Revision History

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

Use Case: Display Active Flights

ID: UC-01

Description
Displays current coordinates, altitude, flight trail, flight plan, and health of currently active drones.

Primary Actor
UAV flight operator

Supporting Actors

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

Pre-Conditions
Dronology system is active
UAVs are activated
One or more flight plan has been loaded
The UAV flight operator is authorized to load the UI and connect to Dronology

Post Conditions

Success end condition
Map is displayed with coordinates and scale that encompasses all preloaded flight plans.
The current status of all active drones is displayed accurately on the map

Failure end condition:

Trigger
UAV flight manager loads the inflight view UI.

Main Success Scenario
1. The operator opens the inflight view (from now on referred to as the UI).
2. The UI registers itself with Dronology.
3. The UI displays operator controls (freeze-in-place, return-to-home, and cancel a flight).
4. The UI requests a list of all active UAVs.
5. Dronology returns a list of active UAVs.
6. The UI requests a list of all planned flight routes.
7. Dronology returns a list of all planned flight routes.

8. The UI establishes a perspective (i.e. scale and central latitude and longitude) that includes all waypoints from all planned flight routes.
9. The UI displays a map of the selected area.
10. The UI displays a dashboard depicting all active UAVs.
11. The UI requests the current status of all active UAVs.
12. Dronology returns the status of all active UAVs.
13. The UI displays the location and status of the currently active drones.
14. The UI requests a list of scheduled flight plans. (when does it become a flight plan?)
15. Dronology returns a list of scheduled flight plans.
16. The UI displays scheduled flight plans.
17. Dronology listens for operator commands
18. Repeat steps 9-16 every X seconds.

Exceptions

17a. In step 17, the UAV flight operator issues a hover-in-place command.
    17a.1   The UAV flight operator selects one, some, or all UAVs.
    17a.2   The UAV flight operator issues a hover-in-place command.
    17a.3   The UI forwards the command to Dronology.
    17a.4   Dronology instructs all UAVs to hover-in-place and returns confirmation to the UI.
    171.5   The UI indicates via the display which UAVs are frozen in place.

17b. In step 17, the UAV flight operator issues a return-to-home command.
    17b.1   The UAV flight operator selects one, some, or all UAVs.
    17b.2   The UAV flight operator issues a return-to-home command.
    17b.3   The UI forwards the command to Dronology.
    17b.4   Dronology instructs all UAVs to return to home and returns confirmation to the UI.
    17b.5   All current flight plans associated with UAVs that return to home are cancelled.
    17b.5   The UI updates the view of each impacted UAV's planned route.

Future Variations

8a. In step 8 the scale of the map is controlled by the user.
8b. In step 8 the map is focused around one key UAV and setup to scroll as the UAV changes coordinates.
9. In step 9, 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 virtual simulations or physical instances of Dronology are executed.

Assumptions
Multiple instances of inflight view may run simultaneously.

Non-Functional Requirements

Performance
1. Commands issued by the user (e.g. to hover-in-place) are responded to by Dronology within X seconds.

Security
1. Only authorized and authenticated users shall be able to issue operator commands to Dronology.

User Interface
1. The current status of each UAV shall be clearly understandable to operators (e.g. movement status, on-ground/in flight status, health, flight plan status)