirements Analysis**

Firstly, the stakeholders’ needs in the project’s communication channels must be understood via **data collection and analysis**. Each stakeholder would be inquired of the **preferred communication** **means** individually or collectively, which would then form a suitable planning template for all stakeholders, normally by plurality.

However, the analysis could form either a generic template or event-specific templates according to the level and frequency for the stakeholders needed to communicate among the project team (España, et al., 2009). In this case, a generic template would be produced as the project team has less need of frequent contact with outside parties relative to a typical project that requires event-specific templates. It also meets the needs of the waterfall model management method to have a central communication system that creates less confusion and more focus.

To solve **ISSUE NO. 1** via this method, a meeting – by gathering or personal visit – among the steering committee is required to **obtain information on all their frequent means of communication** by creating a plan (reference to plan template at ***TABLE 10.3.1***)and devise the best means of information deliverance that **can reach everyone in shortest time possible**. Although straightforward and simple, this solution is necessary to **prevent “hit-and-miss” scenarios (situations where the person in question cannot be contacted)** in informing the important project members, Board of Directors included, by determining a universal communication means. In case of “hit-and-miss” via the universal channel, the alternative contact details via the collection and analysis could be used immediately to prevent further delay.

**Communication Roles and Responsibilities**

While all stakeholders’ requirements on communication needs are needed to be identified, the communication plan should be made based on their **priority** on their **roles and** **responsibilities** as well. Based on the priority level, the planning template for communications could be more organized to **prevent disturbances** such as ‘role blurring’, a risk that involved staffs within a project team consistently unsure about their responsibilities (Esther, et al., 2009).

**Communication Management Plan Template**

A plan template is vital to create a communications plan in order to **understand all available options** of interaction within the project team, in the **quickest and clearest manner** possible. In this case, a template in a form of **generic table** is proposed, including sample inputs as reference in ***TABLE 10.3.1***:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **STAKEHOLDER NAME** | **ROLE(S)** | **DOCUMENT**  **(NAME & FORMAT)** | **AVAILABLE IN (PLATFORM)** | **CONTACT BY (DEADLINE)** |
| Monos Krome | Quality Control | Progress Report  (Printed Copy) | Face-to-Face;  WeChat | Each week, Thursday |
| Lunaire Mun | UI (User Interface) Designer | User Interface Design Draft (.ai Format & Printed Copy) | E-mail;  Face-to-Face | 24/7/2018 |
| Apolloa Sun | Software Engineer | Status Report  (E-mail) | Discord;  E-mail; LINE | Each week,  Monday |

***TABLE 10.3.1: Communication Management Plan Template for ISCMP***

**Communication Technology**

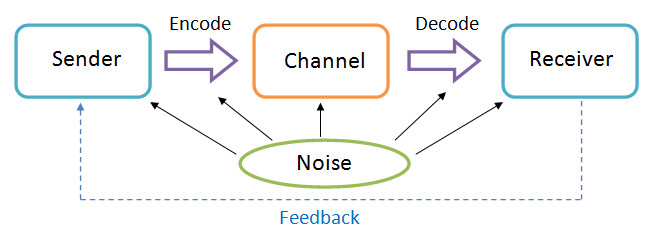
In terms of communication technology in a project, it could be generally divided into 2 main channels: one that requires document transfer, and one that is meant for personal chats and talks only, as proposed by the sample data collection on Morey’s article (Morey, et al., 2013).

While in terms of communication, **document-transfer-based** channels are mostly used by the staffs on the development-based team such as Software Engineers and UI Designers in this scenario. Services such as *SourceTree* and *GitHub* proves a suitable medium for inter-changing software progress and codes to ease the process of creating certain features in the same program.

Channels that are more **chat-based** from *WhatsApp* and *Skype* would prove a more decent approach for in-depth discussions on concepts, proposals and feedbacks among the management teams, where Project Managers would frequently use to contact development teams and board of directors to update on the project’s progress and deliver opinions.

**Communication Models**

Communication model is a representation on how communication, in general, works using senders and receivers as the each ends of the model, with the communication channel itself acting as the medium connecting them together along with several elements as well, such as the reference diagram in ***FIGURE 10.3.1***.



