



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SYSTEM ANALYSIS & DESIGN SECTION-8**

**SECD2613**

**20232024/2**

**PROJECT PROPOSAL:**

**LECTURER'S NAME:**

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## **1.0 Introduction**

Sunway Lagoon Theme Park, a popular destination for families and thrill-seekers, faced a common challenge which is ensuring the safety and security of its guests amidst the bustling crowds and numerous attractions. With incidents of lost children and other safety concerns arising, theme park management recognized the urgent need for a comprehensive solution to monitor guest movements and respond swiftly to emergencies.

Sunway Lagoon Theme Park has diverse facilities spread across its landscape. However, in the event of a missing child or any safety-related incident, the absence of a tracking system poses significant challenges for park personnel in immediate response. Recognizing the imperative to enhance guest safety, our objective is to elevate Sunway Lagoon Theme Park's security infrastructure to ensure guests can enjoy their visit with peace of mind, confident in the prioritization of their safety.

In response to such challenges, our proposal seeks to refine and optimize Sunway Lagoon Theme Park's currently used security system. By implementing an advanced tracking system and enhancing emergency response protocols, we aim to enhance the park's capacity to monitor guest movements effectively. In this proposal, we will provide our plans for the development of the security system in Sunway Lagoon Theme Park to find the best and most effective system that ensures guests can fully enjoy their visit with peace of mind, knowing that their safety is prioritized.

## **2.0 Background Study**

To maintain security and handle any safety concerns, Sunway Lagoon Theme Park currently relies mostly on manual patrols carried out by a small group of committed staff members outfitted with walkie-talkies. Although these patrols are visible throughout the park, their reach and efficacy are constrained. The capacity to track the movements of guests in real time is severely limited in the absence of a centralized tracking system.

Lack of a centralized tracking system makes it difficult for park employees to respond quickly in the unfortunate event of a missing child or other safety issue. Finding people who are in distress becomes difficult when there is no system in place to track their movements thoroughly, which frequently causes response times to be delayed. Furthermore, these difficulties are worsened by the fact that staff members primarily rely on walkie-talkies for communication, which can be problematic in emergency situations due to signal interference or range limitations.

The present security protocols at Sunway Lagoon Theme Park show a dedication to guaranteeing visitor safety, but their reliance on manual patrols and antiquated communication technology highlights the system's fundamental flaws. The ability of the park to give its visitors a safe and secure environment is still jeopardized in the absence of the technological infrastructure and preventative measures required to keep an eye on visitor movements and react quickly to emergencies. Therefore, in order to satisfy the changing needs, it is crucial that the park's security system be improved.

### **3.0 Problem Statement**

#### **1. Lack of Real-Time Monitoring:**

There is no centralized tracking system in place at Sunway Lagoon Theme Park's current security setup to keep an eye on visitors' movements in real time. In the absence of this ability, park management will find it extremely difficult to recognize and respond quickly to safety issues, like missing children or emergencies. This restriction impairs the park's ability to properly manage and mitigate potential risks and incidents in addition to jeopardizing the safety and wellbeing of its visitors.

#### **2.Limited Communication Infrastructure:**

At Sunway Lagoon Theme Park, staff members primarily communicate via walkie-talkies, which have a number of drawbacks. During emergencies, the use of walkie-talkies can cause communication breakdowns and make it more difficult to transmit vital information. Additionally, poor range or signal interference may make it more difficult for park employees to coordinate effectively, which could jeopardize the effectiveness and efficiency of emergency response operations. The necessity for a more durable and dependable communication infrastructure is highlighted by this reliance on antiquated communication technology.

#### **3. Insufficient Surveillance Coverage:**

A small staff team's manual patrols throughout Sunway Lagoon Theme Park may leave gaps in the monitor system. It's possible that some park areas are under- or unmonitored, which leaves them open to unreported safety incidents or security threats. The park's capacity to promptly and effectively identify and manage possible risks or incidents is weakened by this lack of thorough surveillance coverage. To increase overall security and safety in the park, it is essential to improve surveillance coverage through technological solutions or staff placement that is strategically planned.

#### **4. Lack of Guest Accountability:**

The absence of a centralized tracking system makes it challenging to hold guests accountable for their actions or whereabouts within Sunway Lagoon Theme Park. Without a mechanism to monitor guest movements and behavior, park management may face difficulties in addressing safety concerns or managing unruly behavior effectively. Establishing guest accountability measures, such as digital tracking systems or guest registration processes, is essential to enhance overall safety and security within the park. These measures not only promote responsible guest behavior but also enable park management to respond swiftly to safety incidents or emergencies.

