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# TFO SYSTEM

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Presented By: Amaan, Ishawn and Justine



# 1. Business Memo

## TFO System

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### Business Memo

**To:** All Department Heads, Trainee Flight Ops (TFO) System

**From:** Amaan, Ishawn and Justine

**Date:** November 21, 2024

**Subject:** Update on TFO System Development and the next steps

This memo provides an update on the development of the Trainee Flight Ops (TFO) System for Derp University, and the key milestones.

As of today, the development of the TFO system project has progressed to the presentation phase. Below are the key milestones achieved so far:

- User stories
- Context Model Diagram
- Use Case Diagram and Narratives
- Activity Diagrams
- Class Diagram
- ERD
- Organizational security plan
- The presentation is scheduled for tomorrow.

We look forward to your feedback and will be available for any questions regarding the system development.

Thank you for your continued support and cooperation.

**Project Managers,** Amaan, Ishawn, and Justine

## 2. Project charter

### GENERAL PROJECT INFORMATION

PROJECT NAME		PROJECT MANAGER(S)	PROJECT SPONSOR
Trainee Flight Ops (TFO)		Amaan Zahid	Derp University (DerpU)
EMAIL	PHONE	ORGANIZATIONAL UNIT(S)	
<a href="mailto:Chaudh96@purdue.edu">Chaudh96@purdue.edu</a>	571-498- 1644	R&D	
GREEN BELTS ASSIGNED		EXPECTED START DATE	EXPECTED COMPLETION DATE
Ishawn Bhatti Justine Mukashyaka		09/06/2024	11/22/2024

### PROJECT OVERVIEW

PROBLEM OR ISSUE	Derp University (DerpU) needs an information system that tracks pilot trainee progress as well as flight instructor credentials.
PURPOSE OF PROJECT	The purpose of the project is to build TraineeFlightOps for tracking pilot trainee progress as well as flight instructor credentials.
BUSINESS CASE	To increase ease and efficiency while tracking trainee progress and instructor credentials.
GOALS / METRICS	Create a working information system for Derp University's professional flight program which will simplify the process for both trainees and instructors.

EXPECTED DELIVERABLES	We are expected to deliver a system called TraineeFlightOps containing data regarding a pilot trainee and instructor, for example flight time logged. The system is expected to be viewed on web browsers on mobile devices and computers.
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## PROJECT SCOPE

WITHIN SCOPE	Using Visual Paradigm for context system modeling.
OUTSIDE OF SCOPE	<p>Having accessibility from web browsers.</p> <p>Instructors should be able to view personal information of a trainee as well as their current qualifications. Instructors should be able to view the current enrollment of each trainee as well as a history of maneuvers completed and associated grades and notes. Instructors should be able to generate reports about each trainee containing the aforementioned information.</p> <p>The system should also restrict access to information such that trainees may only view their own personal and training information. Instructors are able to view their personal and flight/training information, as well as that of their trainees. Instructors may not view personal and flight information of other instructors. Administrators have access to all records stored in the TFO system. The system should be accessible via web browser from mobile devices, tablets, as well as computers.</p>

## TENTATIVE SCHEDULE

KEY MILESTONE	START	FINISH
Form Project Team / Preliminary Review / Scope	9/06/2024	09/11/20XX
Finalize Project Plan / Charter / Kick Off	9/11/2024	09/13/2024
Analysis Phase	9/13/2024	10/06/20XX
Implementation and Testing Phase	10/06//2024	11/14/20XX

Project Summary Report and Close Out	11/14/2024	11/22/20XX
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## RESOURCES

PROJECT TEAM	Amaan, Ishawn, and Justine
SUPPORT RESOURCES	Visual Paradigm
SPECIAL NEEDS	TBD

## BENEFITS AND CUSTOMERS

PROCESS OWNER	Derp University
KEY STAKEHOLDERS	Derp University
FINAL CUSTOMER	Derp University Professional Flight Program
EXPECTED BENEFITS	Greater efficiency and organization for flight training