***FIGURE 10.3.1: Basic Communication Model based on Shannon-Weaver Model***

Communication model is a concept that would be applicable when devising a universal communication channel to everyone in the project, as it allows the **anticipation on how the message is transferred** (McQuail & Windahl, 2015) via the following elements:

1. **Sender**: How many people would be sending the information via this channel?
2. **Receiver**: How many people would receive the information, and in which format?
3. **Encode**: Would the message encodes into the information the way sender wants?
4. **Decode**: Would the information decodes into message the way the receiver wants?
5. **Noise**: What interference would occur when using the channel, and how big is the impact?

Using a comparison between 2 communication means, *Face-to-Face* and ­*E-mail* for a scenario where the UI Designer would submit a design draft to the Project Manager in a 1-time basis*­*, a comparison could be made between these two methods in ***TABLE 10.3.2***:

|  |  |  |
| --- | --- | --- |
| **Face-to-Face** | **Communication Elements** | **E-mail** |
| UI Designer (in person) +  Design Draft Documents | Sender | UI Designer’s E-mail Account |
| Project Manager (in person) | Receiver | Project Manager’s E-mail Account |
| Verbal input from UI Designer + Display of Design Draft Documents | Encode | Word input from UI Designer +  Digital Copy of Design Draft Documents available for view |
| Project Manager listens in real time  (verbally sends feedback when needed) | Decode | Project Manager views E-mail when he is free  (reply via E-mail when needed) |
| * Venue acceptable by both sides * Surrounding sound (if the venue is too loud) | Noise | * Different interpretation of words and terms in E-mails * Requirement of internet service |

***TABLE 10.3.2: Face-to-Face and E-mail Comparison using Shannon-Weaver Model***

Based on the comparison, Face-to-Face method relies more in **verbal exchange** between senders and receivers while E-mail method relies more on the exchange of information via E-mail accounts that mainly uses **written words** in displays. In contrast, the usage of Face-to-Face method requires interaction **on-the-spot** for both sender’s and receiver’s sides while E-mail method **requires devices** **that contains their respective E-mail accounts** regardless of the location.

While the respective encode and decode methods are unique at their own way, the noise factor determines that Face-to-Face would be a better option for as this method **only has downside in terms of venue of selection**; while E-mail methods require use of internet service and **information deliverance might not be as effective**, especially the meeting is for 1-time only.

Therefore, it is recommended for the use of **Face-to-Face method** for the meetings, while E-mail method could be used as an alternative for more frequent meetings in the future.

**Communication Method**

Besides using communication models, determining the suitable communication method is equally important in anticipation of suitable communication methods. There are 3 types of communication methods that could be classified as **Push**, **Pull**, and **Interactive** methods (Lewis, et al., 2009).

***Push*** method is where the sender of information would communicate with the receivers, but usually in a **one-way** basis where the sender determines the receivers, when and how they receive it. Although **immediate and direct**, such method **limits interactivity and feedback from receivers** to nearly zero. In this instance, it could be classified along with **broadcasts and announcements** by the Project Manager to the Software Engineers of the management team on the ISCMP’s scope and requirements.

***Pull*** method, on the other hand, is where the receiver of the information could obtain information from a medium on **self-service** basis. The senders would store information in that medium and all receivers could access the information from there. This method is **convenient for informational relays**, but **not time-sensitive** as the information is accessible at any time, renders the urgent messages inapplicable via this method. Instances that are adaptable to this channel is by using **self-service sharing platforms** such as SourceTree to obtain latest updates on the software progress would be convenient for the Software Engineers.

***Interactive*** method allows **cross-interaction** between senders and receivers, usually in text, or graphics and sound. **Discussion would be allowed** from this method as both sides would obtain and deliver information on first-hand basis. While the **most convenient and traditional** way, interactive method is not recommended to have too frequently in this project as it might be **time-consuming** and in specific instances, easily sidetracked based on the target of conversation. However, it is still a mandatory method to use in developing of ISCMP when a meeting is held among the board of directors to conduct Status Report for the software’s progress in regular basis.

**Communication Matrix**

Communication matrix is applied as a list for the required to relay the priority and frequency of the required deliveries, communication-wise. A template in the form of table would be created to simplify the information for the project management’s reference in ***TABLE 10.3.3***:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **COMMUNICATION** | **PURPOSE** | **FREQUENCY** | **DURATION** | **AUDIENCE(S)** |
| General Information | Introduce project, scopes and objectives | One-time Only | 2 Hours | * Project Team * Project Sponsor * Stakeholders |
| Interface Design Meetings | Review and discuss software design problems and solutions | As needed | 3 Hours | * Project Team * UI Designers * Project Manager |
| Status Update | Detailed report on project progress, costs, and issues | Monthly | 1 Hour | * Project Team * Software Engineers * Project Manager |

***TABLE 10.3.3: ISCMP Sample Communication Matrix***

**MANAGE COMMUNICATIONS**

Based on the communications plan created from the planning stage, the managing stage would focus on **creating and distributing the proposed communication means** to the desired project teams.

