

Claims

1. An autonomous transportation network (10) comprising
a plurality of autonomous vehicles (20) with an onboard processor (27) and vehicle
5 memory (28) for calculating (240) a route (50) between an origin (30) and a
destination (40) and a vehicle antenna (25) for transmitting the calculated route (50);
a control management center (100) comprising a control management processor
(120) and a central memory (140) for independently calculating (250) the routes (50)
of the plurality of autonomous vehicles (20); and
10 a plurality of beacons (17) connected to the control management center (100) and
receiving redirection information from the control management center (100) for
transmission to one or more of the plurality of autonomous vehicles (20).
2. The autonomous transportation network (10) of claim 1, wherein the plurality of
15 beacons (17) are located at junctions (56).
3. The autonomous transportation network (10) of claim 1 or 2, wherein the control
management center (100) is adapted to determine conflict situation in the routes (50)
of the plurality of autonomous vehicles (20).
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4. The autonomous transportation network (10) of claim 1 to 3, wherein the control
management center (100) is further adapted for simulating (260) a traffic demand
and the routes (50) of the autonomous vehicles (20) and for determining corrected
route instructions (50cor) for the autonomous vehicles (20) in case of a necessary
25 redirection along the route (50).
5. A method of operation (100a) of an autonomous transportation network comprising
a plurality of autonomous vehicles (20), the method comprising:
- receiving an instruction for a journey from an origin (30) to a destination (40);
30 - locally calculating (240) in at least one of plurality of autonomous vehicles (20) a
route (50) from the origin (30) to the destination (40);
- independently calculating (250) in a control management center (100) the route (50)

- from the origin (30) to the destination (40);
- comparing (260) the route (50) calculated in the one of the plurality of autonomous vehicles (20) with the route independently calculated in the control management center (100); and, in the event of a disturbance,
- 5 - sending (270) corrected route instructions (50cor) to the one of the plurality of autonomous vehicles (20).
6. The method of claim 5, wherein the sending (270) of the corrected route instruction (50cor) comprises sending the corrected route instructions (50cor) to one of more
- 10 beacons (17).
7. The method of claim 5 or 6, wherein the corrected route instructions (50cor) comprises one or more of speed instructions or diversion instructions.
- 15 8. A method (100b) for calculation of a route (50) from an origin (30) to a destination (40) in an onboard processor (27) of an autonomous vehicle (20), the method (100b) comprising:
- receiving (300) an instruction for a journey, the instruction comprising the origin (30) and the destination (40) of the journey;
- 20 - locally calculating (240, 310), using the onboard processor (27) and a vehicle geographic data (24), stored in a vehicle memory (28), a direct route (50dir) from the origin (30) to the destination (40);
- receiving (320) by a vehicle antenna (25) of the autonomous vehicle (20) a corrected route instruction (50cor) directed at the one of the plurality of autonomous vehicles
- 25 (20) from a control management center (100);
- locally recalculating (330) a new best route (50new) for a remainder of the route (50) to the destination (40), using the onboard processor (27), the vehicle geographic data (24) stored in the vehicle memory (28), and the received corrected route instructions (50cor); and
- 30 - continuing (340) the journey along the corrected new best route (50new) by the autonomous vehicle (20).

9. A method (100c) for calculation of a route (50) from an origin (30) to a destination (40) in a control management processor (120), the method (100c) comprising:
- receiving (500), from a passenger (35), a request for a journey to the destination (30) of the journey;
 - 5 - assigning (510) one autonomous vehicle (20) of the plurality of autonomous vehicles (20) for fulfilling the request of the passenger (35);
 - independently calculating (240, 520), using the control management processor (120) and the central geographic data (124), stored in the central memory (140), the route (50) to the destination (40);
 - 10 - simulating (260, 530) a traffic demand and the routing of the autonomous vehicles (20) in the transportation network (10), using the requests received from a plurality of the passengers (35) and the control management processor (120);
 - determining (540) corrected route instructions (50cor) for a redirection from the route (50) for the one of the plurality of autonomous vehicles (20) using the
 - 15 simulated (260, 530) traffic demand; and
 - relaying (270, 550) the corrected route instructions (50cor) to the one of the plurality of the autonomous vehicles (20) for redirecting the autonomous vehicle (20) to an alternative route (50alt) or for recalculating a new best route (50new) by the autonomous vehicle (20).

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