Dronology Use Cases

Revision History

Date	Author	Description of change
5/16/2017	Jane Huang, Michael Vierhauser, and Jinghui Cheng	Create Use Case

Use Case: Manage Flight Routes

ID: UC-02

Description
Provides features for creating, deleting, modifying, and persisting flight routes.

Primary Actor
Route planning operator

Supporting Actors

Stakeholders and Interests
Fire department engaged in river rescue
FAA concerned with flight regulations
General public

Pre-Conditions
Home coordinates have been stored in Dronology

Post Conditions

Success end condition
Flight plan is created, modified, or deleted as intended by the route planner.

Failure end condition:

Trigger
UAV flight manager loads the flight

Main Success Scenario

1. The operator opens the route planner UI.
2. The UI registers itself with Dronology and requests home coordinates and default scaling information.
3. Dronology returns home coordinates and scaling information.
4. The UI displays the map centered around the home coordinates using default scaling information.
5. The UI requests a list of all stored flight routes.
6. Dronology returns a list of all stored flight routes.
7. The UI displays a list of existing flight routes.
8. The operator selects to create a new route.
9. The operator creates a new flight route by marking waypoints on the map.
10. The UI connects waypoints into a flight route in the order they are added.
11. The operator issues a command to save the flight routes remotely.
12. Dronology saves the new flight route and sends confirmation to the UI.

13. The UI closes the active flight route planning window and adds the flight route to the list of stored flight routes.

Exceptions

7a. In step 7, the operator modifies an existing flight route.
- 7a.1 The route planner selects one of the existing flight routes.
- 7a.2 The UI checks that the entire route can be displayed on the current map view and repositions the map and rescales if necessary.
- 7a.3 The UI displays the selected flight route on the map
- 7a.4 The operator deletes a waypoint.
- 7a.5 The operator inserts a new waypoint and connects it within the path of waypoints.
- 7a.6 The operator moves an existing waypoint into a new position.

7b. In step 7, the operator chooses to delete an existing flight route.

8a. In step 8, the operator chooses to load a predefined flight route from the local file system.
- 8a.1 The operator selects to load a new flight route.
- 8a.2 The UI displays a file-picker.
- 8a.3 The operator selects the file.
- 8a.4 The UI validates that the selected flight route is formatted correctly, and if correct, loads it onto the map (see step 4).
- 8a.5 The operator issues a command to safe the flight route remotely to Dronology.

12a. In step 12, the connection to Dronology is lost and the new flight route is not saved remotely.
- 12a.1 The UI attempts to reconnect to Dronology and notifies the user.
- 12a.2 If the reconnect attempt fails after 30 seconds, the UI provides the option to the operator to save the flight route locally.
- 12a.3 The operator provides a file name.
- 12a.4 The flight route is saved locally.

Future Variations

4. In step 4, the type of map that is displayed my vary and may include Google Maps, Open Street Maps, and a basic map-less grid.

Frequency:
Whenever a flight plan needs to be modified, created, or deleted.

Assumptions
Any modifications made to flight routes will not impact currently scheduled flights.

Non-Functional Requirements

Performance

Security
1. Only authorized and authenticated users shall be able to create, modify, and delete flight routes.

User Interface
1. The GUI shall provide an intuitive interface that allows interactive manipulation of waypoints.