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AIRPORT OPERATOR AND THE REINFORCEMENT AGENT

TASK FORCE: SWISSPORT X

MAKEATHON

GOAL

Task Recognition

Delay Identification

Identification Reason of Delay

Notification to the Supervisor

MACHINE AUTOMATION

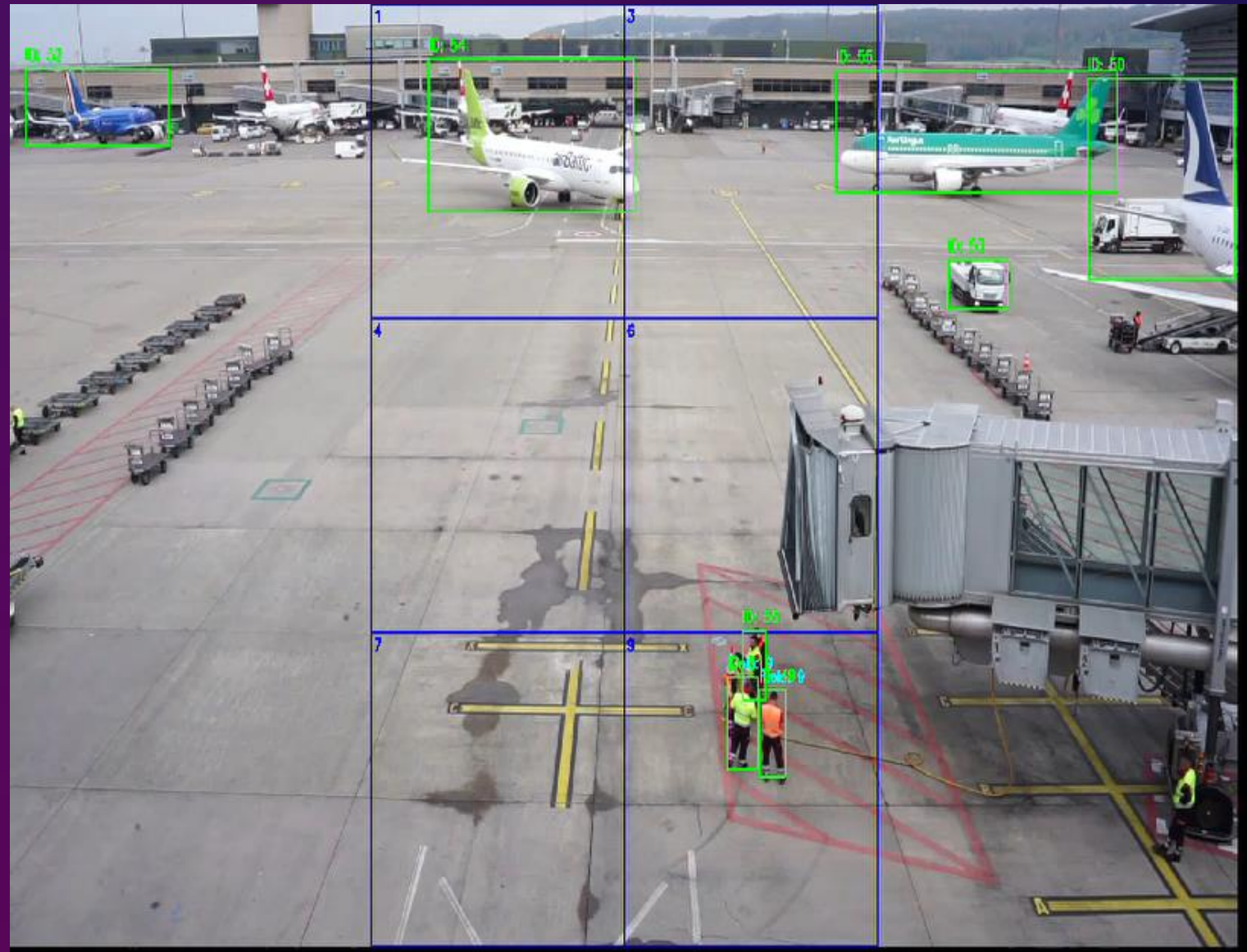
ADVANCED TASK RECOGNITION AND SUPERVISION

Recordings of the work processes

Recognising the objects and their position in the video

Classification and measurement of the performed tasks and their duration

- Object Detection using Yolo
- Implementation of Deepsort for moving objects
- Added Grid to recognize tasks and measure time of work
- forward to knowledge graphs