## RISKS, CONSTRAINTS, AND ASSUMPTIONS

RISKS	Credential leaks
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CONSTRAINTS	The system should be accessible via web browser from mobile devices, tablets, as well as computers.
ASSUMPTIONS	Internet and Power

PREPARED BY	TITLE	DATE
Amaan, Ishawn, and Justine	Students	09/06/2024

### 3. Functional and non-functional requirements and User Stories

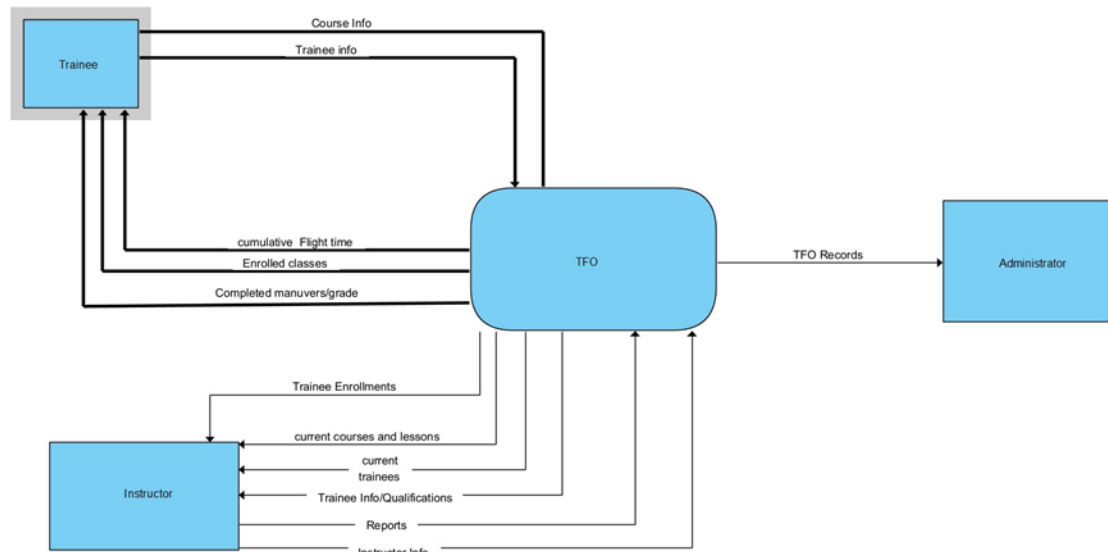
#### Functional Requirements:

1. The system must track cumulative flight time logged by trainees through courses that they are enrolled in
  - a. As a user, I want to be able to track my student's flight time
2. The system must store information pertaining to the trainee including: i) Name; ii) Date of Birth; iii) Citizenship; and iv) Qualifications.
  - a. As a user, I want to be able to identify my student's information and qualifications
3. The system must store the pilot certificate identification number (7 digits) along with the grade
  - a. As a user, I want to quickly identify the trainee and their grade level
4. The system must track landing currency for trainees
  - a. As a user, I want to be able to keep track of my trainees' landing currencies to see if they qualify for certifications or higher-level classes.
5. The system must track the medical examination history of trainees including the date on which it was performed and the class of medical
  - a. As a user, I want to see the condition of my trainees and see if they are fit to fly
6. The system must log similar information for flight instructors
  - a. As a user, I want to monitor if flight instructors are fit to teach
7. The system must store instructor certificate information
  - a. As a user, I want to be able to see if the instructors are qualified to teach their selected class.
8. The system must authenticate users based on their university credentials
  - a. As a user, I want only people in my organization able to login to this system

#### Non-Functional Requirements:

1. The system shall be able to support a large population of students and instructors
  - a. As a user, I want to be able to host many people on this system because Derp University is a large institution
2. The system shall display requirements and pre-requisites for all courses/lessons
  - a. As a user, I want to be able to see what I qualify for and what requirements I should work for in the future
3. The system shall have a near 24/7 availability so students and instructors will always have access to the system
  - a. As a user, I want to be able to log into the system whenever I want
4. The system shall be accessible via web browser from mobile devices, tablets, as well as computers.
  - a. As a user, I want to be able to access the system from multiple devices
5. The system shall run smoothly and timely
  - a. As a user, I want to be able to check the information stored in the system quickly

