fleet management computing system, causes the fleet management computing system to perform actions for managing a fleet of unmanned aerial vehicles (UAVs), the actions including receiving, by the fleet management computing system, telemetry information from a plurality of UAVs; generating, by the fleet management computing system, a map interface having a plurality of UAV icons based on the telemetry information; receiving, by the fleet management computing system, a selection of an initial group of UAV icons via the map interface, where the initial group of UAV icons includes two or more UAV icons; receiving, by the fleet management computing system, a de-selection of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons; transmitting, by the fleet management computing system, a command to UAVs associated with the UAV icons of the final selected group of UAV icons; receiving, by the fleet management computing system, acknowledgement messages from UAVs that have received the command; and generating, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received. Generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

[0006] In some embodiments, a computer-implemented method of managing a fleet of unmanned aerial vehicles (UAVs) is provided. A fleet management computing system receives telemetry information from a plurality of UAVs. The fleet management computing system generates a map interface having a plurality of UAV icons based on the telemetry information. The fleet management computing system receives a selection of an initial group of UAV icons via the map interface, wherein the initial group of UAV icons includes two or more UAV icons. The fleet management computing system

receives a de-selection of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons. The fleet management computing system transmits a command to UAVs associated with the UAV icons of the final selected group of UAV icons. The fleet management computing system receives, by the fleet management computing system, acknowledgement messages from UAVs that have received the command. The fleet management computing system generates, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received. Generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

[0007] In some embodiments, a system that includes a plurality of unmanned aerial vehicles (UAVs) and a fleet management computing system is provided. The fleet management computing system is communicatively coupled to the plurality of UAVs and includes a non-transitory computer-readable medium having logic stored thereon. The logic, in response to execution by one or more processors of the fleet management computing system, causes the fleet management computing system to perform actions including receiving, by the fleet management computing system, telemetry information from the plurality of UAVs, generating, by the fleet management computing system, a map interface having a plurality of UAV icons based on the telemetry information, receiving, by the fleet management computing system, a selection of an initial group of UAV icons via the map interface, where the initial group of UAV icons includes two or more UAV icons, receiving, by the fleet management computing system, a de-selection

of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons, transmitting, by the fleet management computing system, a command to UAVs associated with the UAV icons of the final selected group of UAV icons, receiving, by the fleet management computing system, acknowledgement messages from UAVs that have received the command, and generating, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received. Generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[0008] Non-limiting and non-exhaustive embodiments of the invention are described with reference to the following figures, wherein like reference numerals refer to like parts throughout the various views unless otherwise specified. Not all instances of an element are necessarily labeled so as not to clutter the drawings where appropriate. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles being described. To easily identify the discussion of any particular element or act, the most significant digit or digits in a reference number refer to the figure number in which that element is first introduced.

[0009] FIG. 1 is a block diagram that illustrates aspects of a non-limiting example embodiment of a fleet management computing system according to various aspects of the present disclosure.

[0010] FIG. 2A and FIG. 2B illustrate a non-limiting example embodiment of a UAV according to various aspects of the present disclosure.

[0011] FIG. 3 is a block diagram that illustrates further aspects of a non-limiting example embodiment of a UAV according to various aspects of the present disclosure.

[0012] FIG. 4A - FIG. 4B are a flowchart that illustrates a non-limiting example embodiment of a method of managing a fleet of UAVs according to various aspects of the present disclosure.

[0013] FIG. 5 is an illustration of a non-limiting example embodiment of a map interface generated by the user interface engine according to various aspects of the present disclosure.

[0014] FIG. 6A and FIG. 6B illustrate two non-limiting example embodiments of techniques for providing a selection of an initial group of UAV icons via the map interface according to various aspects of the present disclosure.

[0015] FIG. 7 is an illustration of a non-limiting example embodiment of a map interface after a de-selection of one or more UAV icons from the initial group of UAV icons according to various aspects of the present disclosure.

CLAIMS

What is claimed is:

1. A computer-readable medium having logic stored thereon that, in response to execution by one or more processors of a fleet management computing system, causes the fleet management computing system to perform actions for managing a fleet of unmanned aerial vehicles (UAVs), the actions comprising:

receiving, by the fleet management computing system, telemetry information from a plurality of UAVs;

generating, by the fleet management computing system, a map interface having a plurality of UAV icons based on the telemetry information;

receiving, by the fleet management computing system, a selection of an initial group of UAV icons via the map interface, wherein the initial group of UAV icons includes two or more UAV icons;

receiving, by the fleet management computing system, a de-selection of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons;

transmitting, by the fleet management computing system, a command to UAVs associated with the UAV icons of the final selected group of UAV icons;

receiving, by the fleet management computing system, acknowledgement messages from UAVs that have received the command; and

generating, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received;

wherein generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

2. The computer-readable medium of claim 1, wherein receiving the selection of the initial group of UAV icons via the map interface includes receiving an input of a border around two or more UAV icons to be selected.