Using the already devised communication management plan along with required work performance reports, enterprise environmental factors, organizational factors and organizational process assets, a proper **project communication** would be formed. Along with that, **updates** on the **project management plan**, **project documents**, and the **organizational process assets** would be delivered in regular intervals to monitor how smooth or rough the communication within the project would proceed.

**Performance Reporting**

Performance reporting is a means for stakeholders to **be informed on the project’s progress** and how much of the project objectives have been met at specific intervals (Tooley, et al., 2010).

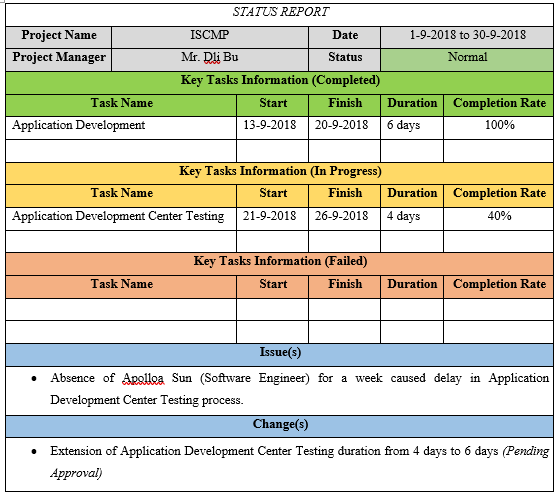
To solve **ISSUE NO. 7** where the development staffs do not adhere to the tasks based on the respective priority of the job, the need of performance reporting would be vital to ensure all staffs in the development team understands the priority level of all their tasks and manage to resolve the tasks within the deadlines. To do so, a **representative** from each software development sections would be delegated to **deliver their performance report** respectively. Depending on the work contents, the performance report would be delivered in **daily, weekly or monthly basis**. In that aspect, the project team would **have a clear sense of each task’s priority** and able to avoid task confusions.

The performance reports in this project would classify into **status report**, **progress report**, and **forecast report**.

ISCMP would follow suit to the following approaches to deliver the reports as shown:

1. **Status Report**

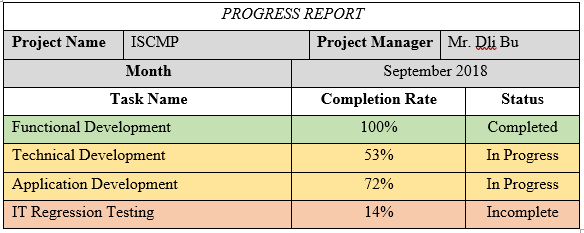
At specific time point, a status report would be delivered to indicate **any activities that was conducted at that specific time**. It is often delivered at regular time intervals – daily, weekly or monthly – to have a constant monitoring on the project’s advancement. In ISCMP, a template as such would be provided for a status report in a **monthly** format as shown in ***TABLE 10.3.4***:



***TABLE 10.3.4: ISCMP Status Report Sample***

1. **Progress Report**

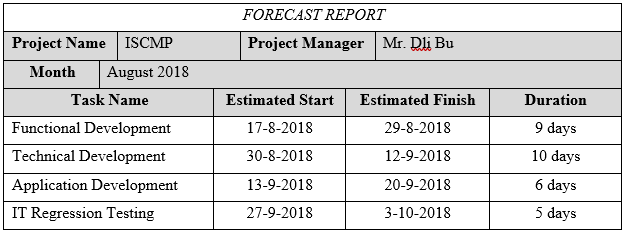
Unlike status report, progress report indicates **what has been accomplished** within the project team, with the amount of time mentioned to determine the period used to finish the tasks. It is usually adapted in cases where milestones are met for the project’s scopes. While not as complicated as status report, important information would be needed to convey about the project’s activities in the **monthly** format as shown, using ISCMP as an example of the case in ***TABLE 10.3.5***:



***TABLE 10.3.5: ISCMP Progress Report Sample***

1. **Forecast Report**

Based on the past experiences and trends, forecast would be made to **predict a project’s status and progress** to anticipate how long would it take to complete the project’s milestones. The reference would usually root from the similar projects that have been attempted at the pastimes. In the case of ISCMP scenario as in ***TABLE 10.3.6***, a **monthly** forecast report would be made to anticipate the priority of each tasks that should be given:

***TABLE 10.3.6: ISCMP Forecast Report Sample***

**CONTROL COMMUNICATIONS**

After the communication methods have been implemented, the communication process in the project team would be constantly monitored and controlled to ensure that the requirements from the communications management plan are met.

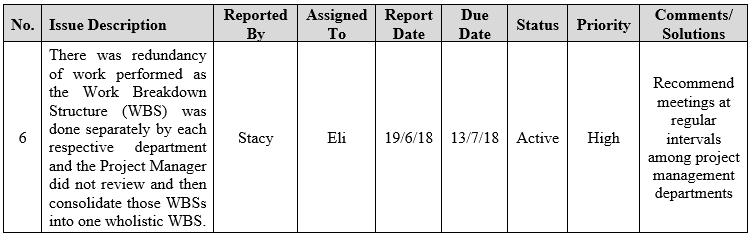
With reference to the outputs from the planning and managing processes such as the project management plan, project communication system, data of work performance, and organizational process assets, the controlling process of the project team’s communication delivers the **information on work performance**, lists of **change requests**, and **updates** on **project management plan**, **project documents**, and **organizational process assets**. In this process, constant observation and monitoring is necessary to produce these outputs at designated intervals.

**Issue Log**

Issue log is a method often used to **identify the project’s issues** that are either resolved, or still ongoing. In this scenario, it could be used to **track any errors** that occurred in ISCMP, while presenting to the project managers and stakeholders on the project’s status even further (Marchewka, 2014).

While it is just a tracking of the project’s progress, it **contributes in meetings** among members of the ISCMP team and resolves **ISSUE NO. 6** as well. Issue log is, in this case, a list of occurring problems of the project that is required to be solved, and thus serves as a **clear guideline** to the project team staffs to **have immediate and precise understanding on the tasks** in which they need to take priority for. In a way, it contributes to a better alignment of tasks delegation for determining a more approachable Work Breakdown Structure. In short, a **regularly conducted meeting paired with effectively organized issue logs** would resolve the issue of decentralized Work Breakdown Structure.

In a section of Issue Log as shown in ***TABLE 10.3.7***, the issue’s index, with its description, would be mentioned with summary of the issue. Using **ISSUE NO.6** as the core of the issue, it is shown that the issue being the Work Breakdown Structure being done in separate instead of a centralized manner, and not reviewed at top of that.

***TABLE 10.3.7: Issue No. 6 Section of ISCMP Issue Log Sample***

The individual(s) who states the issue and the ones whom are directed with are mentioned in the Issue Log as well. This is to **ensure the clients related to the issue are properly addressed**. For this issue, the person who reports the issue would be a **representative from the project development team** (e.g. Software Engineers), with the placeholder name of Stacy; while the addressed individual would be the **Project Manager**, whose placeholder name is Eli.

The same concept is applied for the statement of report date and due date, to **indicate the time required to resolve the issue**, although usually by rough estimated for the issue’s manager. The report and due dates in this instance are based on the project’s pre-determined milestones, where the report date is **when the project has received approval** (19/6/18), and the due date being the time when the **project planning has completed** (13/7/18), the time when WBS must be finished and is set as the guideline for project execution.

The issue’s status **informs the clients if the issue has been resolved**, while the priority **shows the issue’s level of importance** compared to other issues, since a typical project would have multiple issues occurring at the same time intervals. The status could be identified in 2 main stages, where it could be already resolved (Closed), or **still ongoing and not resolved yet (Active)**. This issue takes place on the latter stage. The levels of importance, on the other hand, ranks the issues in 3 stages, as in not important (Low), somehow urgent (Medium), and **immediate emergency (High)**. This issue falls on the ‘High’ category as it must be resolved during the project’s planning phase.