#### 4. Context Model Diagram



#### 5. Use Case Diagram and Narratives

<b>Use-Case Name:</b>	TFO Add Information	<b>Use Case Type</b> <b>Business Requirements:</b> <input checked="" type="checkbox"/> <b>System Analysis:</b> <input type="checkbox"/> <b>System Design:</b> <input type="checkbox"/>
<b>Use-Case ID:</b>	TFO 2	
<b>Priority:</b>	High	
<b>Source:</b>	DerpU	

<b>Use-Case Name:</b>	TFO System	<b>Use Case Type</b>
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<b>Use-Case ID:</b>	TFO1		<b>Business Requirements:</b> <input checked="" type="checkbox"/> <b>System Analysis:</b> <input type="checkbox"/> <b>System Design:</b> <input type="checkbox"/>
<b>Priority:</b>	High		
<b>Source:</b>	DerpU		
<b>Primary Business Actor:</b>	Trainees, Instructors		
<b>Primary System Actor:</b>	Administrators		
<b>Other Participating Actors:</b>	None		
<b>Other Interested Stockholders:</b>	DerpU		
<b>Description:</b>	The use case describes the events of a trainee logging into the system and seeing their information		
<b>Precondition:</b>	User is already registered with the system		
<b>Trigger:</b>	System User attempts to be authenticated		
<b>Typical Course of Events:</b>	<b>Actor Action</b>	<b>System Response</b>	
	Step 1: Sends a request to log into the system	Step 2: System prompts the user to enter their ID and password.	
	Step 3: Enters ID and password	Step 4: System checks if the entered information is correct	
		Step 5: Information is correct, and system allows the actor to log in	
	Step 6: Actor requests to see their personal information.	Step 7: System returns the information that the actor requested.	
	Step 8: The Actor request to see the courses they are enrolled in	Step 9: System returns the course information requested	
	Step 10: The Actor request to see their history of maneuvers completed along with the associated grade	Step 11: System returns the history of maneuvers completed along with their grades.	
<b>Alternate Courses:</b>	ALT-Step 5b: The information is incorrect, and the system prompts the user to input their information again ALT-Step 8b: System returns a list of their current courses and lessons ALT-Step 10b: System returns information of current enrollment of each trainee and a history of maneuvers completed and associated grades and notes.		
<b>Conclusion:</b>	The Use Case concludes when the actor is able to view their information		
<b>Postcondition:</b>	(X) is done		
<b>Business Rules:</b>	1. trainees may only view their own personal and training information 2. Instructors may not view personal and flight information of other instructors		
<b>Implementation Constraints and Specifications:</b>			
<b>Assumptions:</b>	accessible via web browser from mobile devices, tablets, as well as computers. User has internet access		
<b>Open Issues:</b>	None		

