UNIVERSITY of GREENWICH

Alliance with FPT Education

ĐẠI HỌC GREENWICH (VIỆT NAM)

Liên kết với Tổ chức Giáo dục FPT

ASSIGNMENT 1
MANAGING A SUCCESSFUL COMPUTING PROJECT

STUDENT PERFORMANCE: TRAN QUANG HUY

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CLASS: GCD0824

TECHER: NGO NGOC TRI

ASSIGNMENT 1 FRONT SHEET

Qualification	**BTEC Level 5 HND Diploma in Computing**		
Unit number and title	Unit 06: Managing a Successful Computing Project		
Submission date		**Date Received 1st submission**	
Re-submission Date		**Date Received 2nd submission**	
Student Name	TRAN QUANG HUY	**Student ID**	GCD18457
Class	GCD0824	**Assessor name**	
Student declaration I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.			
		Student's signature	

Grading grid

P1	P2	P3	P4	M1	M2	D1

❒ Summative Feedback:		❒ Resubmission Feedback:
Grade:	**Assessor Signature:**	**Date:**
IV Signature:		

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INTRODUCTION

The purpose of this paper is to gain an understanding of project management and to give a brief overview of the methodology that underpins most formally run projects. Many organizations do not employ full time Project Managers and it is common to pull together a project team to address a specific need. While most people are not formally skilled in project methodology, taking a role in a project team can be an excellent learning opportunity and can enhance a person's career profile. A project is generally initiated by a perceived need in an organization. Being a one off undertaking, it will have a start and an end, constraints of budgets, time and resources and involves a purpose built team. Project teams are made up of many different team members, for example, end users/customers (of a product or service), representatives from Information Technology (IT), a project leader, business analysts, trainers, the project sponsor and other stakeholders.

Project management is the discipline of managing all the different resources and aspects of the project in such a way that the resources will deliver all the output that is required to complete the project within the defined scope, time, and cost constraints. These are agreed upon in the project initiation stage and by the time the project begins all stakeholders and team members will have a clear understanding and acceptance of the process, methodology and expected outcomes. A good project manager utilizes a formal process that can be audited and used as a blue print for the project, and this is achieved by employing a project management methodology.

1. Project charter

PROJECT CHARTER

1. General Project Information	
Project Name:	**Virtual Assistant for order in restaurant (ORAI)**
Executive Sponsors:	**Tran Quang Huy - Head of R&D department**
Department Sponsor:	**R&D**
Impact of project:	Technology solutions to help order food at restaurants

2. Project Team				
	Name	**Department**	**Telephone**	**E-mail**
Project Manager:	Tran Quang Huy	R&D	0795541090	Supermido1996@gmail.com
Team Members:	Huynh Thai hieu	R&D	01215541090	Thaihieuhuynh1752@gmail.com
	Nguyen Ha Kieu My	R&D	0702477602	kieumynguyenha@gmail.com
	Duong Minh Phuc	R&D	0795584151	duongminhphuc@gmail.com
	Le Thanh Dat	R&D	0487512641	thanhdatle@gmail.com
	Le Hanh Dung	R&D	0354845121	hanhdungle@gmail.com
	Nguyen Quang Ngoc	Marketing	9823913121	ngocnguyenquang@gmail.com

3. Stakeholders
Le Tan Thanh Thinh – CEO of company
R&D department
HR department
Tran restaurant
Business department

4. Project Scope Statement
Project Purpose / Business Justification
This project – ORAI helps support customers in ordering food at restaurants, thereby reducing customers' waiting time and more attentive service.
Objectives (in business terms)
- Reduce the waiting time about 2-5 mins. - Bring new experiences to customers. - The business and introducing food will be more efficient.

Deliverables

- Improving customer service: service time, handling exact requirements, ...
- Apply AI into service, easily compete with other markets

Scope

- Applicable to medium and large restaurants.
- Technology: Face detection/ recognition (CNN Network), Gender and age classification, Recommend product, Rasa core (NLP English, Vietnamese), Java

Project Milestones

***- Initiate**: 31/07/2019*

***- Planning**: 08/08/2019*

- Execute:

- *NLP: 18/08/2019*
- *Module: 28/08/2019*
- *UX/UI: 04/09/2019*

***- Close:** 08/09/2019*

Major Known Risks (including significant Assumptions)

Risk	Risk Rating (Hi, Med, Lo)
Slow progress	High
Team member's attitude & abilities	Medium
Out of budget	High
Technical problems	High

Constraints

- Limit budget for implement project.
- Working between departments is difficult.

External Dependencies

There is an agreement between the stakeholder and project team

5. Communication Strategy

- Update progress to team leader every day.
- Team leader report to project manager every week.
- Keep track on milestones

6. Sign-off			
	Name	**Signature**	**Date (MM/DD/YYYY)**
Executive Sponsor			
Department Sponsor			
Project Manager	Tran Quang Huy	***Huy***	
7. Notes			

Table 1: Project Charter

2. Project aims and Objectives

2.1. Project aims

This project Virtual Assistant for order in restaurant (**ORAI**) aims to:

- Applying new technology fields to operate the system in restaurants
- Solving problems in customer service such as receiving orders, handling correctly
- Reduce waiting time of customers
- The restaurants that the project targets are medium and large restaurants

2.1. Project objectives

- Reduce the time when customers wait to serve to order or change the order
- Increase the accuracy of customer requirements when ordering
- Gathering more information about customers