The comments would normally be a **post script on sections required to be aware on the issue**, based on the client’s point of view. However, if resolved, its solutions would be written instead as a reference for solving other issues. In this case, since the issue is not yet resolved, **comments from the client’s side** on recommended actions would be noted down, as in *“recommend meetings at regular intervals among project management departments”.*

**Sample Issue Log**

An example of the issue log applicable in ISCMP is shown in the following table with appropriate issues as samples, as displayed in ***TABLE 10.3.8***:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Issue Description** | **Reported By** | **Assigned To** | **Report Date** | **Due Date** | **Status** | **Priority** | **Comments/ Solutions** |
| 1 | The steering committee (which consist of the board of directors, CEO and Senior Managers of the organization) do not recall of being presented the project feasibility study by the Project Sponsor or the Project Manager to them. | Condon | Eli | 10/6/18 | 13/7/18 | Active | High | The Senior Managers are still pending reply on contact info |
| 2 | The project approval was not formally documented. | Isa | Eli | 10/6/18 | 19/6/18 | Closed | High | Hired a new secretary |
| 3 | There is no evidence that a proper project management process was followed. | Shela | Hazel | 13/7/18 | 24/7/18 | Active | Low | Hired a new secretary, but still in training |
| 4 | The PC and server hardware technical specifications were constantly being changed to suit new or added requirements. | Lucie | Barr | 19/6/18 | 24/7/18 | Active | Medium | Barr is currently working on a list of approval for the project’s assets |
| 5 | Requirements keep coming in from users almost daily where the GITS-ADC Team Lead keeps on accepting them without hesitation. | Alvera | Hazel | 13/7/18 | 24/7/18 | Active | Medium | Hazel plans on making a new format on Change Approval Report |
| 6 | There was redundancy of work performed as the Work Breakdown Structure (WBS) was done separately by each respective department and the Project Manager did not review and then consolidate those WBSs into one wholistic WBS. | Stacy | Eli | 19/6/18 | 13/7/18 | Active | High | Recommend meetings at regular intervals among project management departments |
| 7 | Most of the team members have been focusing more on their daily operation support rather than tasks being assigned by the Project Manager or their respective Team Lead. | Abaya | Hazel | 24/7/18 | 20/9/18 | Active | Medium | Centralized WBS is still pending completion |
| 8 | Tasks are performed without prioritizing other dependent tasks | Keen | Hazel | 24/7/18 | 20/9/18 | Active | High | Centralized WBS is still pending completion |
| 9 | IT assets acquisition and spending were through PROC Manager with suppliers without going through a proper tendering process. | Langlois | Eli | 13/7/18 | 24/7/18 | Active | Medium | Hazel suggested approval from Barr for tendering processes |
| 10 | Purchasing of IT assets without a proper tendering process has led to overrun by budget. | Chante | Barr | 13/7/18 | 24/7/18 | Closed | Medium | Complied a proper Resource Cost Breakdown |
| 11 | The testing plan was not developed yet. | Nevilla | Hazel | 20/9/18 | 9/10/18 | Active | Low | Software development process pending approval before testing is verified |
| 12 | There was not even a clear designated sponsor (or sponsors) for the project. | Phan | Eli | 19/6/18 | 24/7/18 | Closed | Medium | Procurements were decided on contract-basis after make-buy analysis |
| 13 | There was no clear project organizational structure to manage the project. | Devon | Eli | 10/6/18 | 13/7/18 | Closed | High | Eli has created a new organizational structure upon arrival |
| 14 | The Project Manager’s authority was constantly overridden by the department head managers. | Tom | Hazel | 10/6/18 | 19/6/18 | Closed | Low | Eli has created a new organizational structure upon arrival |
| 15 | Technical skills were especially lacking in the network and security areas. | Tord | Hazel | 19/6/18 | 20/9/18 | Closed | High | HR promised and hired technical assistants on that field |
| 16 | There were no monitoring reports to review as none were prepared and formally documented. | Edd | Eli | 24/7/18 | 9/10/18 | Active | Low | Template for project reports (Status, Progress, Forecast) remained in progress |
| 17 | The risks associated with the project, although documented, had no detailed action plans and were not categorized in terms of impact or severity. | Matt | Eli | 13/7/18 | 9/10/18 | Active | Medium | The risks were to be announced among Senior Managers in meetings for expert judgements |
| 18 | The hardware and software delivery were still being negotiated with some potential vendors while there were only four (4) months to complete the project. | Djeeta | Barr | 19/6/18 | 13/7/18 | Active | Medium | Hazel and Barr needed to discuss on the cost and asset the project team provides initially |

***TABLE 10.3.8: ISCMP Issue Log Sample***

**CONCLUSION**

While communication among project team does not directly impact the project’s development in technical aspect, it is a lifelong factor that would determine cooperation between individuals where team-based projects would highly value for. With 3 of the issues regarding the factor of communication that occurred in ISCMP, the issues could be resolved by adapting the **communication requirement analysis** to understand the best communication medium for everyone; using **issue log**s as guidelines for discussion while conducting **meetings** among project management staffs on proper work schedule planning; and applying the use of **performance reporting** using uniform templates during project updates to ensure a smooth flow of discussions by having every stakeholder on the same page.