KNOWLEDGE ENGINEERING

KEY FEATURES, TASK, RESOURCES AND DELAY FACTORS

Common Reasons for Delay / Metar

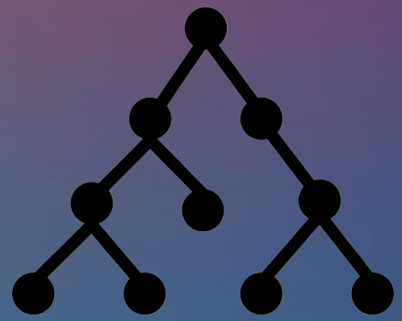
Documented delay reasons are recorded in knowledge databases.

Adverse weather conditions may trigger an increased readiness forecasted by established rules

Plane Reconfiguration

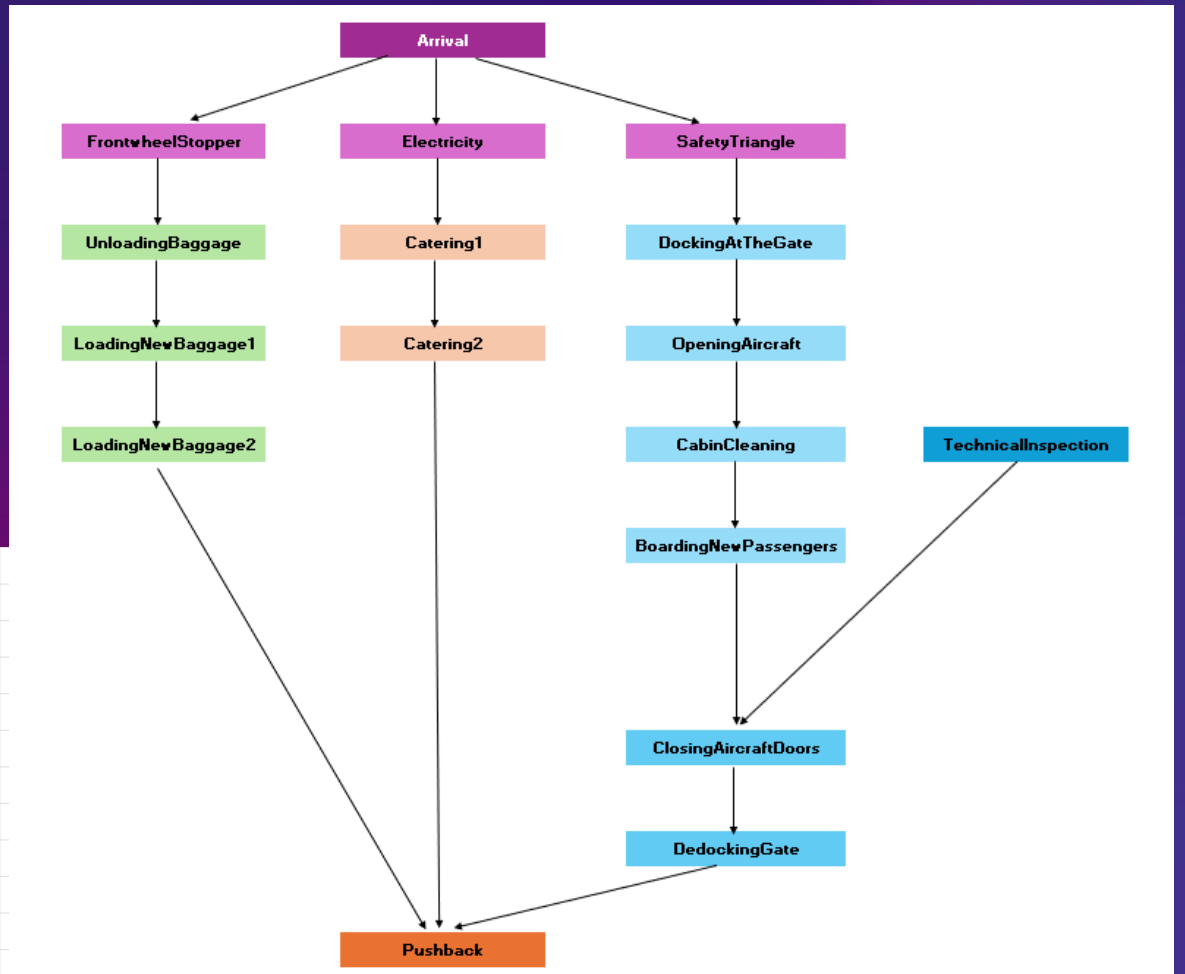
Preparation tasks are recorded with associated time, personnel requirements, and location.