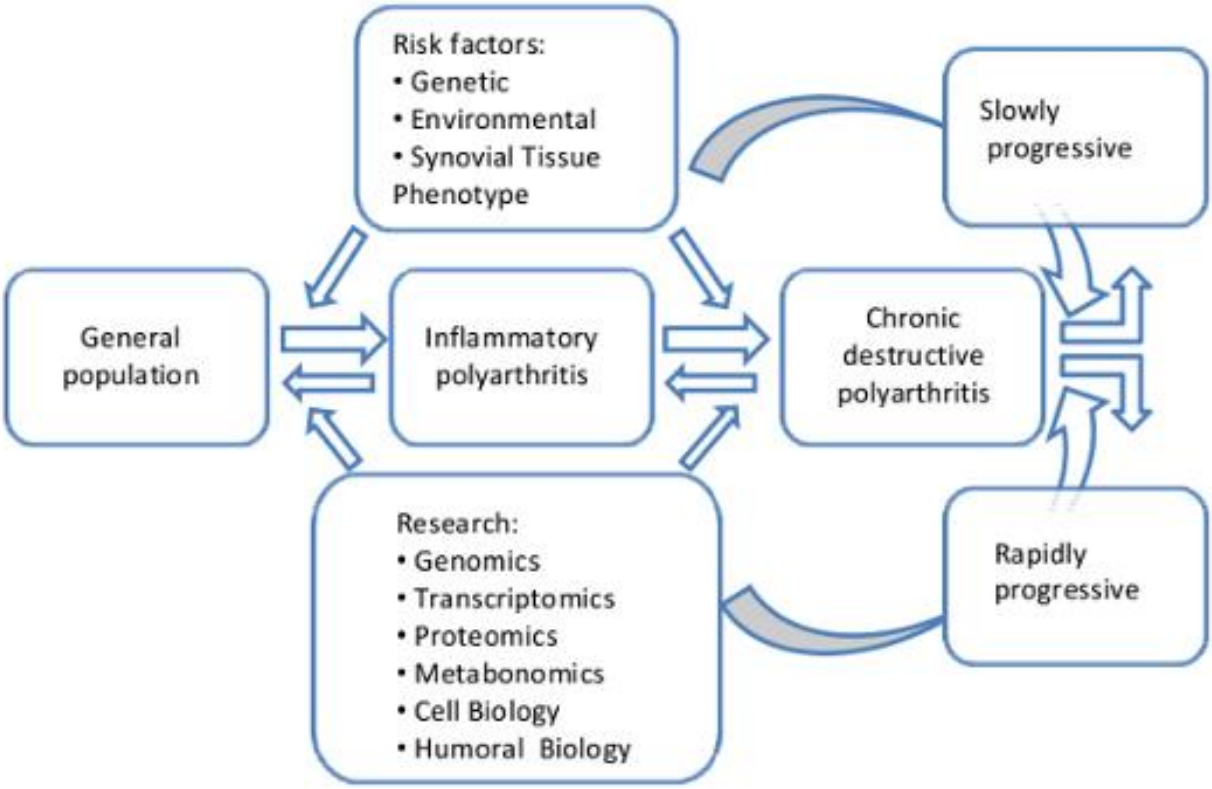


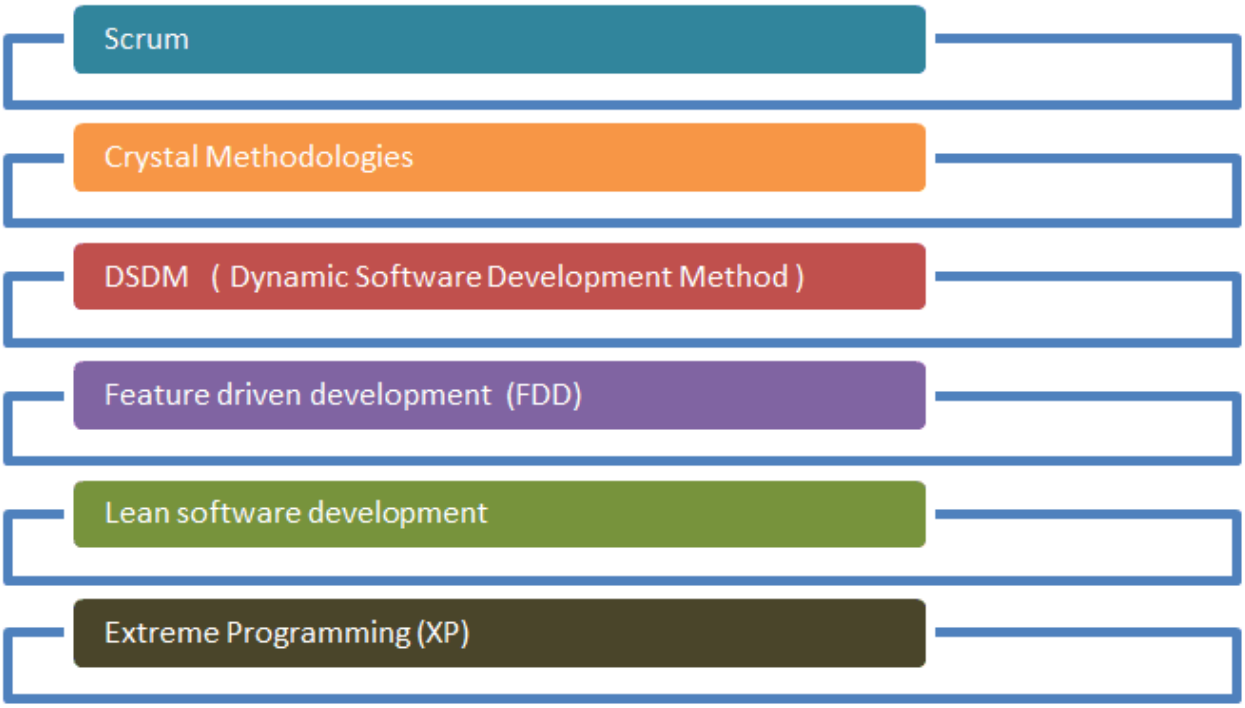
Figure 1: Aims and objectives of PEAC

3. Project management approach and processing methodologies

Agile is an iterative and incremental set of practices of management. It helps teams in an evolving landscape while keeping a focus on the rapid delivery of business value. All the methodologies of Agile project management (Scrum, XP, Kanban, and others) follow the Agile Manifesto which is based on continuous improvement, flexibility, productivity of the team, and delivery of products with high quality. Finally, the methodologies will be agile and these methodologies will make the project successfully. (agiletestingdays, n.d.)

The agile method is based on giving high priority to customer participation, from the very beginning of the development cycle. The objective is to keep the client involved at every step so that they have a product that they are happy with at the end. This method saves the client money and time because the client tests and approves the product at each step of development. If there are defects or challenges, then changes can be made during production cycles to fix the issue. Traditional models of project management would not find defects as early because they do not test as often. Typically, (in traditional methods of production) defects that are not discovered at the different stages can find their way into the final product. This can result in increased overhead prices and client dissatisfaction.

Agile Methodology:



Picture 1: Agile methodologies

This project has proven with their increased client satisfaction rate. The value for businesses that use this model include:

- Lower Cost
- Enables clients to be happier with the end product by making improvements and involving clients with development decisions throughout the process.
- Encourages open communication among team members, and clients.
- Providing teams with a competitive advantage by catching defects and making changes throughout the development process, instead of at the end.
- Speeds up time spent on evaluations since each evaluation is only on a small part of the whole project.
- Ensures changes can be made quicker and throughout the development process by having consistent evaluations to assess the product with the expected outcomes requested.
- It keeps each project transparent by having regular consistent meetings with the clients and systems that allow everyone involved to access the project data and progress.

