CLAIMS

1. A method comprising:

determining, by a computing device in communication with a plurality of sensors categorized into groups of sensors, each group of sensors being associated with detecting a respective flight phase of an aircraft different from other flight phases respectively detected by other groups of the sensors of the plurality of sensors, based on information received from a first group of sensors of the groups of sensors, that the aircraft is in a descent flight phase prior to the aircraft reaching a gate at an airport by a first predetermined amount of time;

responsively, triggering, by the computing device, preparation of servicing equipment associated with servicing the aircraft to be ready for a subsequent flight, wherein preparation time of the servicing equipment is substantially equal to or less than the first predetermined amount of time;

determining by the computing device, based on information received from a second group of sensors of the groups of sensors, that the aircraft landed and has started a taxi-in flight phase prior to reaching the gate by a second predetermined amount of time, wherein the second group of sensors configured to indicate that the aircraft landed and has started the taxi-in flight phase is different from the first group of sensors configured to indicate that the aircraft is in the descent flight phase;

responsively, triggering, by the computing device, deployment of the servicing equipment toward the gate, wherein arrival of the servicing equipment at the gate takes substantially the second predetermined amount of time or less;

determining by the computing device, based on information received from a third group of sensors in communication with the computing device, that the aircraft has arrived at the gate; and

responsively, triggering, by the computing device, use of the servicing equipment to prepare the aircraft for the subsequent flight.

2. The method of claim 1, wherein the servicing equipment is a first set of servicing equipment, and wherein the method further comprises:

determining, based on information received from a fourth group of sensors in communication with the computing device, that the aircraft is in an approach flight phase at a particular altitude prior to the aircraft reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

3. The method of claim 1, wherein the servicing equipment is a first set of servicing equipment, and wherein the method further comprises:

determining, based on information received from a fourth group of sensors in communication with the computing device, that the aircraft is in a landing flight phase prior to reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

4. The method of claim 3, wherein the fourth group of sensors comprises a load sensor coupled to a landing gear of the aircraft, wherein determining that the aircraft is in the landing flight phase is based on the load sensor indicating an increase in load experienced by the landing gear upon the landing gear touching a runway.

5. The method of claim 1, wherein at least one of the first, second, or third group of sensors include at least one sensor coupled to the aircraft and one sensor that is ground-based.

6. The method of claim 1, wherein the computing device is in communication with a database including information indicative of weather conditions in a vicinity of the airport, and wherein the method further comprises:

modifying at least one of the first or second predetermined amount of time based on weather information received from the database, wherein determining, based on information received from the first group of sensors of the groups of sensors, that the aircraft is in the descent flight phase comprises:

assigning to each sensor a weight indicative of a degree of accuracy of the sensor based on the weather conditions in the vicinity of the airport.

7. The method of claim 1, wherein the servicing equipment includes at least one autonomous vehicle, and wherein triggering deployment of the servicing equipment toward the gate comprises transmitting a command to the autonomous vehicle to autonomously navigate toward the gate.

8. A non-transitory computer readable medium having stored therein instructions that, in response to execution by a computing device in communication with a plurality of sensors categorized into groups of sensors, each group of sensors being associated with detecting a respective flight phase of an aircraft different from other flight phases respectively detected by other groups of the sensors of the plurality of sensors, cause the computing device to perform operations comprising:

determining, based on information received from a first group of sensors of the groups of sensors, that the aircraft is in a descent flight phase prior to the aircraft reaching a gate at an airport by a first predetermined amount of time;

responsively, triggering preparation of servicing equipment associated with servicing the aircraft to be ready for a subsequent flight, wherein preparation time of the servicing equipment is substantially equal to or less than the first predetermined amount of time;

determining, based on information received from a second group of sensors of the groups of sensors, that the aircraft landed and has started a taxi-in flight phase prior to reaching the gate by a second predetermined amount of time, wherein the second group of sensors configured to indicate that the aircraft landed and has started the taxi-in flight phase is different from the first group of sensors configured to indicate that the aircraft is in the descent flight phase;

responsively, triggering deployment of the servicing equipment toward the gate, wherein arrival of the servicing equipment at the gate takes substantially the second predetermined amount of time or less;

determining, based on information received from a third group of sensors in communication with the computing device, that the aircraft has arrived at the gate; and

responsively, triggering use of the servicing equipment to prepare the aircraft for the subsequent flight.