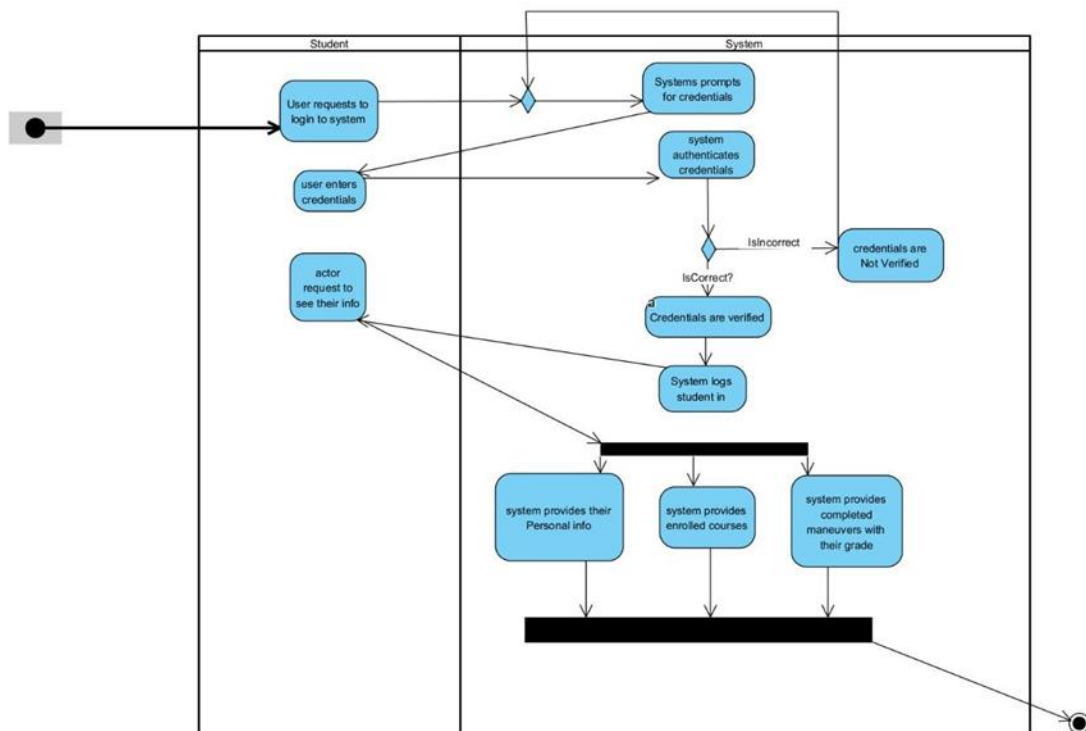


<b>Primary Business Actor:</b>	Instructors and Trainees	
<b>Primary System Actor:</b>	TFO System	
<b>Other Participating Actors:</b>	None	
<b>Other Interested Stockholders:</b>	None	
<b>Description:</b>	The instructors and trainees can fill out a form to enter information to the TFO system like their personal information and instructor certificate	
<b>Precondition:</b>	Actor is already in the system	
<b>Trigger:</b>	Actor attempts to add information into the system	
<b>Typical Course of Events:</b>	<b>Actor Action</b>	<b>System Response</b>
	Step 1: Actor sends a request to log into the system	Step 2: System prompts the user to enter their ID and password.
	Step 3: Enters ID and password	Step 4: System checks if the entered information is correct
		Step 5: Information is correct, and system allows the actor to log in
	Step 6: Trainee/Instructor request to add information into the system (instructor certificate, personal information)	Step 7: System checks if the values entered are the correct data type. For example, social security number should be a number.
		Step 8: The values entered are the correct data type and the information stored in the TFO system is updated.
<b>Alternate Courses:</b>	ALT-Step 5b: The information is incorrect, and the system prompts the user to input their information again ALT-Step 8b: The values entered are the wrong data type, the system prompts the user to reenter the information.	
<b>Conclusion:</b>	The user is either able or unable to update information in the system.	
<b>Postcondition:</b>	The user updates information.	
<b>Business Rules:</b>	1. Actors can only edit information that they have permission to. For example, one trainee should not be able to edit another trainee's information.	
<b>Implementation Constraints and Specifications:</b>	1. Strict data entry, some values should only be a certain length and data type 2. Sensitive information like SSN should be encrypted.	
<b>Assumptions:</b>	accessible via web browser from mobile devices, tablets, as well as computers. User has internet access	
<b>Open Issues:</b>		

## 6. Activity Diagrams

<b>Use-Case Name:</b>	TFO Trainee	<b>Use Case Type</b>  <b>Business Requirements:</b> <input checked="" type="checkbox"/>  <b>System Analysis:</b> <input type="checkbox"/>  <b>System Design:</b> <input type="checkbox"/>
<b>Use-Case ID:</b>	TFO1	
<b>Priority:</b>	High	
<b>Source:</b>	DerpU	
<b>Primary Business Actor:</b>	Trainees	
<b>Primary System Actor:</b>	Administrators	
<b>Other Participating Actors:</b>	None	
<b>Other Interested Stockholders:</b>	DerpU	
<b>Description:</b>	The use case describes the events of a trainee logging into the system and seeing their information	
<b>Precondition:</b>	User is already registered with the system	
<b>Trigger:</b>	System User attempts to be authenticated	
<b>Typical Course of Events:</b>		
	Actor Action	System Response
	Step 1: Sends a request to log into the system	Step 2: System prompts the user to enter their ID and password.
	Step 3: Enters ID and password	Step 4: System checks if the entered information is correct
		Step 5: Information is correct, and system allows the actor to log in
	Step 6: Actor requests to see their personal information.	Step 7: System returns the information that the actor requested.
	Step 8: The Actor request to see the courses they are enrolled in	Step 9: System returns the course information requested
	Step 10: The Actor request to see their history of maneuvers completed along with the associated grade	Step 11: System returns the history of maneuvers completed along with their grades.