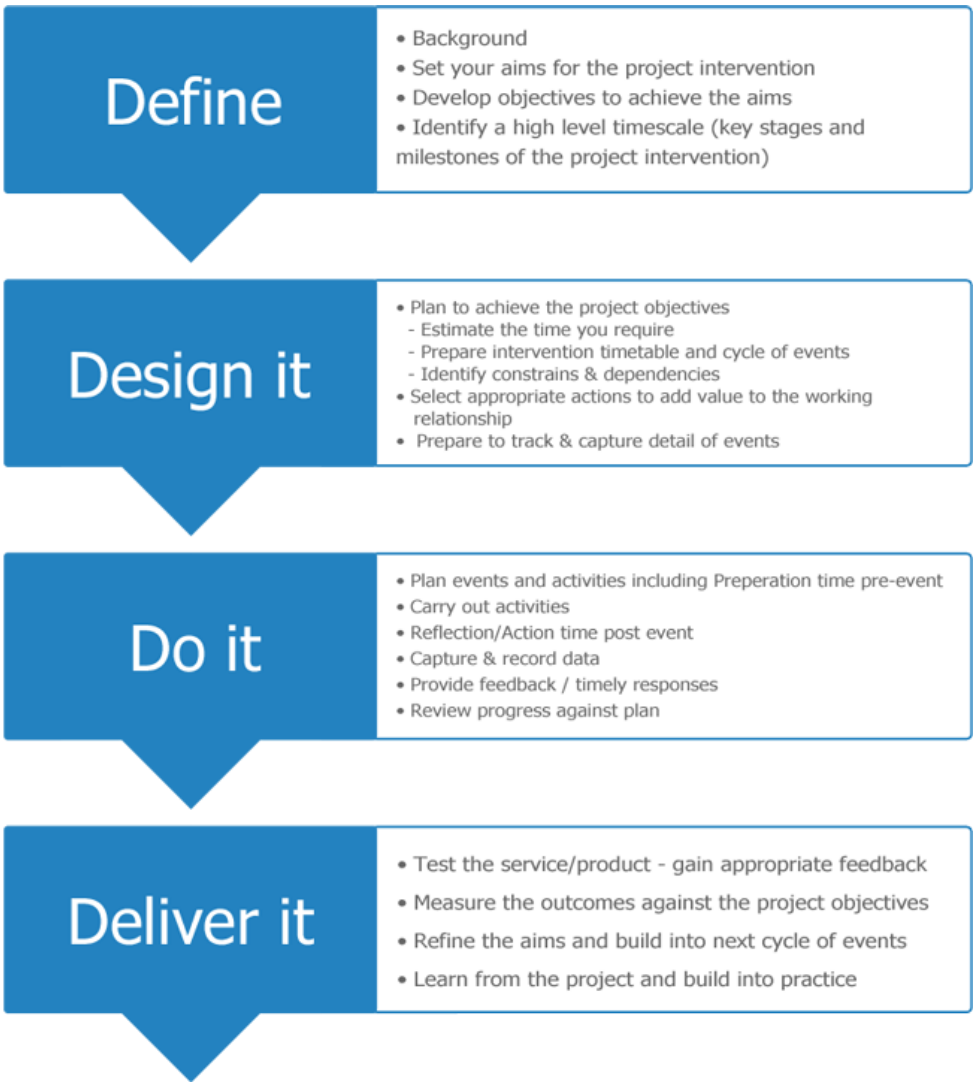


Figure 2: Project Management Model. (the-happy-manager, n.d.)

These benefits of agile software development include:

- **Stakeholder Engagement:** Agile provides multiple opportunities for stakeholder and team engagement – before, during, and after each Sprint. By involving the client in every step of the project, there is a high degree of collaboration between the client and project team, providing more opportunities for the team to truly understand the client's vision. Delivering working software early and frequently increases stakeholders' trust in the team's ability to deliver high-quality working software and encourages them to be more deeply engaged in the project.

- **Transparency:** An Agile approach provides a unique opportunity for clients to be involved throughout the project, from prioritizing features to iteration planning and review sessions to frequent software builds containing new features. However, this also requires clients to understand that they are seeing a work in progress in exchange for this added benefit of transparency.

- **Early and Predictable Delivery:** By using time-boxed, fixed schedule Sprints of 1-4 weeks, new features are delivered quickly and frequently, with a high level of predictability. This also provides the opportunity to release or beta test the software earlier than planned if there is sufficient business value.

- **Predictable Costs and Schedule:** Because each Sprint is a fixed duration, the cost is predictable and limited to the amount of work that can be performed by the team in the fixed-schedule time box. Combined with the estimates provided to the client prior to each Sprint, the client can more readily understand the approximate cost of each feature, which improves decision making about the priority of features and the need for additional iterations.

- **Allows for Change:** While the team needs to stay focused on delivering an agreed-to subset of the product's features during each iteration, there is an opportunity to constantly refine and reprioritize the overall product backlog. New or changed backlog items can be planned for the next iteration, providing the opportunity to introduce changes within a few weeks.

- **Focuses on Business Value:** By allowing the client to determine the priority of features, the team understands what's most important to the client's business, and can deliver the features that provide the most business value.

- **Focuses on Users:** Agile commonly uses user stories with business-focused acceptance criteria to define product features. By focusing features on the needs of real users, each feature incrementally delivers value, not just an IT component. This also provides the opportunity to beta test software after each Sprint, gaining valuable feedback early in the project and providing the ability to make changes as needed.

- **Improves Quality:** By breaking down the project into manageable units, the project team can focus on high-quality development, testing, and collaboration. Also, by producing frequent builds and conducting testing and reviews during each iteration, quality is improved by finding and fixing defects quickly and identifying expectation mismatches early.

When this project uses this model of project management to ensure that throughout the process customers save time, money, and have the flexibility to make changes anytime during the development process. (vcwebdesign, n.d.)

Project scope requires input from the project stakeholders, who together with project managers establish the key elements of budget, objectives, quality and timeline. To determine a project scope, project managers must collect requirements for what the stakeholders need from the project -- this includes the project's objective or the project's deliverables, when the project needs to be completed, and how much they can pay for it. The goal is to gather and record precise and accurate information during this process, so that the project scope effectively reflects all requirements and thus improves the chances for project leaders to deliver products that meet stakeholder expectations on time and on budget. (searchcio, n.d.)

ORAI project's scope include: Initiating, Planning, Executing, Monitoring and Closing. This AI meet the requirements from stakeholder and customers.

Project target:

- Applicable to medium and large restaurants.

Technology:

- Face detection/ recognition (CNN Network)
- Gender and age classification
- Recommend product
- Rasa core (NLP English, Vietnamese)
- Java

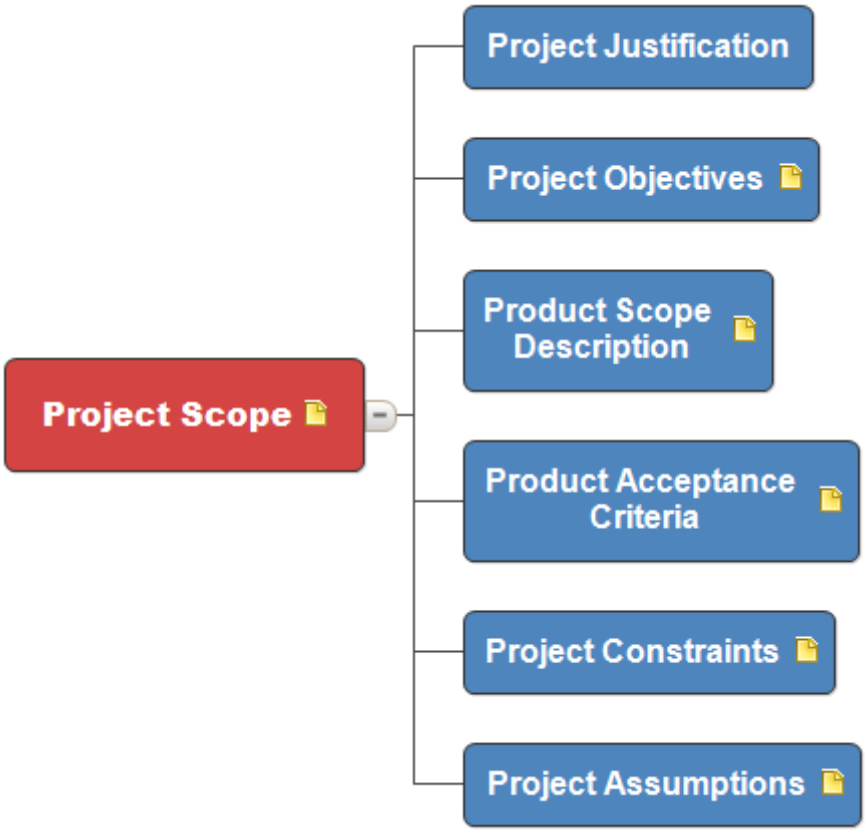


Figure 3: Project Scope Statement. (projectscope, n.d.)