## 4.0 Proposed Solutions

Easytrack is an extraordinary system that improves guest safety and security by providing seamless integration with existing security infrastructure .It can detect the location of the guest when the guests scan their ticket with the time recorder machine which will show guest's location to the theme park management .Easytrack can empower park management to effectively monitor guest movements and respond swiftly to emergencies. This system has the potential to revolutionize the way theme parks manage crowd control, ensuring a safer and more enjoyable experience for all visitors.

### Technical feasibility

Easytrack requires a time recorder machine in different areas of the theme park ,strong database system and user-friendly interface for theme park management to know the guest's location.The current technical resources are sufficient for the new system.

### Operational feasibility

Easytrack is essential and needed for guests to ensure their safety and create an environment where guests can enjoy their trip with peace of mind.Besides,staff training will be provided so they can use Easytrack effectively and enhance overall operational efficiency.Human resources are available to operate the system once it has been installed.

### Economic feasibility (CBA)

Assumptions	
Discount rate	10%
Sensitivity factor(cost)	1.1
Sensitivity factor(benefits)	0.9
Annual change in production costs	7%
Annual change in benefits	5%

Estimated costs	
Hardware	RM30000
Software	RM10000
Training	RM5000
Maintenance	RM3000 per year
Salary	RM20000 per year

Estimated Benefits	
operational Optimization	RM30000 per year
increase ticket sales	RM50000 per year

Costs	YEAR 0	YEAR 1	YEAR 2	YEAR 3
Development cost				
Hardware	33000			
Software	11000			
Training	5500			
Total	49500			
Production cost				
Maintenance		3300	3531	3778
Salary		22000	23540	25188

<b>Annual Prod.Costs (Present Value)</b>		<b>25300</b> <b>23000</b>	<b>27071</b> <b>22373</b>	<b>28966</b> <b>21763</b>
<b>Accumulated Costs</b>		<b>72500</b>	<b>94873</b>	<b>116636</b>

<b>Benefits</b>	<b>YEAR 0</b>	<b>YEAR 1</b>	<b>YEAR 2</b>	<b>YEAR 3</b>
<b>operational Optimization</b>		<b>27000</b>	<b>28350</b>	<b>29767</b>
<b>increase ticket sales</b>		<b>45000</b>	<b>47250</b>	<b>49613</b>
<b>Annual benefits (Present value)</b>		<b>72000</b> <b>65454</b>	<b>75600</b> <b>62479</b>	<b>79380</b> <b>59639</b>
<b>Accumulated benefits</b>		<b>65454</b>	<b>127933</b>	<b>187572</b>
<b>Gain or Loss</b>		<b>(7046)</b>	<b>33060</b>	<b>70936</b>
<b>Profitable Index (PI)</b>	<b>1.43</b>			

**Profitability index = 1.43, showing that it is a good investment because its index is less than one.**

## 5.0 Objectives

The objective of implementing Easytrack in Sunway Lagoon Theme Park is:

- 1) Real-time Tracking: enable real-time tracking of guest movements, ensure their safety, and provide smooth and rapid assistance in case of emergencies.
- 2) Efficient Crowd Management: improve crowd management by monitoring guest density in different areas of the park and enhancing the overall guest experience.
- 3) Swift Emergency Response: integrate Easytrack with the park's emergency response protocols to enable prompt identification and resolution of safety concerns, such as lost children, medical emergencies, or unauthorized access to restricted areas.
- 4) Enhanced Guest Experience: by prioritizing guest safety and security, create an environment where guests can enjoy their trip with peace of mind, knowing that measures are in place to ensure their well-being.
- 5) Operational Optimization: streamline park operations by leveraging Easytrack's capabilities to improve staff coordination, optimize resource allocation, and enhance overall operational efficiency.



## 6.0 Scope of the Project

The area that will be covered by the Easytrack:

Included:

1)Guest Movement Tracking: The system will cover tracking guest movements throughout the entire Sunway Lagoon Theme Park premises, including:

- Attractions: Tracking guests as they move between rides, slides, and other attractions.
- Dining Areas: Monitoring guest traffic in restaurants, cafes, and food courts.
- Restrooms: Tracking guest movements to and from restroom facilities.
- Queues: Monitoring guest queues for attractions to optimize wait times and crowd flow.