Task sequencing for recovery is defined by established rules.



DURATION OF ACTIVITY & DEPENDENCIES

Task no.	Task	Duration
Task 0	Arrival	00:00:39
Task 1	Frontwheel stopper	00:00:06
Task 2	Electricity	00:47:52
Task 3	5 Safety triangle	00:00:51
Task 4	Docking at the gate	00:01:13
Task 5	Unloading baggage	00:13:44
Task 6	Opening Aircraft	00:00:10
Task 7	Passenger disembarkation	00:09:08
Task 8	Catering 1	00:09:10
Task 9	Cabin cleaning	00:07:56
Task 10	Loading new baggage 1	00:29:28
Task 11	Catering 2	00:05:35
Task 12	Boarding new passengers	00:16:50
Task 13	Technical inspection (Pilot)	00:01:07
Task 10	Loading new baggage 2	00:09:26
Task 14	Closing aircraft doors	00:00:10
Task 15	Dedocking gate	00:01:47
Task 16	Pushback and taxiing	00:01:26

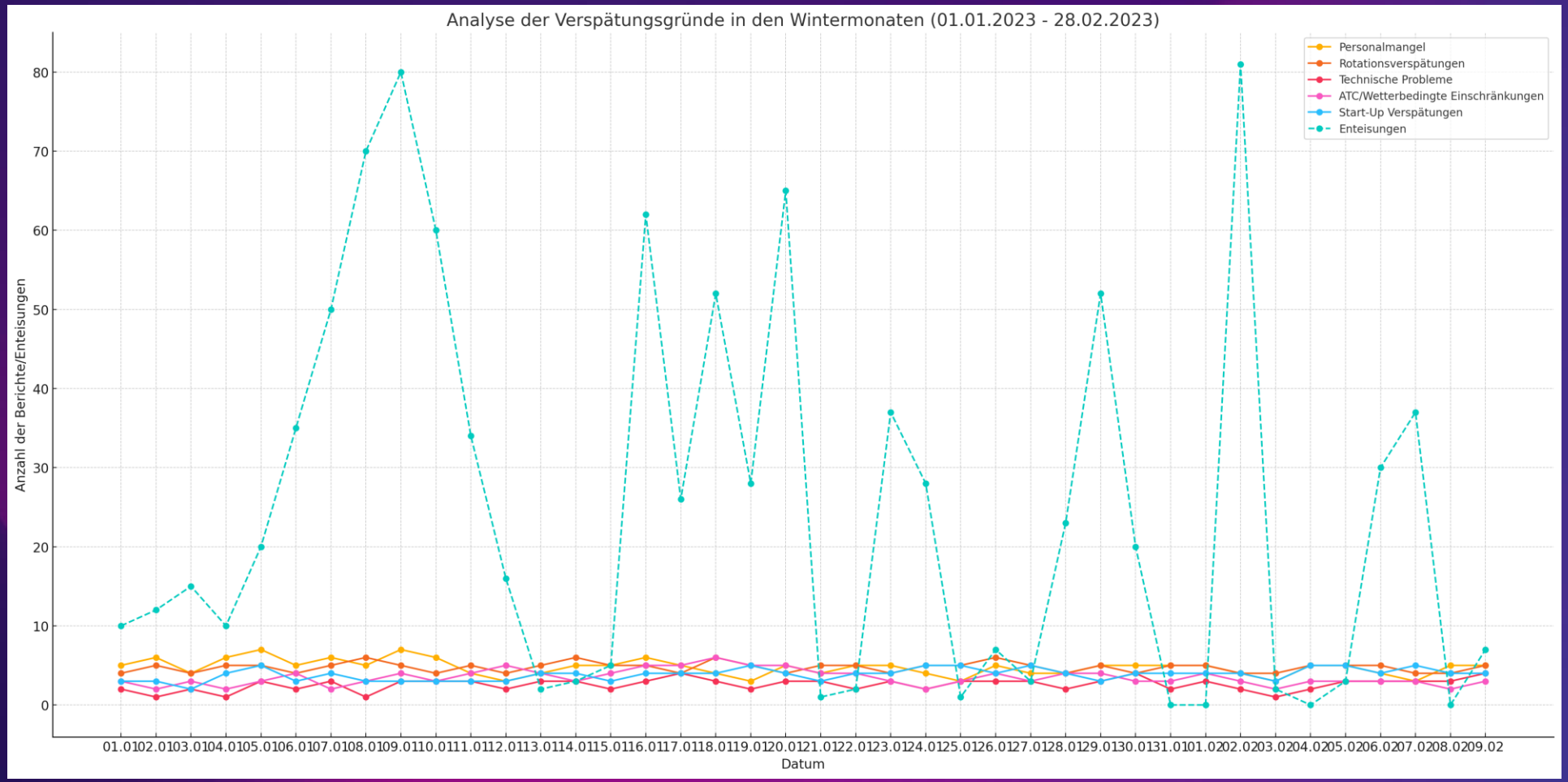


DE-ICING DURING WINTER SEASON

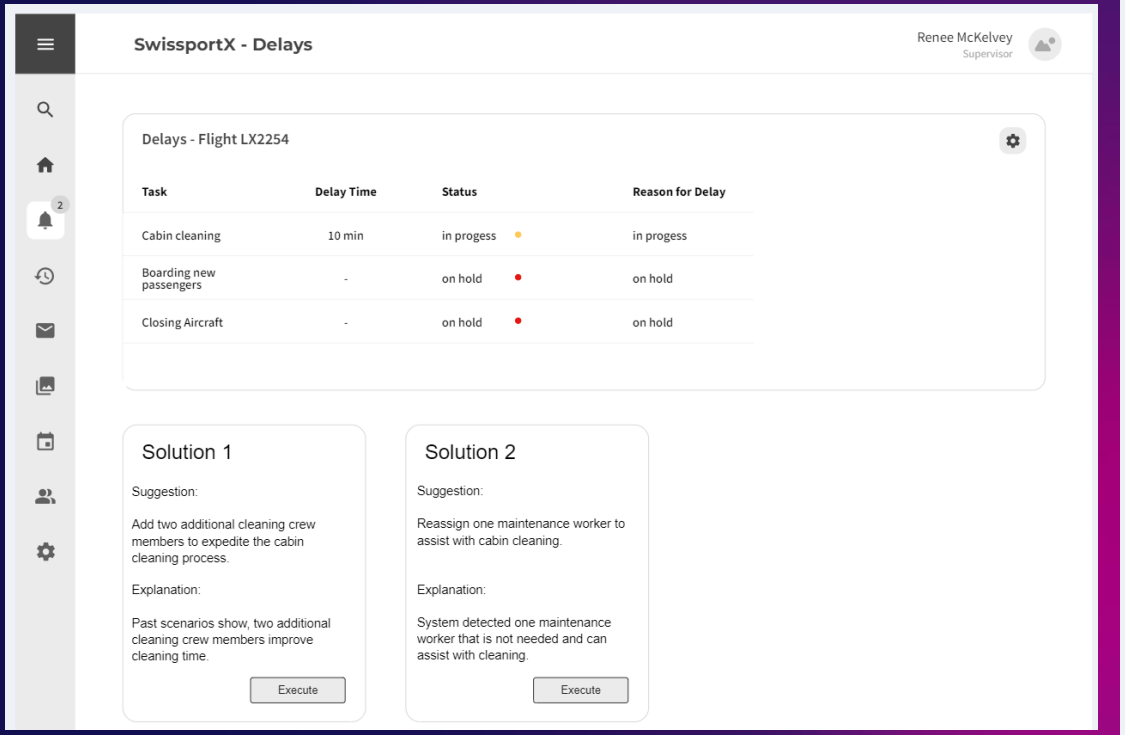
- Pattern recognition
- De-Icing stand out the most
- Implementation of rules like weather conditions
- Degree < 3°C = Notification
- early detection reduces delays