4. Project milestone

Project milestones are a way of knowing how the **ORAI** project is advancing, especially if project managers are not familiar with the tasks being executed. They have zero duration because they symbolize an achievement, or a point of time in a project. Since a milestone's start and end date depends on a task's start and end date, task association is a major feature of a milestone. (clarizen, n.d.)

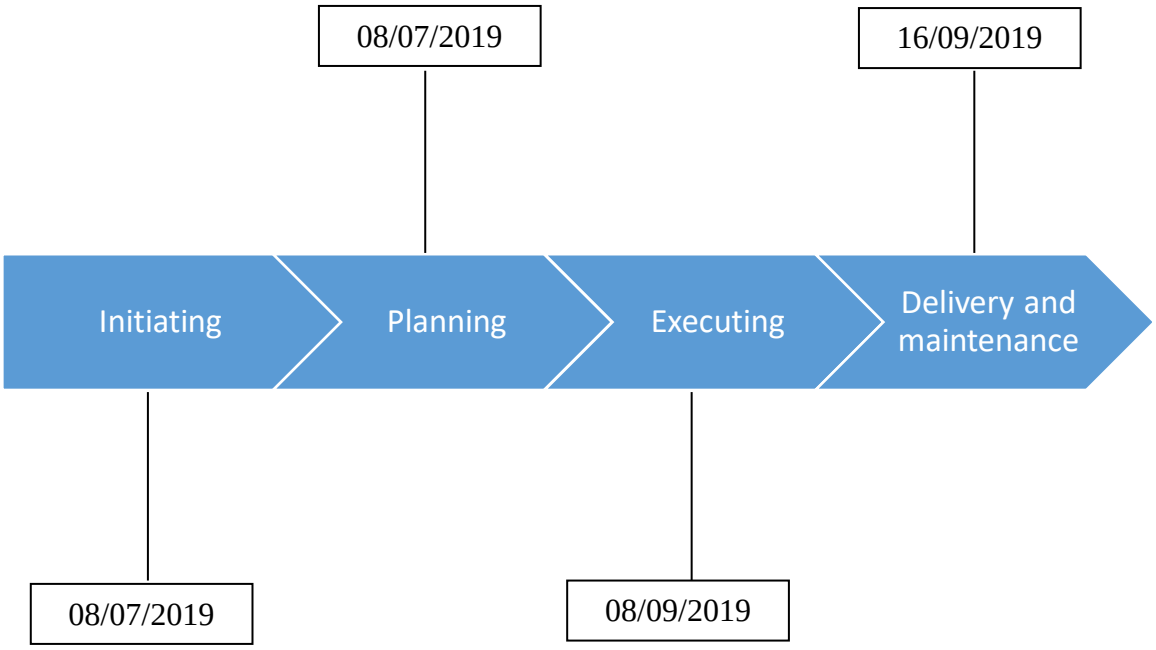


Figure 4: Project Milestone

5. Project communication

5.1. Project communication

Excellent communication is a critical component of project success. In fact, according to the Project Management Institute (PMI), most project failures are due to communication issues. Project communication management ensures that does not happen. It consists of three processes that help make sure the right messages are sent, received, and understood by the right people. Project communication management is one of the ten key knowledge areas in the PMBOK (Project Management Book of Knowledge). The processes included in this area have changed over the years, but in the current version, there are three primary project communication management processes. (wrike, n.d.)

Communication	Frequency	Goal	Owner	Audience
Email				
Project status report	Weekly	Review project status and discuss potential issues or delays	Project manager	Project team + Project sponsor
Meetings				
Team stand-up	Daily	Discuss what each team member did yesterday, what they will do today and any blockers	Project manager	Project team
Project review	At milestone	Present project deliverables, gather feedback and discuss next step	Project manager	Project team + project sponsor
Post-mortem meetings	At end of project	Assess what worked and what did not work and discuss actionable takeaways	Project manager	Project team
Team Gantt				
Task progress updates	Daily	Share daily progress made on project tasks	Project manager	Project team
GitHub				
Update source code	Daily	Commit source code on GitHub for each function.	Project manager	Project team
Pull source code	Daily	Keep track and pull source code from GitHub that team had done yesterday	Project manager	Project team
Skype				
Communication channel	Daily	Talk and exchange information about the project	Project manager	Project team

Table 2:Project Communication

5.2. Team structure

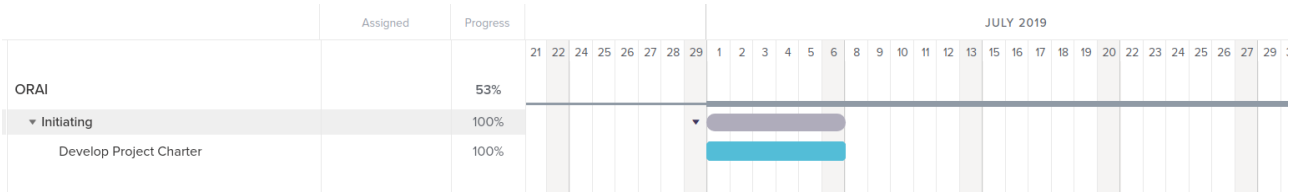
Like families, each team structure has its own particular mix of dynamics and goals. Recognizing the different types of teams and how they work can assist you in creating teams that best serve the needs of ORAI project. While project manager could choose to stick to teams that only fall into one category or another, PM can just as easily form teams that are comprised of a mixture of two or more categories that best meet your company's needs.

No.	Name	Title	Role	Email	Phone
1	Tran Quang Huy	Project manager	Project manager	Supido1996@gmail.com	0795541090
2	Huynh Thai hieu	Senior Developer	Python, SQL	Thaihieuhuh@gmail.com	01215541090
3	Nguyen Ha Kieu My	Senior Developer	Python,Java,SQL	kieuguyenha@gmail.com	0702477602
4	Duong Minh Phuc	Senior Developer	Python,Java	duonnhphuc@gmail.com	0795584151
5	Le Thanh Dat	Senior Developer	Java, NodeJS	thanhdatle@gmail.com	0487512641
6	Le Hanh Dung	Marketer	Marketing	hanhdungle@gmail.com	0354845121
7	Nguyen Quang Ngoc	Graphic desginer	Design, Video, Banner, Backdrop	ngocnguenq@gmail.com	9823913121