**LESSON LEARNED REPORT**

During the analysis of the issues by applying tools and techniques applicable to the solution of those issues, I have learnt the use of **communication requirement analysis** in the aspect of more effective information delivery to all project management team. The analysis could be carried out in multiple forms involving inspecting elements of communication methods, technologies and models to compile a communications management plan for effective communication method selection. In the meantime, the importance of **meetings** and **issue logs** are proven from its adaption to the completion of an approachable Work Breakdown Structure by setting up department-based meetings in regular time intervals, all in the meantime using issue logs as a guidance for arranging all issue’s and task’s priority and status. As for the application on **performance reporting**, the creations of status report, progress report, and forecast report’s templates have been learnt to provide a clear routine check on all department’s progress while ensuring the project team wouldn’t go sidetracked from the low-priority tasks.

## 10.4 Risk Management **[Yeo Zhi Yin, TP035402]**

Project risk is uncertain or random events which has positive or negative effect on project objectives and can occur anytime. Risk can have one or more causes and cause multiple impacts on the project. It can be avoided or mitigated by planning or through pre-emptive action. (Sharma, 2013)

Risk management holds as an important role in IT project when it comes in controlling the quality of the product delivered by the project team. Improper risk management plan will cause a project to fail. Risk management is one of the knowledge areas that required in IT project.

Risk management is a process consist of risk management planning, identification, analysis, response planning and project risk controlling. Leader/Project manager of the team uses this technique to reduce the negative risks and brings benefits of the events that occurred during the project duration.

There are few procedures that can assist the project manager on managing the negative risks during the project which are the following (Institude, 2013):

* Plan Risk Management
* Identify Risks
* Perform Qualitative Risk Analysis
* Perform Quantitative Risk Analysis
* Plan Risk Responses
* Control/Monitoring Risks

With these processes, the team will be able to response with appropriate action the reduce the impact and effect of the risk or even gain positive effect from the risk. Risk should be managed throughout the whole project duration and expecting some unexpected events or problems to be happened during the execution of the project. A project comes with the risk start from initiating phase of project. A calm mind-set or experienced project manager will be more ready when risks happen. Proper risk management planning helps the project progress with less chance of getting negative effects by the risk occurred during the project life time.

**Plan Risk Management**

Project team need to come up with plans that can estimate the possible risks that will be faced by the team during the project. Failure of the previous team that was handling the project would be a good example for references for the current team to develop a risk management plan. Risk management plan consist of how the risk management activities will be carried by the project team. Risk management plan includes few components that will help on identifying risks of a project which are the following (Institude, 2013):

* Methodology
* Roles and responsibilities
* Timing
* Probability
* Impact matrix

The project management has provided the baseline of current situation of the project such as budget, time management, module, human resources. All these resources are needed to be counted in the risk management planning. Project charter provides high-level risk, risk description and high-level budget for the risk management planning. Factors like enterprise environmental, organizational process and stakeholders are needed to be considered in the planning of risk management. (Institude, 2013)

Delphi technique is used on for analysis of inputs of the resources given to the risk management planning as it is the most suitable technique to use. With the Delphi technique we can conclude some suitable resolutions for current situation of the project. Expert judgements from specific fields are used to ensure a well-planned risk management developed by the project team. (Satish, 2015)

Meeting with stakeholders should be conducted frequently to discuss and for them to catch up the progress of the project and issues they are facing in the project.

Risk management team of the project will be using methodology to identify and analyze the risks that will be faced by the project team. Risk manager will have to consider the financial impacts of each risks, opportunities, budget and risk control method.

