Pilotage Management System

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1. OVERVIEW

1.1   PURPOSE

The purpose of this project is to build an online system to to provide the solution for an organization to help in monitoring working condition pilot and ship to ease the Pilotage management.

1.2   PROJECT SCOPE

This project is for the piloat and ship management. This will be implemented by the developers of OPUS TECHNOLOGY LIMITED. This project is useful for an organization to help in monitoring working condition.

2. OVERALL DESCRIPTION

2.1 PRODUCT PERSPECTIVE

Actors:

1. Ship Owner
2. Pilot Supervisor
    a. Master Pilot Supervisor
    b. Beat Pilot Supervisor (multiple Beat Authority)
3. Pilot
    a. Master Pilot
    b. Beat Pilot
4. BIWTA Admin

Actions:

1. Ship & Owner information fetch from 3rd party SW.
    a. Ship details
    b. Owner details
    c. Ship speed
2. Beat, Port, Pilot information
3. Beat Definition:
    a. Beat - Port relation
    b. Beat - Pilot relation
    c. Beat Cost (# of token)
    d. Beat standard Time
4. Trip Definition

        a. Numbers and sequence of beat/port

        b. Expected time and Cost

5. Ship owner
    a. Purchase e-Token
    b. Request for a Trip (always round trip)
    c. Cancel / change a trip request
    d. Pay for a trip
    e. See ship status, trip status, purchase history, balance token, other history

6. Master Pilot Supervisor
    a. Make / remake group
    b. Schedule / Reschedule group sailing
    c. Assign / Reassign Master Pilot to Group / Ship

7. Beat Pilot Supervisor
    a. Make / remake group
    b. Schedule / Reschedule group sailing
    c. Assign / Reassign Beat Pilot to Group / Ship
    d.

8. System Notification
    a. Schedule / Reschedule of group& sailing
        i. Ship Owner, Ship regular Captain
        ii. BIWTA Admin
    b. Assign / Reassign Pilot to Group
        i. Pilot
        ii. Ship Owner, Ship regular Captain
        iii. BIWTA Admin

2.2 PRODUCT FEATURES

The major features of this project are shown below

1. Schedule – Group – Notification (Master Pilot, Ship Owner, BIWTA Admin) – Contact Person Details
2. Reschedule – Cancellation of a Ship
    a. Master pilot assigned Ship cancel
    b. General ship in a group cancel
    c. Master pilot fail to attend trip
    d. Ship speed information (faster, Slower) this is considered while scheduling & allocating Master Pilot.
    e. Penalty for delay notification. Due time variable.
        i. Existing Balance reduction.
        ii. Payment reduction from future payment.

3. Trip requisition (Always two way trip – round trip)
   a. Upward
   b. Downward
4. Pilot Acknowledges to next supervisor for next pilot
5. Beat – Pilot
   a. Relationship
   b. Transfer

2.3 DATABASE DESIGN

NEED to ADD

2.4 DESIGN and IMPLEMENTATION CONSTRAINTS

NEED to ADD

3. SYSTEM FEATURES

1. Schedule and M/P assign in one page
2. Ship owner should give the journey time based on round trip
3. If Ship doesn't load on time which is a common problem… for this type of situation ship owner need to inform 8 pm before the trip next day
4. If he failed to inform and cant load on time he will have to give penalty.. so we need an option penalty in our software
5. We need to have a re-schedule option
6. In Ship owners dropdown there should three type of ship owner name such as 1. WTC 2. Group of companies 3. Others
7. E-Token Management – Individual ID for each token, Generation, Sell, Strategy.
8. Notification (SMS, Email, Application Notification)
9. Cancellation Module (Notification, Rescheduling, If leading ship cancels then whole schedule impacts)
10. Fast mover / slow mover ship
11. Hydrography, Distance from Bouya (Pilot Mobile GPS Location),
12. Beat pilot Rescheduling
13. Master Pilot & Beat Pilot has their own Supervisor, Supervisor is responsible for scheduling trip.

4. EXTERNAL INTERFACE REQUIREMENTS

4.1 USER INTERFACES

- Front-end software: C#
- Back-end software: SQL

4.2 HARDWARE INTERFACES

- Windows.
- A browser which supports CGI, HTML &Javascript.

4.3 SOFTWARE INTERFACES

Following are the software used for the Pilotage Management System.

Operating system: We have chosen Windows operating system for its best support and user-friendliness.

Database: To save Pilotage management system we have chosen SQL database.

Platform: To implement the project we have chosen C# language for its more interactive support.

4.4 COMMUNICATION INTERFACES

Pilotage Management System should support all types of web browsers.

5.NONFUNCTIONAL REQUIREMENTS

5.1 PERFORMANCE REQUIREMENTS

The steps involved to perform the implementation of Pilotage Management System database are as listed below

5.1.1. E-R DIAGRAM

The E-R Diagram constitutes a technique for representing the logical structure of a database in a pictorial manner. This analysis is then used to organize data as a relation, normalizing relation and finally obtaining a relation database.

- **ENTITIES:** Which specify distinct real-world items in an application.
- **PROPERTIES/ATTRIBUTES:** Which specify properties of an entity and relationships.
- **RELATIONSHIPS:** Which connect entities and represent meaningful dependencies between them.

5.1.2. NORMALIZATION:

The basic objective of normalization is to reduce redundancy which means that information is to be stored only once. Storing information several times leads to wastage of storage space and increase in the total size of the data stored.

If a database is not properly designed it can give rise to modification anomalies. Modification anomalies arise when data is added to, changed or deleted from a database table. Similarly, in traditional databases as well as improperly designed relational databases, data redundancy can be a problem. These can be eliminated by normalizing a database.

Normalization is the process of breaking down a table into smaller tables. So that each table deals with a single theme. There are three different kinds of modifications of anomalies and formulated the first, second and third normal forms (3NF) is considered sufficient for most practical purposes. It should be considered only after a thorough analysis and complete understanding of its implications.

5.2 SAFETY REQUIREMENTS

If there is extensive damage to a wide portion of the database due to catastrophic failure, such as a disk crash, the recovery method restores a past copy of the database that was backed up to archival storage (typically tape) and reconstructs a more current state by reapplying or redoing the operations of committed transactions from the backed up log, up to the time of failure.

5.3 SECURITY REQUIREMENTS

Security systems need database storage just like any other applications. However, the special requirements of the security market mean that vendors must choose their database partner carefully.

5.4 SOFTWARE QUALITY ATTRIBUTES

- **AVAILABILITY:** The Ship should be available on the specified date and specified time as.
- **CORRECTNESS:** The Ship should start from correct start terminal with correct officials and should reach the correct destination.
- **MAINTAINABILITY:** The admin or supervisor should maintain correct schedules of Ship.
- **USABILITY:** The Ship schedules should satisfy a maximum number of needs.