Table 3: Team structure

6. Project schedule

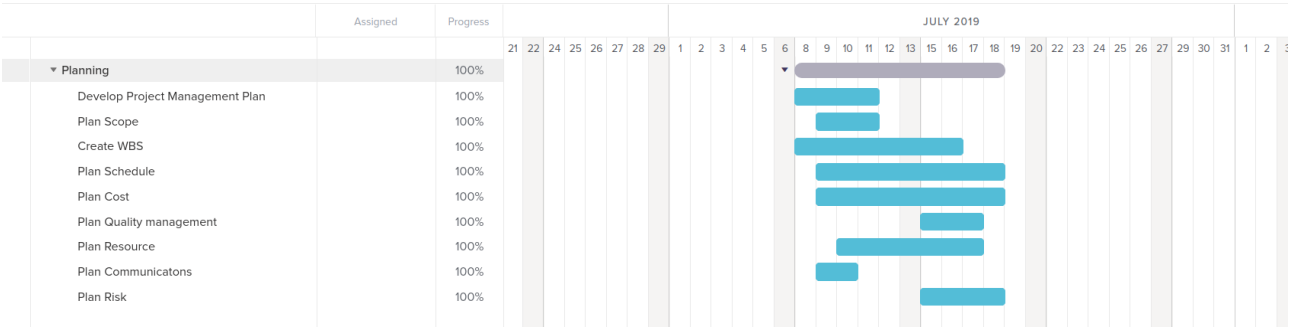
6.1. Initiating phase



Picture 2: Initiating phase

Completing the project charter helps the team get an overview of the project, which can visualize future and future jobs to meet customer needs and technical requirements.

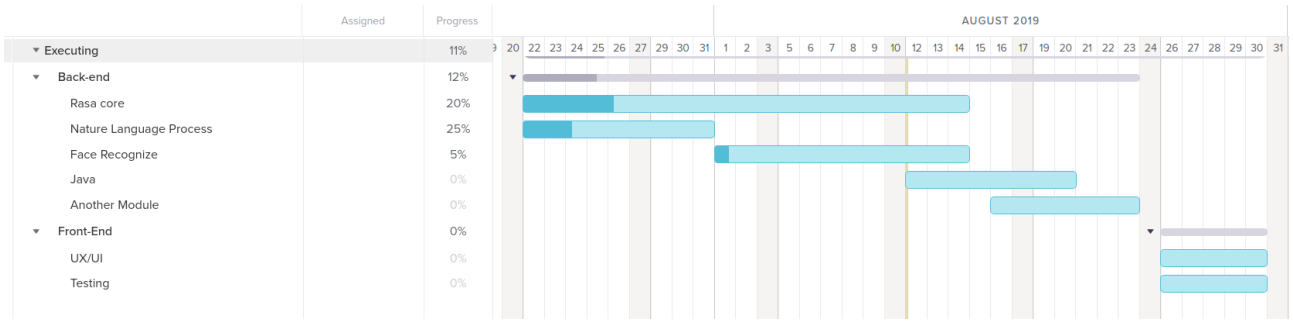
6.2. Planning phase



Picture 3: Planning phase

Planning Phase is an important step in determining the sequence of jobs, assigning tasks and appropriate resources, and evaluating and assessing risks and funding for project implementation.

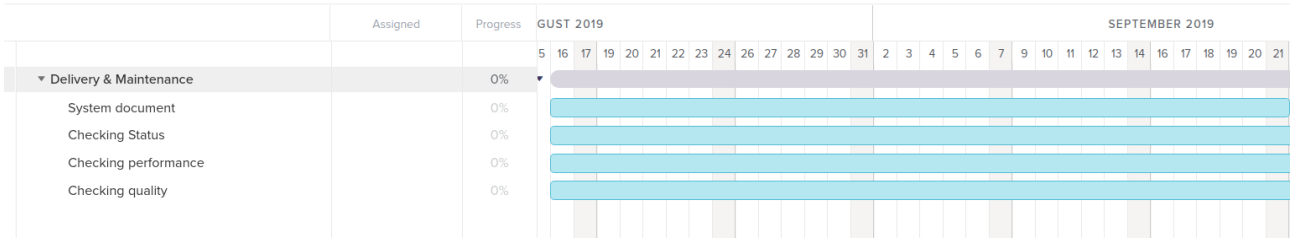
6.3. Executing phase



Picture 4: Executing phase

The implementation of the project consists of two main parts: back-end and front-end to create a complete product with the required features of the product.

6.4. Delivery and maintenance phase



Picture 5: Delivery and maintenance phase

The last part of the project is to maintain and develop products that operate in the best way to serve customers in the best way.

7. Project schedule management plan

7.1. Project schedule activity estimation

Certain activities might be too large or complex for a reliable duration estimate. If an activity takes up more than 10 percent of the project schedule, you might want to break it into several different tasks. You can use a work breakdown structure to reduce these activities into smaller, more manageable tasks. Doing this enables you to set priorities and estimate the duration of tasks more accurately. A work breakdown structure also is useful for building accountability, because you can assign specific tasks to designated project participants. (azcentral, n.d.)

Bottom-up estimating is an extremely helpful technique in project management as it allows for the ability to get a more refined estimate of a particular component of work. In bottom-up estimating, each task is broken down into smaller components. Then, individual estimates are developed to determine what specifically is needed to meet the requirements of each of these smaller components of the work. The estimates for the smaller individual components are then aggregated to develop a larger estimate for the entire task as a whole. In doing this, the estimate for the task as a whole is typically far more accurate, as it allows for careful consideration of each of the smaller parts of the task and then combining these carefully considered estimates rather than merely making one large estimate which typically will not as thoroughly consider all of the individual components of a task. In general, the smaller the scope, the greater the accuracy. (knowledge, n.d.)

These five steps will send you on your way to successful bottom-up estimating:

- Identify All Project Required Tasks
- Estimate All Tasks Identified in Your WBS or Project Activity Definition
- Identify Task Dependencies
- Identify the Resources Required to Complete All Tasks
- Determine When Resources Should Complete These Tasks. (nuwavetech, n.d.)

7.2. Project schedule controlling

Control schedule is a process in project management that involves monitoring the status of activities related to a particular project. Aside from monitoring the status, it also involves updating of the project process as well as managing the changes to the schedule in order to achieve the plan.

Comparing the progress of the project against a scheduled baseline allows project managers to determine if a particular project activity is ahead or behind the schedule. Project managers can then plan on corrective actions to manage the changes to the baseline schedule. This will reduce the risk of delivery of the products or services especially when it is managed well.

The control schedule process is part of the controlling and monitoring process group of project management. The key principle of this process is that the changes should not just be reacted to but should also be controlled proactively. This task falls on the project manager and it is important that the project manager acts immediately before the changes affect or influence the entire project schedule. (knowledge, n.d.)