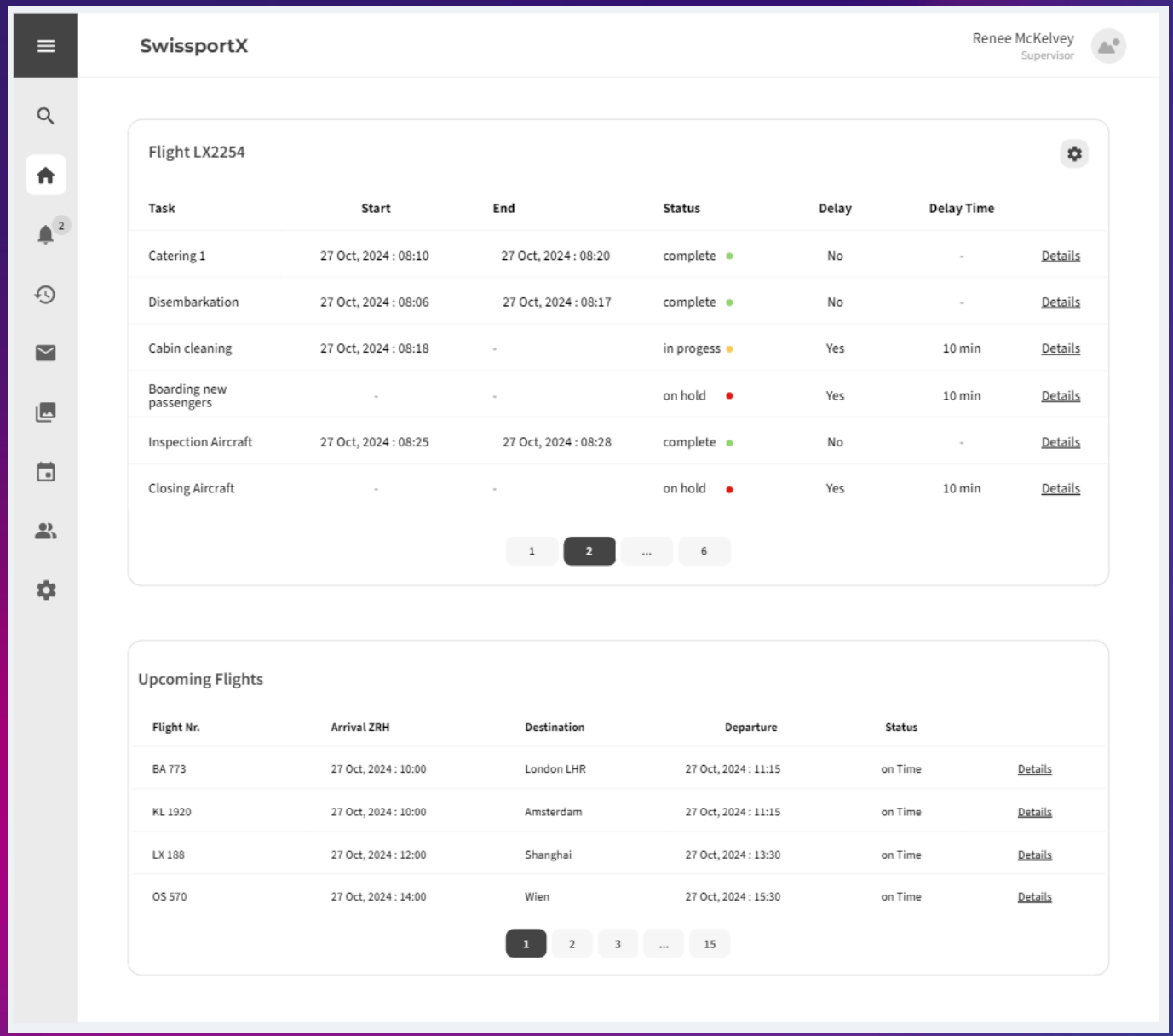
Possible Solutions:

- Increasing the Icing pads
- De-icing technology



OVERVIEW FOR SUPERVISOR





INNOVATIVE SOLUTIONS

Budget for the Project: CHF 1'250'000
(CHF 30,000 per year (for ongoing maintenance, support and updates)

- **Long-term cost savings** through reduced delays and improved operational efficiency
- **Scalability** for multiple locations worldwide
- **Real-time monitoring and automatic escalation** when delays are detected
- **Fully automated analysis system**
- **More effective use of labour**
- **Delay information and suggested solutions to supervisor**
- **Explainability AI**
- **Causal AI**

Let's work together for smarter solutions and innovation in airport operations!

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Thank you!