**Roles & Responsibilities**

|  |  |
| --- | --- |
| Position | Responsibilities |
| Project Manager | Risk Planning |
| Risk control |
| Attend risk meeting and lead the team |
| Financial Manager | Submit financial report to project manager |
| Calculate the risk management cost |
| Procurement Manager | Ensure the tendering process goes smoothly |
| Confirmation on the contracts with vendors |
| Human Resource Manager | Maintains resource power |
| Team Leader | Monitor team members |
| Ensure team members progress speed |
| Submit progress report to project manager |

Project manager should have the highest authority to the project including the control of budget, human resources like organizing man power, making decision for the project team etc. Managers of the departments would have to manage what their department was supposed to do. Other managers from different department should not have higher authority than the project manager. List of responsibilities of respective departments should be stated clearly. Managers from every department should report their progress and report to the project manager frequently to keep up to date.

**Risk Breakdown Structure**

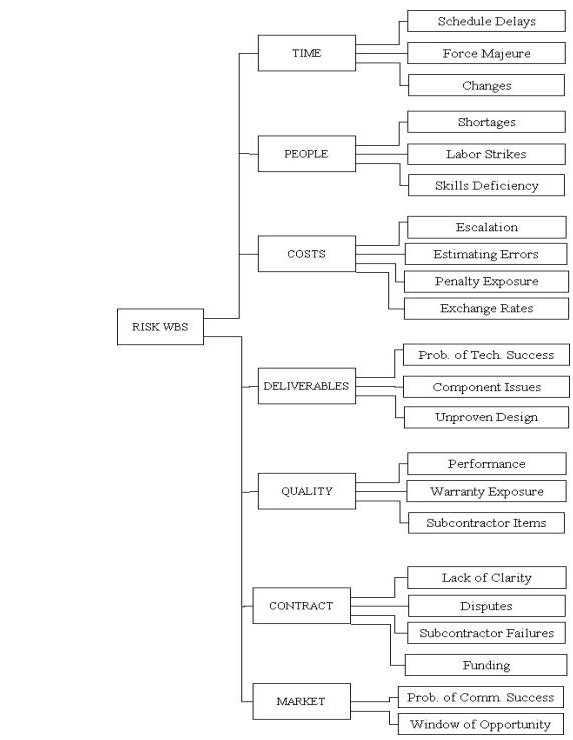


Figure 1https://project-management.com/understanding-the-risk-breakdown-structure-rbs/

**Risk Probability & Impact**

Risk probability are the chances which a risk may occur during the execution of a project.

It is measured by the method of percentage in the probability multiply by impact which is P x I matrix used in the qualitative analysis of risks. Risk impact is the severity level of the impact of the risk to the project. Budget cost, staff health and safety and some critical factor are considered in risk and impact. It is not possible to estimate when will risk happen or how it will happen but by doing analysis on the risks and come out with solutions can help to mitigate the risks or avoid them. Probability x Impact Matrix is used to analyses the risk and categories them into 4 level which is the following (Mind Tools Content Team, 2018).

* - Low impact/low probability
* - Low impact/high probability
* - High impact/low probability
* - High impact/high probability

Risk management process will be done by the risk management monthly to update the risk register since the project has short duration. Risk manager will have to re-asses every risk on the risk register to adjust the solution and update them.

**Identify Risk**

Delphi technique and interview are used to identify the risks which may happen during the duration of project.

Delphi technique, is a forecasting or estimating method based on a discussion by a group of experts (J, 2018). The group are asked to anonymously answer a survey and provide feedback on each other’s answers. The process repeats itself and aim to come up with concrete solutions.

Interviews are conducted between project members, related fields experts and stakeholders to understand what the status of the project is and analyze the situation. Questions will be asked and answered by the interviewee during the interview. The outcome of the interview will be analyzed and added to the risk register.

Situation from the previous team will be analyzed too and find out what was the problem occurred when they was handling the project.

**Risk Register**

Risk register is a documented list of risks that has been identified by the risk manager, It includes potential risks and identified risks. The key components of a risk register are stated below:

* Description of the Risk
* Risk Type (business, project, stage)
* Probability of risk occurring
* Impact of risk
* Risk owner
* Root cause
* Status

Risk register requires opinions from every departments including stakeholders of the system. It must provide framework to the team on how to solve the risk or avoid the risk. Risk register should be reviewed by stakeholders to let them have knowledge on what risks they might face and be prepared for it. If there is any risk that is not identified, they will provide information on the unidentified risk.

**Qualitative Risk Analysis**

# 11. CONCLUSION