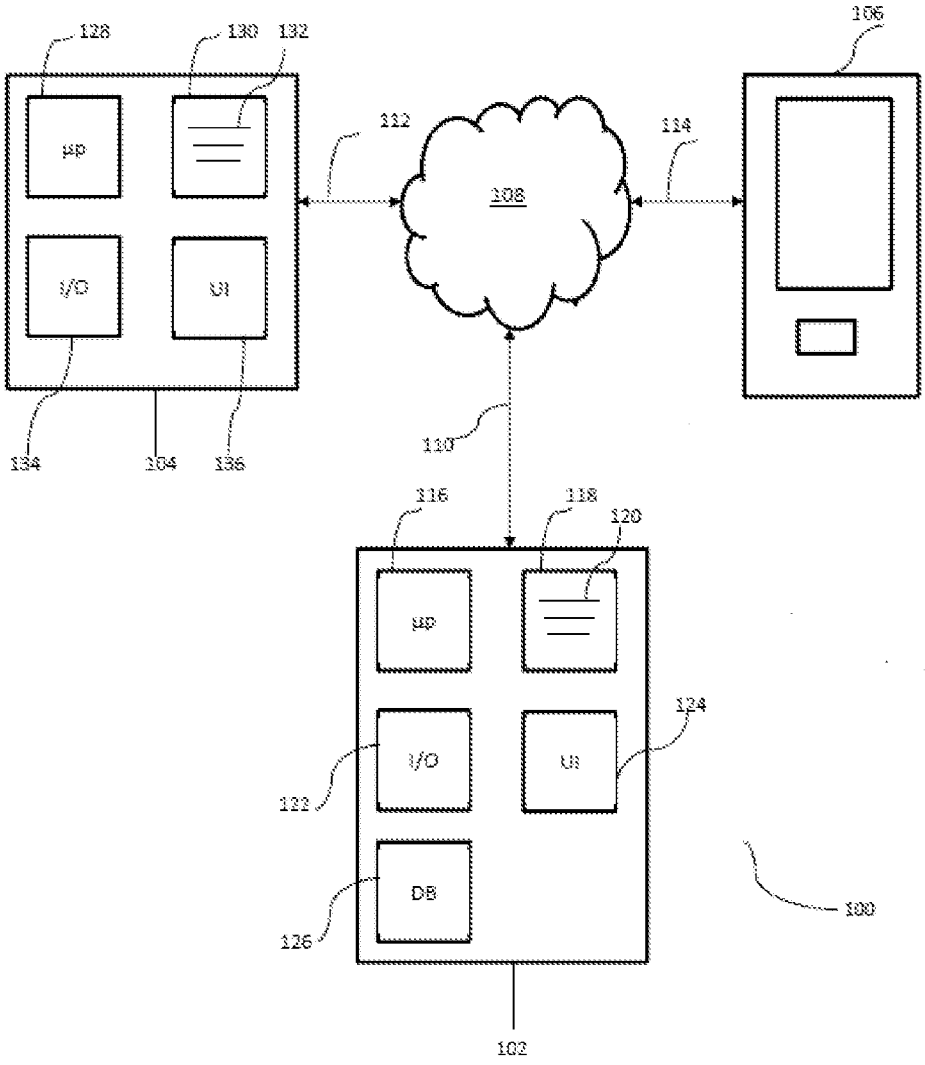
128
130
132
106
µp
112
114
108
I/O
UI
134
104
136
110
116
118
120
µp
124
I/O
UI
122
DB
126
100
102