3. The computer-readable medium of claim 2, wherein receiving the input of the border around the two or more UAV icons to be selected includes receiving a rectangular selection border.

4. The computer-readable medium of claim 2, wherein receiving the input of the border around the two or more UAV icons to be selected includes receiving a lasso selection border.

5. The computer-readable medium of claim 1, wherein receiving the de-selection of one or more UAV icons from the initial group of UAV icons includes receiving a click-and-modifier-key input, a right-click input, or a long-tap input.

6. The computer-readable medium of claim 1, wherein transmitting the command to UAVs associated with the UAV icons of the final selected group of UAV icons includes transmitting a land now command or a hover command.

7. The computer-readable medium of claim 1, wherein the actions further comprise:

receiving, by the fleet management computing system, an indication of a tag to be applied to the UAVs associated with the UAV icons of the final selected group of UAV icons; and

storing, by the fleet management computing system, associations between the tag and the UAVs associated with the UAV icons of the final selected group of UAV icons.

8. A computer-implemented method of managing a fleet of unmanned aerial vehicles (UAVs), the method comprising:

receiving, by a fleet management computing system, telemetry information from a plurality of UAVs;

generating, by the fleet management computing system, a map interface having a plurality of UAV icons based on the telemetry information;

receiving, by the fleet management computing system, a selection of an initial group of UAV icons via the map interface, wherein the initial group of UAV icons includes two or more UAV icons;

receiving, by the fleet management computing system, a de-selection of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons;

transmitting, by the fleet management computing system, a command to UAVs associated with the UAV icons of the final selected group of UAV icons;

receiving, by the fleet management computing system, acknowledgement messages from UAVs that have received the command; and

generating, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received;

wherein generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

9. The computer-implemented method of claim 8, wherein receiving the selection of the initial group of UAV icons via the map interface includes receiving an input of a border around two or more UAV icons to be selected.

10. The computer-implemented method of claim 9, wherein receiving the input of the border around the two or more UAV icons to be selected includes receiving a rectangular selection border.

11. The computer-implemented method of claim 9, wherein receiving the input of the border around the two or more UAV icons to be selected includes receiving a lasso selection border.

12. The computer-implemented method of claim 8, wherein receiving the de-selection of one or more UAV icons from the initial group of UAV icons includes receiving a click-and-modifier-key input, a right-click input, or a long-tap input.

13. The computer-implemented method of claim 8, wherein transmitting the command to UAVs associated with the UAV icons of the final selected group of UAV icons includes transmitting a land now command or a hover command.

14. The computer-implemented method of claim 8, further comprising:

receiving, by the fleet management computing system, an indication of a tag to be applied to the UAVs associated with the UAV icons of the final selected group of UAV icons; and

storing, by the fleet management computing system, associations between the tag and the UAVs associated with the UAV icons of the final selected group of UAV icons.

15. A system, comprising:

a plurality of unmanned aerial vehicles (UAVs); and

a fleet management computing system communicatively coupled to the plurality of UAVs;

wherein the fleet management computing system includes a non-transitory computer-readable medium having logic stored thereon that, in response to execution by one or more processors of the fleet management computing system, causes the fleet management computing system to perform actions comprising:

receiving, by the fleet management computing system, telemetry information from the plurality of UAVs;

generating, by the fleet management computing system, a map interface having a plurality of UAV icons based on the telemetry information;

receiving, by the fleet management computing system, a selection of an initial group of UAV icons via the map interface, wherein the initial group of UAV icons includes two or more UAV icons;

receiving, by the fleet management computing system, a de-selection of one or more UAV icons from the initial group of UAV icons to create a final selected group of UAV icons;

transmitting, by the fleet management computing system, a command to UAVs associated with the UAV icons of the final selected group of UAV icons;

receiving, by the fleet management computing system, acknowledgement messages from UAVs that have received the command; and

generating, by the fleet management computing system, an interface element to allow retrying transmission of the command to UAVs from which acknowledgement messages have not been received;

wherein generating the interface element to allow retrying transmission of the command includes de-selecting the UAV icons of the map interface associated with UAVs from which acknowledgement messages were received.

16. The system of claim 15, wherein receiving the selection of the initial group of UAV icons via the map interface includes receiving an input of a border around two or more UAV icons to be selected;

wherein receiving the input of the border around the two or more UAV icons to be selected includes receiving a rectangular selection border or a lasso selection border; and

wherein receiving the de-selection of one or more UAV icons from the initial group of UAV icons includes receiving a click-and-modifier-key input, a right-click input, or a long-tap input.