2)Emergency Response Coverage: The system will include features for emergency response and management, such as:

- Lost Children: Providing tools for swift identification and location of lost children.
- Medical Emergencies: Facilitating rapid response to medical emergencies by tracking guest locations and coordinating with medical personnel.
- Security Incidents: Assisting security personnel in responding to security incidents, including unauthorized access and disturbances.

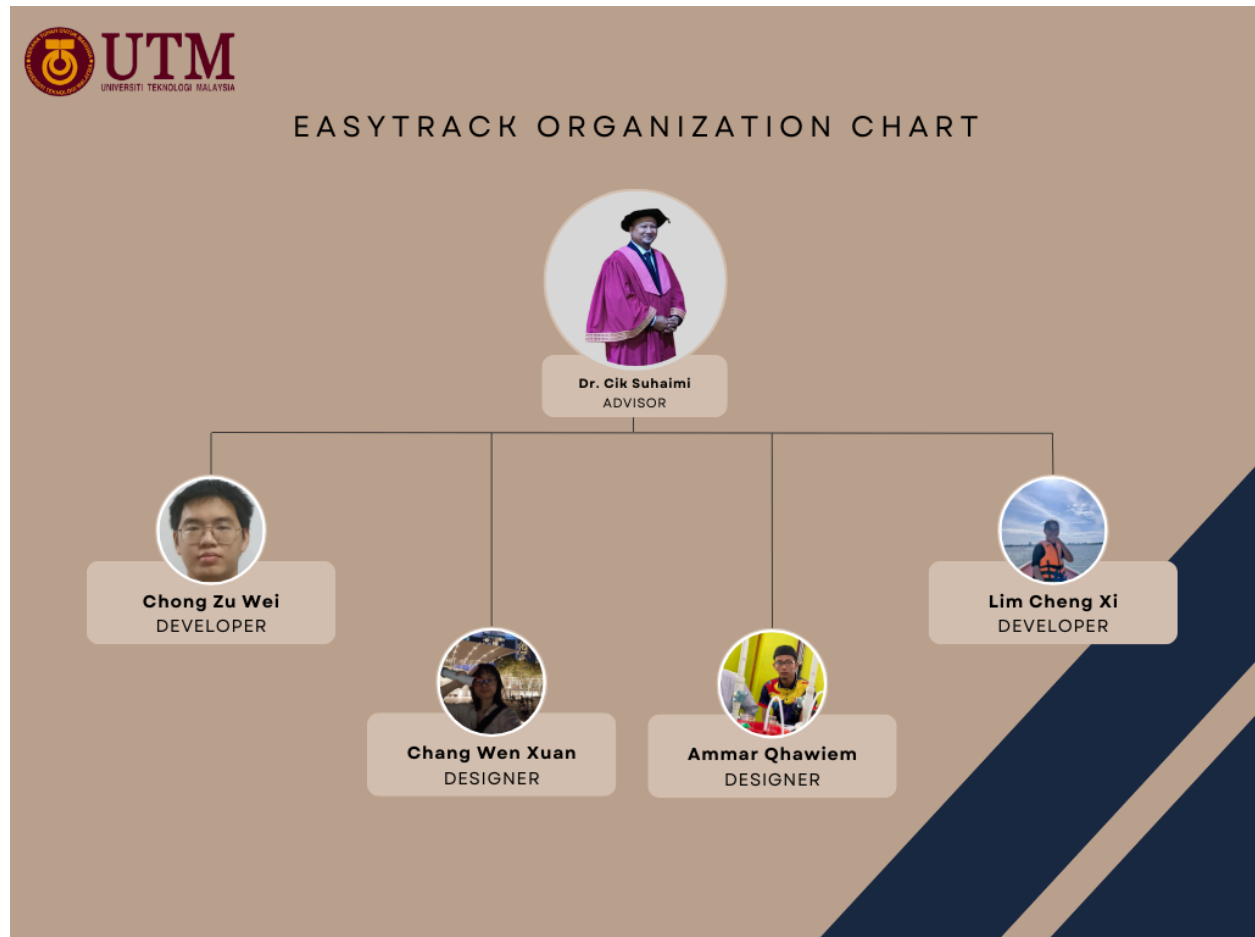
Not Included:

1)External Areas: The system will not extend beyond the boundaries of Sunway Lagoon Theme Park and will not cover tracking guests outside of the park premises.