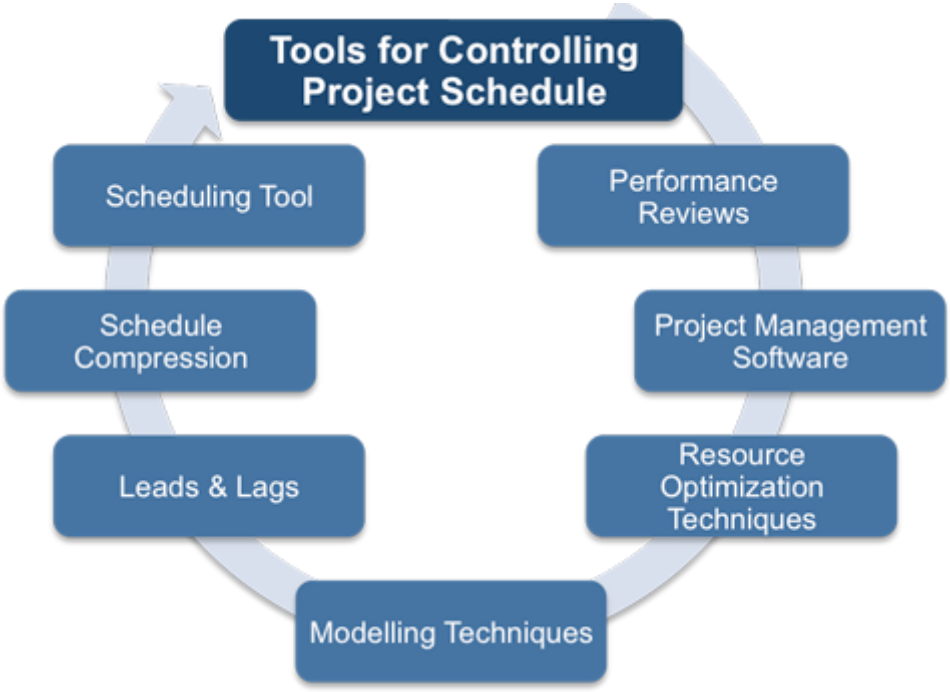


Figure 5: Tools for Controlling Project Schedule

This process is part of monitoring and controlling and is sometimes referred to as 'working the plan' in contrast with the previous processes which are all to do with 'planning the work'. Controlling the schedule involves:

- Determining the current status.
- Influencing factors that could cause schedule changes.
- Identifying if the schedule has changed.
- Managing changes as they occur. (ebooks, n.d.)

8. Project work breakdown structure (WBS)

A work breakdown structure (WBS) is a key of **ORAI** project deliverable that organizes the team's work into manageable sections. The Project Management Body of Knowledge (PMBOK) defines the work breakdown structure as a "deliverable oriented hierarchical decomposition of the work to be executed by the project team." The work breakdown structure visually defines the scope into manageable chunks that a project team can understand, as each level of the work breakdown structure provides further definition and detail. (workbreakdownstructure, n.d.)

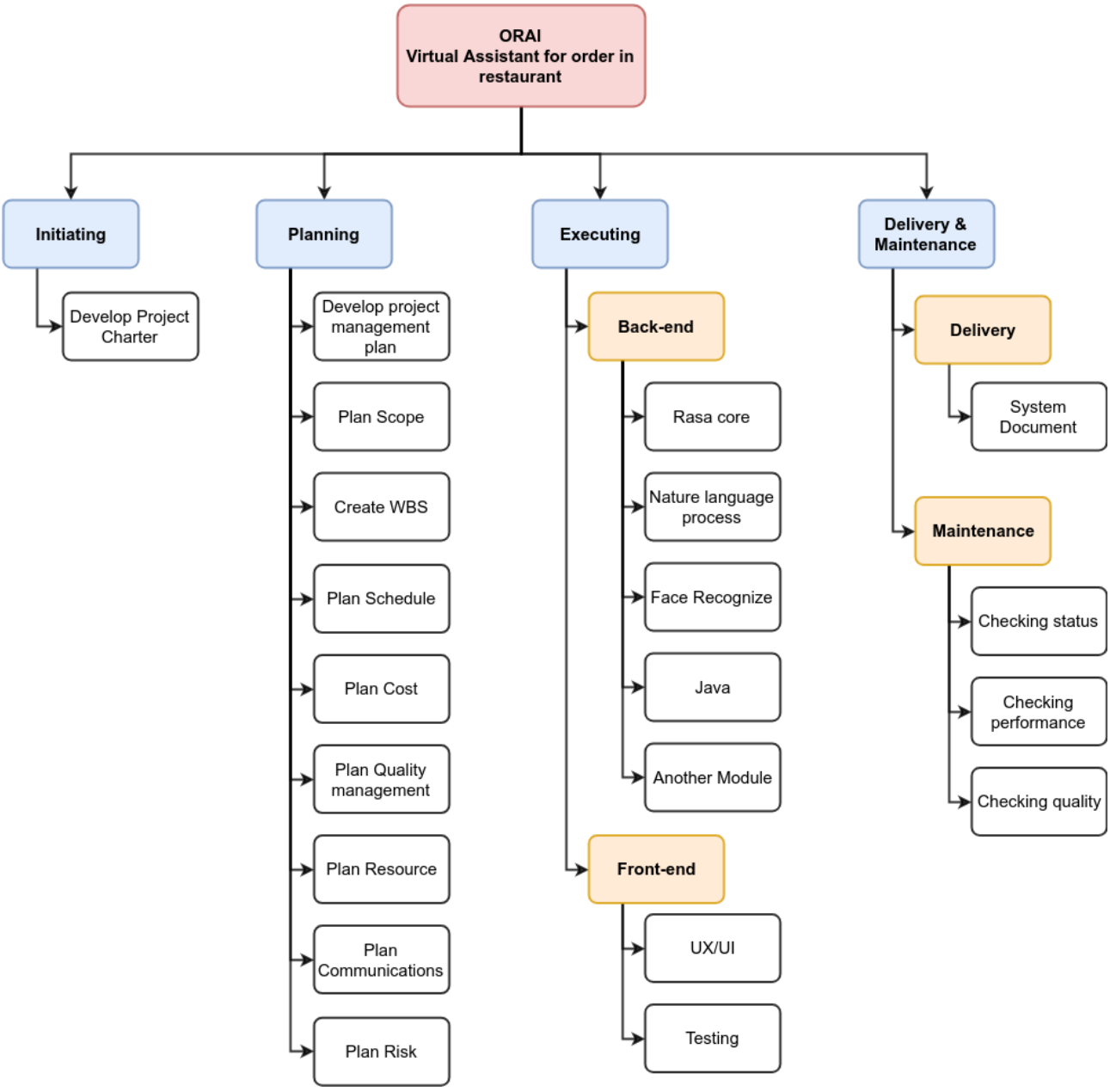


Figure 6: Project work breakdown structure (WBS)

The WBS for the ORAI Project is comprised of 4 works packages represents 4 main phases of the development process, which are Initiating phase, Planning phase, Executing phase and Delivery & Maintenance phase. In order to assign those work to team member, following Gantt Chart will represents as the Project Schedule management.

9. Project cost management

9.1. Project cost estimation

The **ORAI** project lives and dies by its budget. Just think: a project can only come together with all the necessary materials and labor, and those materials and labors cost money. And in this new economic reality, businesses are looking to pay less and less for those materials and labor while maintaining or even increasing quality and scope. So how do we put together a budget that will bring the project to fruition while keeping costs to a minimum? That's why proper cost estimation is important.

Cost estimation in project management is the process of forecasting the financial and other resources needed to complete a project within a defined scope. Cost estimation accounts for each element required for the project from materials to labor and calculates a total amount that determines a project's budget. An initial cost estimate can determine whether an organization greenlights a project, and if the project moves forward, the estimate can be a factor in defining the project's scope. If the cost estimation comes in too high, an organization may decide to pare down the project to fit what they can afford. (It is also required to begin securing funding for the project.) Once the project is in motion, the cost estimate is used to manage all of its affiliated costs in order to keep the project on budget. (wrike, n.d.)

