Claims

1. A container structure for transport by airborne aerial drone, comprising:

a main body comprising a set of sidewalls, a bottom coupled to the set of sidewalls, and a main opening opposite the bottom, which provide a predetermined container structure inner spatial volume into which objects are insertable through the main opening;

a lid couplable or coupled to the main body and configured for closing the main opening of the main body;

a plurality of aerial drone grip elements organized in an aerial drone grip configuration and shaped and dimensioned to accommodate structural counterpart aerial drone gripping mechanisms by which the container structure is carried by an aerial drone during aerial drone flight;

a plurality of visual aerial drone orientation markers carried by at least one external surface of the container structure at predetermined locations relative to the plurality of aerial drone grip elements, which collectively define a container structure pickup orientation relative to the aerial drone;

a first machine-readable code disposed on an external surface of the container structure, which indicates or encodes a unique container structure serial number and at least one of container structure dimensions, container structure weight carrying capacity, and the aerial drone grip configuration; and

an inwardly-protruding structure corresponding to each aerial drone grip element within the plurality of aerial drone grip elements, wherein each inwardly-protruding structure establishes a physical separation or barrier between an object disposed inside the container structure and an aerial drone gripping mechanism when the container structure is carried by the aerial drone.

2. The container structure of claim 1, wherein at least one of the visual aerial done orientation markers comprises an optically reflective material in visible and/or infrared optical wavelength bands.

3. The container structure of claim 1, wherein at least one of the visual aerial drone orientation markers comprises optically reflective tape.

4. The container structure of claim 1, further comprising an RFID tag storing data including container structure grip element configuration and the unique container structure serial number.

5. The container structure of claim 4, further comprising a sensing unit having:
a power source;
one of a state machine and a microcontroller;
a memory; and
a set of sensors comprising at least one of a temperature sensor, a relative humidity sensor, a moisture sensor, an altitude or barometric pressure sensor, a set of accelerometers and/or gyroscopes, a magnetometer, a photodetector or photodiode, and a microphone.

6. The container structure of claim 4, wherein the RFID tag further stores data corresponding to at least two of: a number of times the container structure has been transported by aerial drone, a most-recent date and time on which the container structure was transported by an aerial drone, and an electronic link to container structure aerial drone transport history data.

7. The container structure of claim 6, wherein the container structure history data includes a set of aerial drone transport history codes or data comprising at least two of: a container structure user name or identifier (ID); container in-flight weight; an aerial drone container structure pickup address comprising two dimensional (2D) or three dimensional (3D) geospatial location data corresponding to an aerial drone container structure pickup location; an aerial drone container structure drop-off address comprising 2D or 3D geospatial location data corresponding to an aerial drone container structure drop-off location; aerial drone flight time between the container structure pickup location and the container structure drop-off location; and a set of signal values sensed in-flight between the container structure pickup location and the container structure dropoff location.

8. The container structure of claim 1, further comprising a plurality of prepositioned, selectively exposable adhesive areas on an inner surface of the bottom of the container structure.

9. The container structure of claim 1, further comprising a set of first closure mechanisms carried by the lid, each of the first closure mechanisms including a first multi-width aperture

structure having a first cross-sectional area and a second cross-sectional area different than the first cross-sectional area.

10. The container structure of claim 9, further comprising:

a set of second closure mechanisms carried by at least one sidewall within the set of sidewalls, each of the second closure mechanisms including a second multi-width aperture structure having includes a third cross-sectional area and a fourth cross-sectional area that is different than the third cross-sectional area, wherein each second closure mechanism corresponds to a counterpart first closure mechanism to form a counterpart first closure mechanism – second closure mechanism pair; and

an elongate elastic cord or band structure corresponding to each first closure mechanism – second closure mechanism pair, wherein the elastic cord or band structure comprises:

a predetermined length of elastic material having a first end and a second end;

a first knob element disposed at the first end of the length of elastic material and having a cross sectional area that is at least 10% smaller than the first cross sectional area and at least 20% larger than the second cross-sectional area, and which is configured for insertion into a first multi-width aperture structure through the first cross-sectional area and retention by the first multi-width aperture structure by the second cross-sectional area; and

a second knob element disposed at the second end of the length of the elastic material and having a cross sectional area that is at least 10% smaller than the third cross sectional area and at least 20% larger than the fourth cross-sectional area, and which is configured for insertion into the second multi-width aperture structure through the third cross-sectional area and retention by the second multi-width aperture structure by the fourth cross-sectional area.

11. The container structure of claim 10, further comprising an elastic cord or band structure corresponding to each of the first closure mechanisms, the elastic cord or band element structure comprising:

a predetermined length of elastic cord or band having a first end portion and a second end portion, the first end portion securely retained by or coupled to a predetermined container structure sidewall and extending outwardly through the predetermined container structure sidewall into container structure’s external environment; and

a first knob element disposed at a second end portion of the length of elastic material in the container structure's external environment, and having a cross sectional area that is at least 10% smaller than the first cross sectional area and at least 20% larger than the second cross sectional area, and which is configured for insertion into a first multi-width aperture structure through the first cross-sectional area and retention by the first multi-width aperture structure by the second cross-sectional area.

12. The container structure of claim 1, further comprising a second machine readable code disposed on an exterior surface of the container structure that indicates or encodes a target destination address to which the container structure is to be transferred by the aerial drone, wherein the target destination address comprises a target destination aerial drone landing pad (ADLP) address comprising current or most-recent 2D or 3D geospatial location data for the target destination ADLP plus an as-manufactured ADLP serial number.