2)Non-Guest Tracking: The system will focus on tracking guest movements and will not include tracking of park staff, maintenance personnel, or other non-guest individuals.

## 7.0 Project Planning

### 7.1 Human Resource



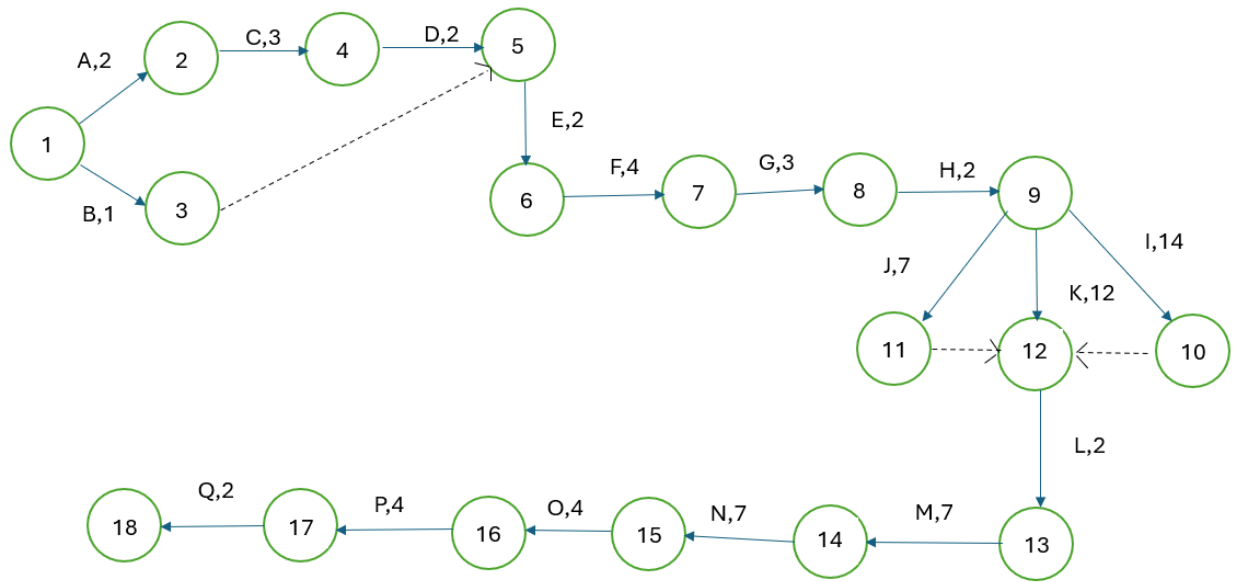
## 7.2 Work Breakdown Structure (WBS)



### 7.3 PERT Chart

Activity		Predecessor	Duration
<b>A</b>	Define objective project	None	2
<b>B</b>	Interview user management	None	1
<b>C</b>	Feasibility study	A	3
<b>D</b>	Documenting result	C	2
<b>E</b>	Interviewing	B,D	2
<b>F</b>	Questionnaires	E	4
<b>G</b>	Prototyping	F	3
<b>H</b>	Sampling and investing hard data	G	2
<b>I</b>	Create data flow diagram	H	14
<b>J</b>	Complete data dictionary	H	7
<b>K</b>	Analyze structure decision made	H	12
<b>L</b>	Present system proposal	K	2
<b>M</b>	User interface design	L	7
<b>N</b>	Database design	M	7
<b>O</b>	Testing and implementation	N	4
<b>P</b>	Debugging and improvement	O	4
<b>Q</b>	Evaluate system	P	2

**Note: All durations are in days**



**Path 1: A - C - D - E - F - G - H - I - L - M - N - O - P - Q**  
**Length: 2+3+2+2+4+3+2+14+2+7+7+4+4+2 = 58**

Path 2: A - C - D - E - F - G - H - J - L - M - N - O - P - Q  
 Length: 2+3+2+2+4+3+2+7+2+7+7+4+4+2 = 51

Path 3: A - C - D - E - F - G - H - K - L - M - N - O - P - Q  
 Length: 2+3+2+2+4+3+2+12+2+7+7+4+4+2 = 56