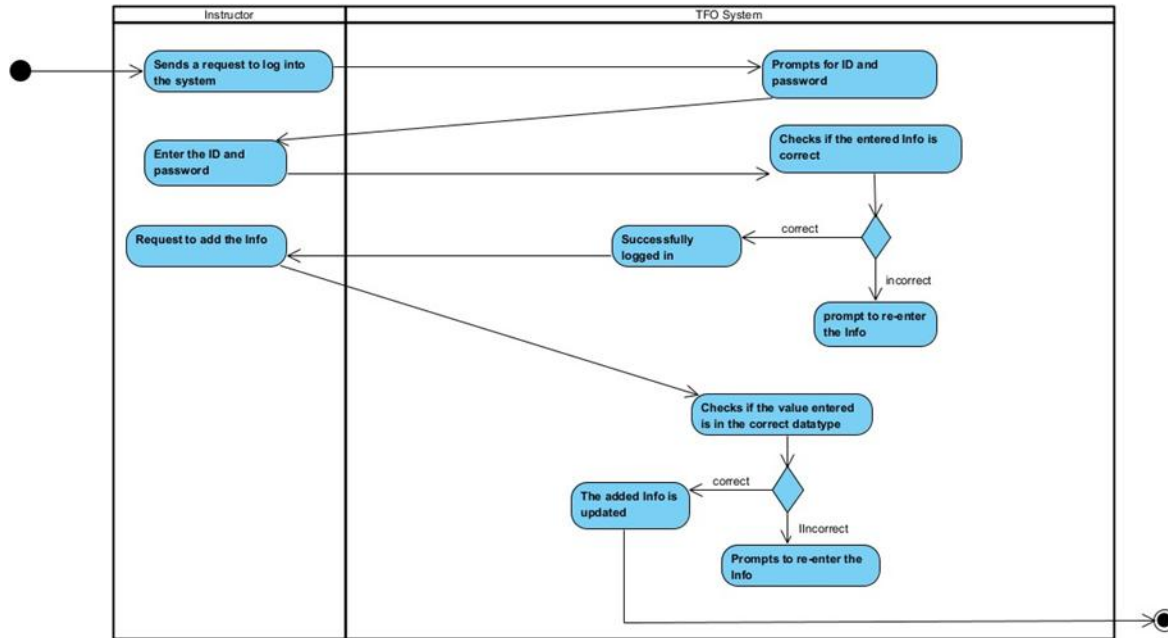
<b>Alternate Courses:</b>	<p>ALT-Step 5b: The information is incorrect, and the system prompts the user to input their information again</p> <p>ALT-Step 8b: System returns a list of their current courses and lessons</p> <p>ALT-Step 10b: System returns information of current enrollment of each trainee and a history of maneuvers completed and associated grades and notes.</p>
<b>Conclusion:</b>	The Use Case concludes when the actor can view their information
<b>Postcondition:</b>	(X) is done
<b>Business Rules:</b>	<ol style="list-style-type: none"> <li>1. trainees may only view their own personal and training information</li> <li>2. Instructors may not view personal and flight information of other instructors</li> </ol>
<b>Implementation Constraints and Specifications:</b>	
<b>Assumptions:</b>	accessible via web browser from mobile devices, tablets, as well as computers. User has internet access
<b>Open Issues:</b>	None