Phase	Process	Members	Work hours	Cost per hour	Total
Initiating					
	Develop Project Charter	5 members	24 hours	$5	$600
Planning					
	Develop Project Management Plan	4 members	24 hours	$5	$480
	Plan Scope	3 members	16 hours	$5	$240
	Create WBS	1 members	12 hours	$5	$70
	Plan Schedule	2 members	72 hours	$5	$720
	Plan Cost	3 members	20 hours	$5	$300
	Plan Quality management	3 members	18 hours	$5	$270
	Plan Resource	3 members	10 hours	$5	$150
	Plan Communication	1 member	10 hours	$5	$50
	Plan Risk	3 members	24 hours	$5	$360
Executing					
Back-end	Rasa core	2 members	528 hours	$6	$,6336
	Nature Language Process	2 members	360 hours	$5	$3,600
	Face Recognize	3 member	340 hours	$6	$6,120
	Java	2 members	120 hours	$5	$1,200
	Another Module	2 members	80 hours	$5	$800
Front-end	UX/UI	2 members	40 hours	$5	$400
	Testing	3 members	18 hours	$4	$216
Delivery & Maintenance					
Delivery	System Document	4 members	100 hours	$3	$1,200
Maintenance	Checking status	1 members	40 hours	$4	$120
	Checking performance	1 members	40 hours	$4	$120
	Checking quality	2 members	60 hours	$5	$600
Total					**$23,952**

Table 4: Project cost estimation each phase

Equipment and domain name cost:

Item	Description	Quantity	Cost	Total
Sensor	Motion sensor and identification	2	$50	$100
Camera	Webcam Microsoft LifeCam Studio HD 1080p	2	$105	$210
LCD touch screen	RASPBERRY 7 INCH 800X480 TOUCH SCREEN	2	$520	$1040
Server	CPU type: ES-2630v4, CPU vCores: 8 Cores, RAM: 16Gb, SSD: 128Gb, Bandwidth: 100 Mbs, Monthly Traffic: 2TB	36 month	$121.75 / Month	$4383
Total				**$5733**

Table 5: Equipment and domain name cost

9.2. Project cost management plan

The Cost Management Plan clearly defines how the costs on a project will be managed throughout the project's lifecycle. It sets the format and standards by which the project costs are measured, reported and controlled. The Cost Management Plan:

- Identifies who is responsible for managing costs
- Identifies who has the authority to approve changes to the project or its budget
- How cost performance is quantitatively measured and reported upon
- Report formats, frequency and to whom they are presented (projectmanagementdocs, n.d.)

Costs for this project will be managed at the fourth level of the Work Breakdown Structure (WBS). Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CA's will measure and manage the financial performance of the project. Although activity cost estimates are detailed in the work packages, the level of accuracy for cost management is at the fourth level of the WBS. Credit for work will be assigned at the work package level. Work started on work packages will grant that work package with 50% credit; whereas, the remaining 50% is credited upon completion of all work defined in that work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost Performance Index (CPI) and **Schedule Performance Index (SPI)** will be reported on a monthly basis by the Project Manager to the Project Sponsor & Stakeholders:

- Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary; as such, those values will be changed to yellow in the project status reports.
- Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage; as such, those values will be changed to red in the project status reports.

This will require corrective action from the Project Manager in order to bring the cost and/or schedule performance indexes below the alert level. Corrective actions will require a project change request and be must approved by the Project Sponsor before it can become within the scope of the project.

10. Project risk management

10.1. Project risk

Risk category	Risk	Responsible by	Risk rating
Technical	Requirements	Project team	Medium
	Technology	Technical team	High
	Interfaces	Developer team	Medium
	Performance	Project team	High
	Quality	Project team	High
External	Customer	Project manager	Medium
	Contract	Project manager	Medium
	Market	Marketing team	High
	Supplier	Project team	Low
Organizational	Project Dependencies	Project team	Medium
	Logistics	Project team	Medium
	Resources	Project manager	Medium
	Budget	Project manager	High
Project management	Planning	Project team	Medium
	Schedule	Project team	Medium
	Estimation	Project manager	High
	Controlling	Project manager	Medium
	Communication	Project team	Low

Table 6: Project risks

10.2. Risk management plan

Even the most carefully planned project can run into trouble. No matter how well you plan, your project can always encounter unexpected problems. Team members get sick or quit, resources that you were depending on turn out to be unavailable, even the weather can throw you for a loop (e.g., a snowstorm). So does that mean that you're helpless against unknown problems? No! You can use risk planning to identify potential problems that could cause trouble for your project, analyze how likely they are to occur, take action to prevent the risks you can avoid, and minimize the ones that you can't.

A risk is any uncertain event or condition that might affect your project. Not all risks are negative. Some events (like finding an easier way to do an activity) or conditions (like lower prices for certain materials) can help your project. When this happens, we call it an opportunity; but it's still handled just like a risk.

There are no guarantees on any project. Even the simplest activity can turn into unexpected problems. Anything that might occur to change the outcome of a project activity, we call that a risk. A risk can be an event (like a snowstorm) or it can be a condition (like an important part being unavailable). Either way, it's something that may or may not happen …but if it does, then it will force you to change the way you and your team work on the project.

There are four basic ways to handle a risk.

- **Avoid:** The best thing you can do with risk is avoid it. If you can prevent it from happening, it definitely won't hurt your project. The easiest way to avoid this risk is to walk away from the cliff, but that may not be an option on this project.
- **Mitigate:** If you can't avoid the risk, you can mitigate it. This means taking some sort of action that will cause it to do as little damage to your project as possible.
- **Transfer:** One effective way to deal with a risk is to pay someone else to accept it for you. The most common way to do this is to buy insurance.
- **Accept:** When you can't avoid, mitigate, or transfer risk, then you have to accept it. But even when you accept a risk, at least you've looked at the alternatives and you know what will happen if it occurs. If you can't avoid the risk, and there's nothing you can do to reduce its impact, then accepting it is your only choice. (projectmanagement, n.d.)

11. Project qualitative and quantitative

11.1. Project qualitative research

Like all scientific research, qualitative research aims at the systematic application of a predetermined set of procedures, to collect and analyze evidence, and present findings that resolve issues. Qualitative research however aims to gain an understanding only on the particular case studied rather than to generalize, or to use the data to support hypothesis. For instance, in a qualitative study on organizational behavior, the focus is on understanding the behavior of the employees and the reasons for such behavior rather than using the sample to predict the personality types of the workforce.

JAD (Joint Application Development) is a methodology that involves the client or end user in the design and development of an application, through a succession of collaborative workshops called JAD sessions. Chuck Morris and Tony Crawford, both of IBM, developed JAD in the late 1970s and began teaching the approach through workshops in 1980.

The **JAD** approach, in comparison with the more traditional practice, is thought to lead to faster development times and greater client satisfaction, because the client is involved throughout the development process. In comparison, in the traditional approach to systems development, the developer investigates the system requirements and develops an application, with client input consisting of a series of interviews.

A variation on **JAD**, rapid application development (RAD) creates application more quickly through such strategies as using fewer formal methodologies and reusing software components.