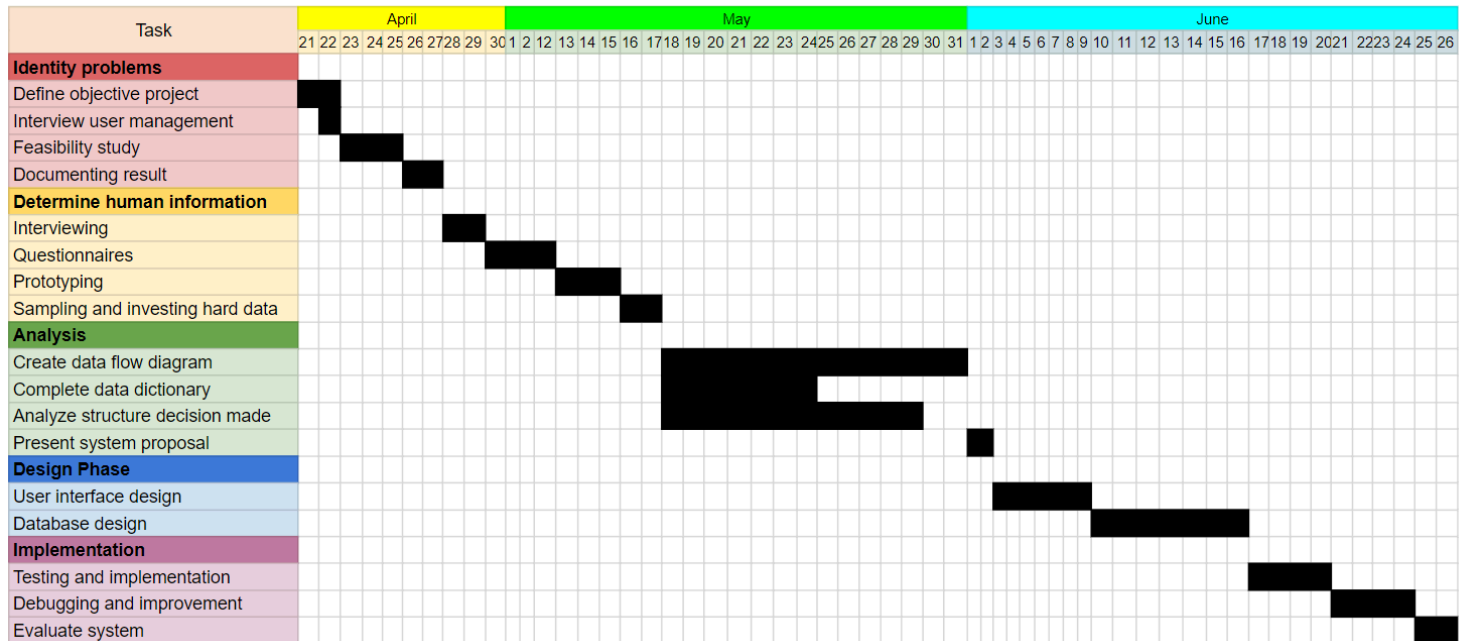
Path 4: B - E - F - G - H - I - L - M - N - O - P - Q  
 Length: 1+2+4+3+2+14+2+7+7+4+4+2 = 52

Path 5: B - E - F - G - H - J - L - M - N - O - P - Q  
 Length: 1+2+4+3+2+7+2+7+7+4+4+2 = 45

Path 6: B - E - F - G - H - K - L - M - N - O - P - Q  
 Length: 1+2+4+3+2+12+2+7+7+4+4+2 = 50

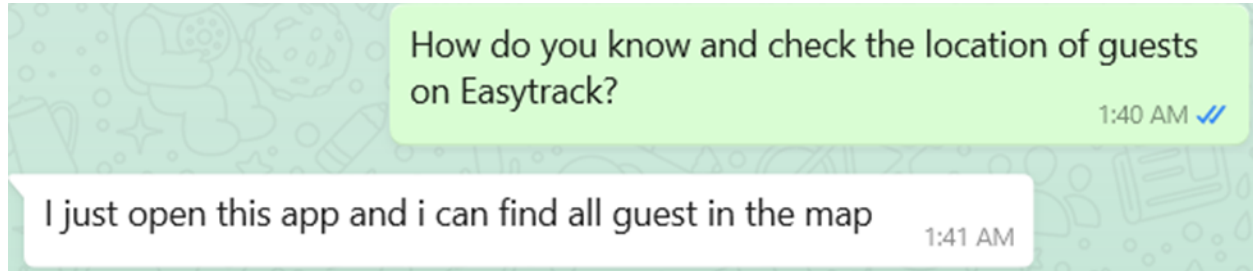
Since the critical path is the longest path through the network diagram, Path 1 is the critical path for this Project.