9. The non-transitory computer readable medium of claim 8, wherein the servicing equipment is a first set of servicing equipment, and wherein the operations further comprise:

determining, based on information received from a fourth group of sensors in communication with the computing device, that the aircraft is in an approach flight phase at a particular altitude prior to reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

10. The non-transitory computer readable medium of claim 8, wherein the servicing equipment is a first set of servicing equipment, and wherein the operations further comprise:

determining, based on information received from a fourth group of sensors, that the aircraft is in a landing flight phase prior to reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

11. The non-transitory computer readable medium of claim 10, wherein the fourth group of sensors comprises a load sensor coupled to a landing gear of the aircraft, wherein determining that the aircraft is in the landing flight phase is based on the load sensor indicating an increase in load experienced by the landing gear upon the landing gear touching a runway.

12. The non-transitory computer readable medium of claim 8, wherein at least one of the first, second, or third group of sensors includes at least one sensor coupled to the aircraft and one sensor that is ground-based.

13. The non-transitory computer readable medium of claim 8, wherein the third group of sensors includes a vision sensor coupled to the gate or a jet bridge at the gate.

14. The non-transitory computer readable medium of claim 8, wherein the servicing equipment includes at least one autonomous vehicle, and wherein triggering deployment of the servicing equipment toward the gate comprises transmitting a command to the autonomous vehicle to autonomously navigate toward the gate.

15. A system comprising:

one or more processors;

a plurality of sensors in communication with the one or more processors and categorized into groups of sensors, wherein each group of sensors is associated with detecting a respective flight phase of an aircraft that is different from other flight phases respectively detected by other groups of the sensors of the plurality of sensors; and

data storage storing thereon instructions, that when executed by the one or more processors, cause the one or more processors to perform operations comprising:

determining, based on information received from a first group of sensors of the groups of sensors, that the aircraft is in a descent flight phase prior to the aircraft reaching a gate at an airport by a first predetermined amount of time;

responsively, triggering preparation of servicing equipment associated with servicing the aircraft to be ready for a subsequent flight, wherein preparation time of the servicing equipment is substantially equal to or less than the first predetermined amount of time;

determining, based on information received from a second group of sensors of the groups of sensors, that the aircraft landed and has started a taxi-in flight phase prior to reaching the gate by a second predetermined amount of time, wherein the second group of sensors is different from the first group of sensors;

responsively, triggering deployment of the servicing equipment toward the gate, wherein arrival of the servicing equipment at the gate takes substantially the second predetermined amount of time or less;

determining, based on information received from a third group of sensors in communication with the one or more processors, that the aircraft has arrived at the gate; and

responsively, triggering use of the servicing equipment to prepare the aircraft for the subsequent flight.

16. The system of claim 15, wherein the servicing equipment is a first set of servicing equipment, and wherein the operations further comprise:

determining, based on information received from a fourth group of sensors in communication with the one or more processors, that the aircraft is in an approach flight phase when the aircraft reaches a particular altitude prior to reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing

equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

17. The system of claim 15, wherein the servicing equipment is a first set of servicing equipment, and wherein the operations further comprise:

determining, based on information received from a fourth group of sensors in communication with the one or more processors, that the aircraft is in a landing flight phase prior to reaching the gate by a third predetermined amount of time; and

responsively, triggering preparation of a second set of servicing equipment associated with servicing the aircraft to be ready for the subsequent flight, wherein respective preparation time of the second set of servicing equipment is substantially equal to or less than the third predetermined amount of time, and wherein triggering deployment of the servicing equipment toward the gate comprises triggering deployment of the first and second sets of servicing equipment, wherein arrival of the first and second sets of servicing equipment at the gate takes substantially the second predetermined amount of time or less.

18. The system of claim 15, wherein at least one of the first, second, or third group of sensors includes at least one sensor coupled to the aircraft and one sensor that is ground-based.

19. The system of claim 18, wherein the at least one sensor coupled to the aircraft indicates position, speed, acceleration, altitude, or heading direction of the aircraft, and the sensor that is ground-based includes a vision sensor, a Light Detection and Ranging (LIDAR) device, a RADAR, a passive RFID, an active RFID, or a Bluetooth device.

20. The system of claim 15, wherein the servicing equipment includes at least one autonomous vehicle, and wherein triggering deployment of the servicing equipment toward the gate comprises transmitting a command to the autonomous vehicle to autonomously navigate toward the gate.