DSS Project Proposal
Drone Management in Small Ports

Student Information

Personal Number	Name	Email	Share
030530-4560	Kalidindi Uma Shreeya	umka24@student.bth.se	25%
040317-8619	Jayent Reddy P	japl24@student.bth.se	25%
031213-3481	Varsha Patel Gandla	vaga24@student.bth.se	25%
040203-T132	Ashwin Kumar Santh	assa24@student.bth.se	25%

Problem Description

System's Goal to Achieve

The goal of this project is to develop a Decision Support System (DSS) to assist small EU ports in selecting suitable drones for tasks such as:

- Environmental and pollution monitoring (air, water, quay)
- Fence and infrastructure inspections
- Port surveillance and ship inspections

The DSS will evaluate drone options using a multi-criteria decision-making approach tailored to each port's specific needs.

Decision Criteria

The following criteria will be considered in the decision-making model:

1. Flight radius
2. Maximum flight height
3. Day/Night operation
4. Max daily flights
5. Wind resistance
6. Budget (5K / 10K / 15K EUR)
7. Battery life
8. Payload capacity
9. Camera resolution
10. Infrared/Night vision

11. Weather resistance
12. Real-time data streaming
13. Port coverage area
14. GPS accuracy
15. Maintenance cost
16. Environmental durability
17. System integration capability
18. Vendor support
19. Training requirements
20. Scalability

General Architecture of DSS

Database Description

The DSS database will contain:

- Drone specifications and capabilities
- Port operational needs and constraints
- User input and priority weights

Model Base Description

- A Multi-Criteria Decision-Making (MCDM) approach such as Weighted Sum Model or Analytic Hierarchy Process (AHP)
- Scoring mechanism to evaluate drones based on normalized values and weights

Implementation Plan

Tools

- Python (backend logic and modeling)
- SQLite/PostgreSQL (database)
- Streamlit or Tkinter (UI)
- Excel (optional for prototyping)

Techniques

- Weighted Scoring Models
- Analytic Hierarchy Process (AHP)
- Data Normalization