## 7.4 Gantt Chart



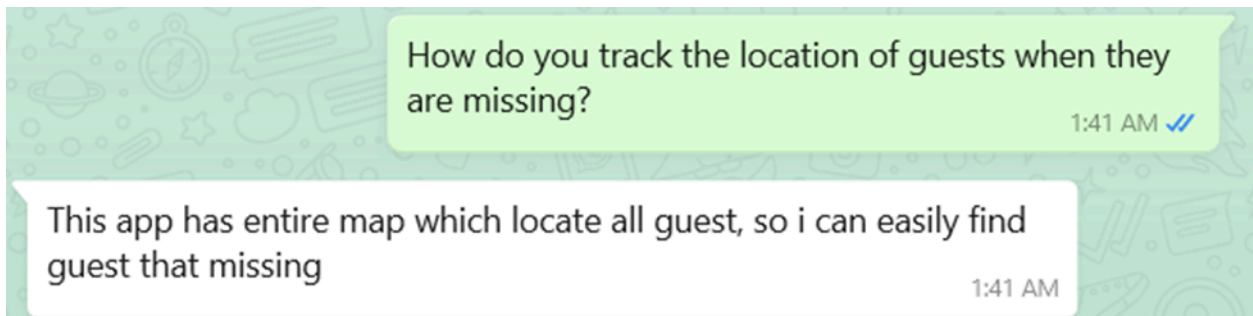
## 8.0 Interview

### Question 1 : How do you know and check the location of guests on Easytrack?



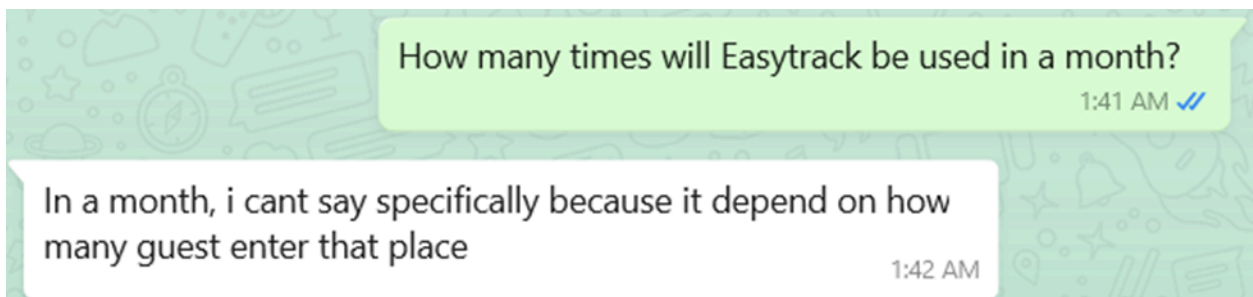
The interview shows that Mr. Azimi needs to open the app to check the location of guests. This means by open Easytrack Mr. Azimi can access all locations of guests in that area.

### Question 2 : How do you track the location of guests when they are missing?



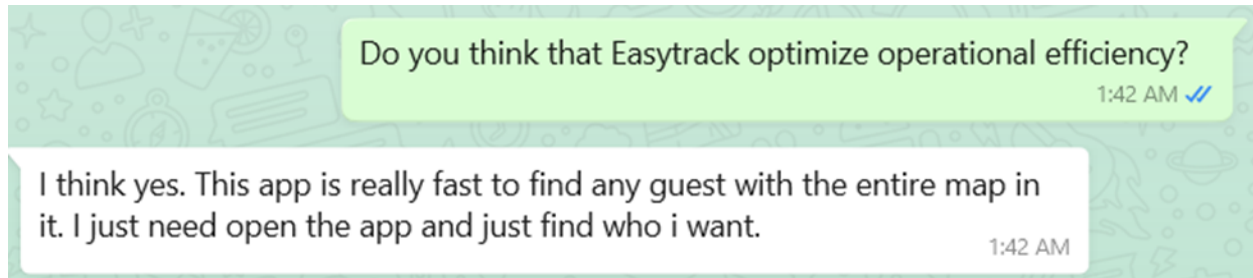
By the answer of this question, Mr, Azimi states that this app has the entire map on the specific area. He claims that when a guest is missing, he's gonna find that guest easily.