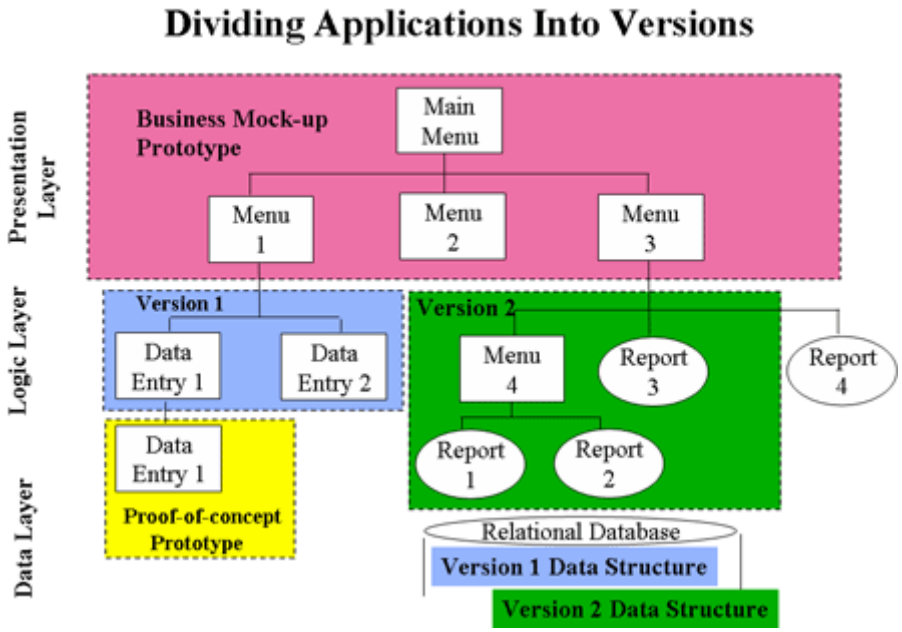


Figure 7: Dividing Applications Into Versions. (batimes, n.d.)

The key actors in such a session are:

- The Executive Sponsor, or the system owner, who makes decisions and provides resources to execute the project.
- The Project Leader or Manager, or the leader of the project execution team, who is responsible for coordination, time-based deliverables, and resource utilization. The project leader may incorporate key members of the project team, with specific roles and responsibilities.
- The customers and end users. They provide the user input to the executive sponsor and the project leader, and the discussion is among these three groups to arrive at a consensus.
- Facilitator or Session Leader, who presides over the meeting, and ensures that the meeting covers all the required issues. A good facilitator tries to mediate when disputes or disagreements arise and bring about a consensus.
- The Scribe or Modeler, who records the proceedings of the meeting.

One approach recommends substituting a manual scribe with computer aided software engineering (CASE) for this purpose. The complexity of using CASE tools however slows down the process and becomes the bottleneck, and as such the dominant view is to stick with a scribe and recording the proceedings with a word processor.

The involvement of the customer and the presence of all stakeholders allow for accurate conceptualization of requirements incorporating technical limitations. This saves time by freezing requirements, eliminating the possibility of scope creep, improving quality, and reducing the chances of errors or misunderstandings.

The proper application of JAD reduces process delays and speeds up the project or application development by 20 to 50 percent, and effects cost savings by reducing the time spent by experts, such as project leaders, on non-remunerative activities such as requirements gathering. (brighthubpm, n.d.)

11.2. Project quantitative research

Quantitative research deals in numbers, logic, and an objective stance. Quantitative research focuses on numeric and unchanging data and detailed, convergent reasoning rather than divergent reasoning (i.e., the generation of a variety of ideas about a research problem in a spontaneous, free-flowing manner). (libguides, n.d.)

Its main characteristics are:

- The data is usually gathered using structured research instruments.
- The results are based on larger sample sizes that are representative of the population.
- The research study can usually be replicated or repeated, given its high reliability.
- Researcher has a clearly defined research question to which objective answers are sought.
- All aspects of the study are carefully designed before data is collected.
- Data are in the form of numbers and statistics, often arranged in tables, charts, figures, or other non-textual forms.
- Project can be used to generalize concepts more widely, predict future results, or investigate causal relationships.

Researcher uses tools, such as questionnaires or computer software, to collect numerical data. The overarching aim of a quantitative research study is to classify features, count them, and construct statistical models in an attempt to explain what is observed.

In order to conduct a quantitative research for information gathering and data collection to generate the knowledge to support the development of this ORAI project, the most appropriate method is to design an online survey using Google Form with following questionnaire:

Virtual Assistant for order in restaurant (ORAI)

Thank you for using our system. We hope you had as much fun attending as we did organizing it.

We want to hear your feedback so we can keep improving our logistics and content. Please fill this quick survey and let us know your thoughts (your answers will be anonymous).

How satisfied were you with the system? *

	1	2	3	4	5	
Not very	○	○	○	○	○	Very much

How relevant and helpful do you think it was for your order? *

	1	2	3	4	5	
Not very	○	○	○	○	○	Very much

What were your key take aways from this system?

Short-answer text

How satisfied were you with the logistics? *

1 = Very disatisfied 5 = Very satisfied

Picture 6: ORAI Survey 1

Picture 7: ORAI Survey 1

How satisfied were you with the logistics? *

1 = Very disatisfied 5 = Very satisfied

	1	2	3	4	5	N/A
Accommodati...	○	○	○	○	○	○
Welcome kit	○	○	○	○	○	○
Communicatio...	○	○	○	○	○	○
Transportation	○	○	○	○	○	○
Welcome activ...	○	○	○	○	○	○
Venue	○	○	○	○	○	○
Activities	○	○	○	○	○	○
Closing cerem...	○	○	○	○	○	○

Additional feedback on system? *

Short-answer text

Picture 9: ORAI Survey 2

Which function did you find most relevant? *

	Not relevant	Relevant	Very relevant	Did not attend
Face recognize	○	○	○	○
Virtual Assistant	○	○	○	○
LCD Touch Screen	○	○	○	○
Ordering food	○	○	○	○

Picture 8: ORAI Survey 3

CONCLUSION

All projects are designed for a specific period of time and the process of project closure is an important aspect of project management. The purpose of a formal closedown to the project is to address all issues generated by the project, to release staff from the project and go through a 'lessons learnt' exercise. At this stage a formal acceptance from the customer (the person for whom the process product has been created) is gained to indicate their sign-off on the project. This is generally done in the form of a customer acceptance form and is the formal acknowledgement from the customer that the project has ended. Once signed off, the project team is disbanded and no more work carried out. However, the project team will come together for what is called a Project Review Meeting, to formally end the project and go over any outstanding issues such as ongoing maintenance, the closing of project files and conduct a team review of the project. As a result, a Project Closure Report is created to formalize how successfully the project has achieved its objectives, and how well the project has performed against its original business case, the scope, project plan, budget and allocated timeframes.

The Project Manager may also create a process improvement document that reviews the processes used by the project (e.g. what did we do well, what mistakes did we make) so that the organization can learn from this project and make further projects more successful. Because the project was run by a team of people who have spent a lot of time involved in the success of a particular piece of work, that has taken them out of their usual day-to-day activities it is important to hold some type of social closing event. This might be dinner, drinks or some type of group activity where everyone can be recognized and rewarded for their efforts.

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