Use-Case Name:	TFO Instructor	<div>Use Case Type</div> <div>Business Requirements: <input checked="" type="checkbox"/></div> <div>System Analysis: <input type="checkbox"/></div> <div>System Design: <input type="checkbox"/></div>
Use-Case ID:	TFO 2	
Priority:	High	
Source:	DerpU	
Primary Business Actor:	Instructor	
Primary System Actor:	TFO System	
Other Participating Actors:	None	
Other Interested Stockholders:	None	
Description:	The use case describes the events of an instructor logging into the system and seeing their information	
Precondition:	User is already registered with the system	

<b>Trigger:</b>	Instructor attempts to be authenticated	
<b>Typical Course of Events:</b>		
	Actor Action	System Response
	Step 1: Actor sends a request to log into the system	Step 2: System prompts the user to enter their ID and password.
	Step 3: Enters ID and password	Step 4: System checks if the entered information is correct
		Step 5: Information is correct, and system allows the actor to log in
	Step 6: The actor request to add information into the system (instructor certificate, personal information)	Step 7: System checks if the values entered are the correct data type. For example, the social security number should be a number.
		Step 8: The values entered are the correct data type and the information stored in the TFO system is updated.
<b>Alternate Courses:</b>	ALT-Step 5b: The information is incorrect, and the system prompts the user to re-enter their information again	
	ALT-Step 8b: The values entered are the wrong data type, the system prompts the user to reenter the information.	
<b>Conclusion:</b>	The Use Case concludes when the actor can view their information	
<b>Postcondition:</b>	The user is either able or unable to update information in the system.	
<b>Business Rules:</b>	1. Actors can only edit information that they have permission to. For example, one instructor should not be able to edit another instructor's information.	
<b>Implementation Constraints and Specifications:</b>	1. Strict data entry, some values should only be a certain length and data type 2. Sensitive information like SSN should be encrypted.	
<b>Assumptions:</b>	accessible via web browser from mobile devices, tablets, as well as computers. User has internet access	

Open Issues:



Use-Case Name:	TFO Admin	Use Case Type	<input type="checkbox"/>
Use-Case ID:	TFO 3	Business	<input type="checkbox"/>
Priority:	Medium	Requirements:	<input checked="" type="checkbox"/>
Source:	DerpU	System Analysis:	
		System Design:	

Primary Business Actor:	Administrator
Primary System Actor:	TFO System
Other Participating Actors:	None
Other Interested Stockholders:	None
Description:	Process for an administrator logging into the database and examining the stored information.
Precondition:	Administrator account exists

<b>Trigger:</b>	Administrator attempts to access the database	
<b>Typical Course of Events:</b>	<i>Actor Action</i>	<i>System Response</i>
	Step 1: Administrator sends a request to login	Step 2: System prompts the administrator to enter their login information
	Step 3: Administrator enters information	Step 4a: System checks that the login information is correct. Login information is correct.
		Step 5a: System checks if the login details correspond with an administrator account. Account is an administrator
	Step 6: Administrator is allowed to view the information stored in the database	
<b>Alternate Courses:</b>	ALT Step 4b: Login information is incorrect; System prompts user to enter their login information again  ALT Step 5b: Account is not an administrator account; user is not allowed to access the database	
<b>Conclusion:</b>	Administrator can access the database or is denied access.	
<b>Postcondition:</b>	The administrator accesses the database	
<b>Business Rules:</b>	1. Administrators can only access data that they have permission to view, for example a housing administrator may not have access to a student's grade records.	
<b>Implementation Constraints and Specifications:</b>	accessible via web browser from mobile devices, tablets, as well as computers. User has internet access	
<b>Assumptions:</b>	Administrator already has login credentials	
<b>Open Issues:</b>	None	

## 7. Class Diagram





<b>Role</b>	<b>Responsibility</b>	<b>Assigned Individual</b>	<b>Contact Information</b>
<b>Chief Information Security Officer (CISO)</b>	Oversee the entire information security program, define policies, ensure compliance	Amaan	<a href="mailto:amaan@tfo.com">amaan@tfo.com</a>
<b>Security Operations Manager</b>	Manage day-to-day security operations, incident response	Ishawn	<a href="mailto:ishawn@tfo.com">ishawn@tfo.com</a>
<b>Compliance Officer</b>	Ensure compliance with regulations (HIPAA and PCIDSS)	Justine	justine@tfo.com
<b>IT Team</b>	Implement security measures, monitor systems	Multiple (IT staff)	<a href="mailto:it@tfo.com">it@tfo.com</a>
<b>Employee</b>	Follow security policies, participate in training	All Employees	N/A