### Question 3 : How many times will Easytrack be used in a month?



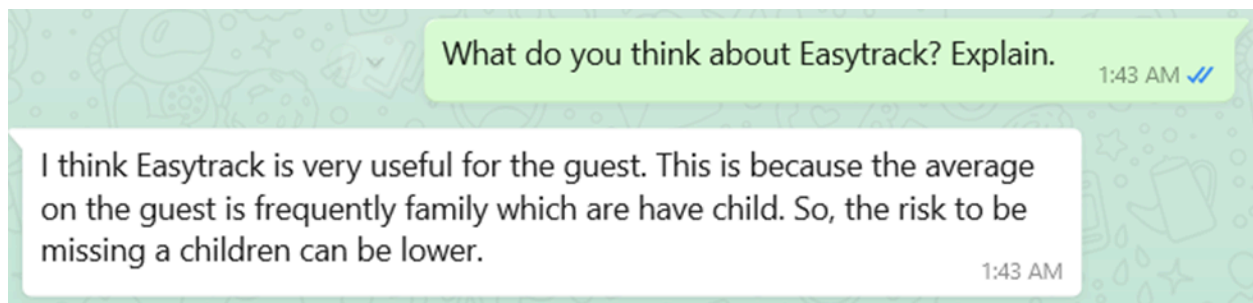
Mr. Azimi said that in a month he won't be able to confirm the usage of Easytrack. He states that the factor of usage on the app depends on how many guests at that area have been visited at that moment.

**Question 4 : Do you think that Easytrack optimize operational efficiency?**



We know that Easytrack provide the ability that user can reduce waste of time and effort. This is proved by word from Mr. Azimi states that Easytrack is optimizing its operational efficiency.

**Question 5 : What do you think about Easytrack? Explain.**



By this answer, we know that Easytrack did a good job by finding missing children in that area. By statistics, many cases like missing children from their parents always occur. So, the existence of Easytrack really helps us to reduce the problem that we face.



## **9.0 Benefit and Overall Summary of Proposed System**

Easytrack is a system that we proposed to enhance the efficiency of the security system and the safety measures in the area of the Sunway Lagoon Theme Park. We decided to propose this system because we observed several problems faced by our guests during their visits. For instance, a child in a family lost his way in the park, and the parents have a hard time to track their children in such a big location even with the help of the workers of the Water Park. Based on the problems faced by our guests, we suggested a few useful functions that can be included in this system to overcome the problem and make our objectives come true in our project. For example, the waterpark workers can help the parents to track the child's latest location by implementing a scanner system by each and every park facility.

The implementation of our enhanced security system at Sunway Lagoon Theme Park represents a significant step forward in ensuring the safety and well-being of our guests. By addressing key challenges such as real-time monitoring, communication infrastructure, emergency response protocols, surveillance coverage, and guest accountability, we have fortified the park's capacity to effectively manage safety incidents and mitigate potential risks.

## 10.0 GitHub Repository

URL of the GitHub repository: [https://github.com/limchenxi/Group5\\_Project\\_SAD\\_20232024](https://github.com/limchenxi/Group5_Project_SAD_20232024)

limchenxi Update README.md67967b6 · now7 Commits

README.mdUpdate README.mdnow


SAD PROPOSAL.pdfAdd files via upload33 minutes ago

README

SECD2613 SYSTEM ANALYSIS AND DESIGN PROJECT

Group 5 Project SAD 2023/2024

Easytrack



No description, website, or topics provided.

Readme

Activity

0 stars

2 watching

1 fork

Releases

No releases published

Create a new release

Packages

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Todo7 / 5Estimate: 0

is item hasn't been started

Draft

Questionnaires

Draft

prototyping

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Sampling and investing hard data

Draft

create data flow diagram

Draft

complete data dictionary

Add item

In Progress1 / 5Estimate: 0

This is actively being worked on

Draft

Kanban - Lim Chen Xi

Add item

Review0Estimate: 0

Add item

Done12Estimate: 0

This has been completed

Draft

Introduction - Chang Wen Xuen

Draft

Background Study - Chang Wen Xuen

Draft

Problem Statement - Chang Wen Xuen

Draft

Proposed Solutions - Chong Zu Wei

Draft

Objectives - Chong Zu Wei

Add item