ENHANCED TRANSIT LOCATION SYSTEMS AND METHODS

CROSS REFERENCE TO RELATED APPLICATIONS

(01) The present application claims priority to U.S. Provisional Patent Application No. 62/893,724, filed August 29, 2019, entitled "ENHANCED TRANSIT LOCATION SYSTEMS AND METHODS," the disclosure thereof incorporated by reference herein in its entirety.

FIELD

(02) The present disclosure relates generally to transportation intelligence, and more specifically to systems and methods for enhanced identification of transit location.

SUMMARY

(02a) According to a first aspect of the present invention, there is provided a system, comprising:

a hardware processor; and

a non-transitory machine-readable storage medium encoded with instructions executable by the hardware processor to perform a method comprising:

receiving, at a first one of a plurality of first electronic devices anchored along a transportation pathway, a first wireless signal transmitted by a second electronic device attached to a vehicle traveling along the transportation pathway;

responsive to receiving the first wireless signal, transmitting, from the first one of the first electronic devices, a second wireless signal, wherein the second electronic device determines a location of the vehicle along the transportation pathway according to the second wireless signal;

receiving, at the first one of the first electronic devices, a third wireless signal transmitted by a second electronic device, wherein the third wireless signal identifies the determined location of the vehicle; and

transmitting, from the first one of the first electronic devices, a fourth wireless signal, wherein the fourth wireless signal identifies the determined location of the vehicle, wherein other ones of the first electronic devices wirelessly relay fifth wireless signals along the transportation pathway, wherein the fifth wireless signals identify the determined location of the vehicle.

(02b) According to a second aspect of the present invention, there is provided a non-transitory machine-readable storage medium encoded with instructions executable by a hardware processor of a computing component, the machine-readable storage medium comprising instructions to cause the hardware processor to perform a method comprising:

receiving, at a first one of a plurality of first electronic devices anchored along a transportation pathway, a first wireless signal transmitted by a second electronic device attached to a vehicle traveling along the transportation pathway;

responsive to receiving the first wireless signal, transmitting, from the first one of the first electronic devices, a second wireless signal, wherein the second electronic device determines a location of the vehicle along the transportation pathway according to the second wireless signal;

receiving, at the first one of the first electronic devices, a third wireless signal transmitted by a second electronic device, wherein the third wireless signal identifies the determined location of the vehicle; and

transmitting, from the first one of the first electronic devices, a fourth wireless signal, wherein the fourth wireless signal identifies the determined location of the vehicle, wherein other ones of the first electronic devices wirelessly relay fifth wireless signals along the transportation pathway, wherein the fifth wireless signals identify the determined location of the vehicle.

(02c) According to a third aspect of the present invention, there is provided a computer-implemented method, comprising:

receiving, at a first one of a plurality of first electronic devices anchored along a transportation pathway, a first wireless signal transmitted by a second electronic device attached to a vehicle traveling along the transportation pathway;

responsive to receiving the first wireless signal, transmitting, from the first one of the first electronic devices, a second wireless signal, wherein the second electronic device determines a location of the vehicle along the transportation pathway according to the second wireless signal;

receiving, at the first one of the first electronic devices, a third wireless signal transmitted by a second electronic device, wherein the third wireless signal identifies the determined location of the vehicle; and

transmitting, from the first one of the first electronic devices, a fourth wireless signal, wherein the fourth wireless signal identifies the determined location of the vehicle, wherein other ones of the first electronic devices wirelessly relay fifth wireless signals along the transportation pathway, wherein the fifth wireless signals identify the determined location of the vehicle.

(03) Embodiments of the present disclosure provide systems and methods for tracking information relating to transportation vehicles. For example, some embodiments of the disclosure provide a system for enhanced location and data

collection from vehicles traveling along a vehicle pathway. The system may include a communications mesh architecture of vehicle tagging devices and anchored transceivers affixed to segments of a vehicle pathway. For example, the vehicle may be a light rail train, a commuter train, a freight train, an automobile, an airplane, a ship, a space vehicle, a ski lift, a gondola, or other forms of transportation as known in the art. The transportation pathway may be any pathway along which the respective vehicle moves, such as a train track, a road, a canal or shipping lane, a runway, an airway, or other vehicle pathways as known in the art. By providing a communications mesh architecture, the enhanced transit location system may be fault tolerant while still providing highly accurate, real-time location data for vehicles.