## 2. Incident Response Plan Workflow

<b>Step</b>	<b>Action</b>	<b>Responsible Party</b>	<b>Timeline/Target</b>
<b>Detection</b>	Identify potential security incidents through logs, or user reports	Security Operations Center	Immediate
<b>Assessment</b>	Verify the scope and impact of the incident	IT Team, Security Team	1-2 hours
<b>Containment</b>	Isolate affected systems to prevent further damage	IT Team, Incident Response	2-4 hours

<b>Recovery</b>	Restore systems and services from backups	IT Team, Operations	1-3 days
<b>Post-Incident Analysis</b>	Review incident response, identify areas for improvement	Incident Response Team	1-2 weeks

### 3. Security Control Implementation

<b>Training Topic</b>	<b>Target Audience</b>	<b>Frequency</b>	<b>Delivery Method</b>	<b>Responsible Party</b>
<b>Phishing Awareness</b>	All Employees	Annually	Online Course	IT Security
<b>Password Management</b>	All Employees	Semi-Annually	Webinar, Email Tips	IT Security
<b>Incident Response Procedures</b>	IT Team, Security Ops	Annually	Classroom Training	Security Operations
<b>Data Privacy</b>	HR, Legal, Compliance	Annually	Online Course	Compliance Officer

#### 4. Network Security

Category	Objective	Description	Measures / Actions	Timeline
1. Network Perimeter Security	Protects the external boundaries of the network from unauthorized access	Establishes strong external network defenses to prevent unauthorized access	-Establish Fire Walls -Establish VPNS	Ongoing
2. Intrusion Detection/Prevention.	Ensures that the network cannot be broken into and if it is, professionals are alerted.	Monitors a network to see if a threat penetrates the network or prevents it.	Software can search for anomalies and if anything seems suspicious the traffic is	Continuous
			blocked until a professional can view it.	

3. Network Monitoring & Logging	Monitors Network activities for early threat detection	Collects and analyzes network logs to detect suspicious activities for early threat detection	-Scan/Alert Anomalous Behavior - - Implement a Security Information and Event Management	Continuous
4. Incident Response	Prepares for effective responses to security incidents	Develop and test plans to respond to various types of security incidents	-Create An Incident Response Plan -Test And Practice this Plan Monthly	Quarterly
5. Encryption & Data Security	Protects data and sensitive information	Encrypts both moving and stationary data to prevent unauthorized access or theft		Ongoing
6. Firewall Configuration	Deploy and configure firewalls to protect the network.	Implement firewalls on the network. E.g., (Between the corporate network and internet)	IT Network Team	Within 30 days

## 5. Access Control and Authentication

Section	Description	Action/Control	Responsible

<b>Access Control Policy</b>	Define the overall access control policy for the organization.	- Develop an access control policy based on the principles	IT Security
<b>Multi-Factor Authentication (MFA)</b>	Implement multi-factor authentication for systems that contain sensitive data or require secure access	- Require MFA for all employees, and trainees accessing critical systems (e.g., email, flight operations tools)	IT Security
<b>Single Sign-On (SSO)</b>	Implement Single Sign-On to simplify access while maintaining security,	- Deploy an SSO solution to enable users to access multiple systems with a single set of credentials.	IT Security Systems Admin
<b>Account Lockout and Monitoring</b>	Implement monitoring and automatic lockout to prevent against attacks and unauthorized access	- Lock accounts after a specified number of failed login attempts.	IT Security
<b>User Deactivation and Termination</b>	Establish procedures for disabling or deactivating user accounts when they are no longer needed	- Implement a process to immediately revoke access for employees, and trainees who are terminated or leave.	HR, IT Security