Fig. 1

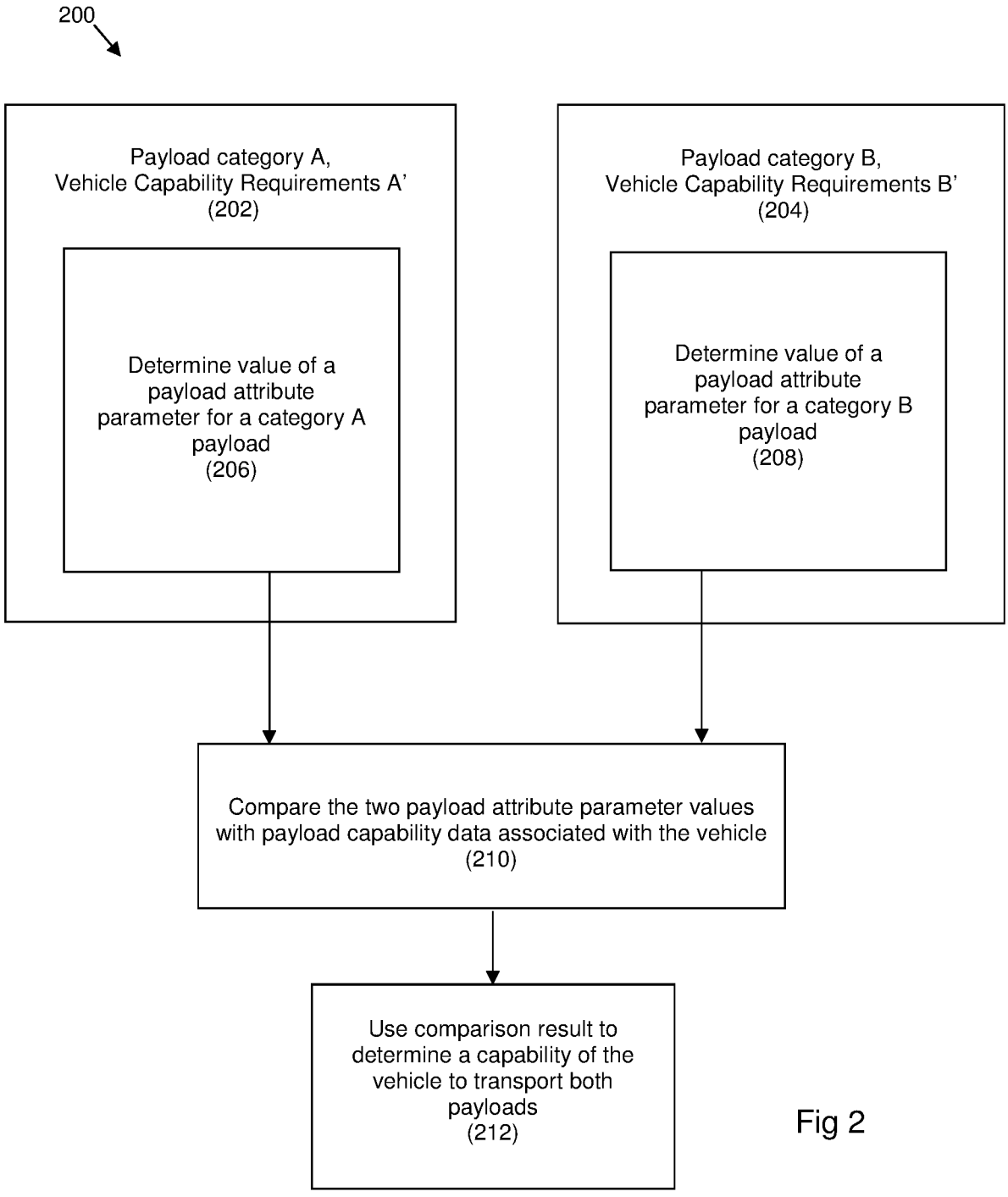
200
Payload category A,
Vehicle Capability Requirements A'
(202)
Determine value of a payload attribute parameter for a category A payload
(206)
Payload category B,
Vehicle Capability Requirements B'
(204)
Determine value of a payload attribute parameter for a category B payload
(208)
Compare the two payload attribute parameter values with payload capability data associated with the vehicle
(210)
Use comparison result to determine a capability of the vehicle to transport both payloads
(212)

Fig 2

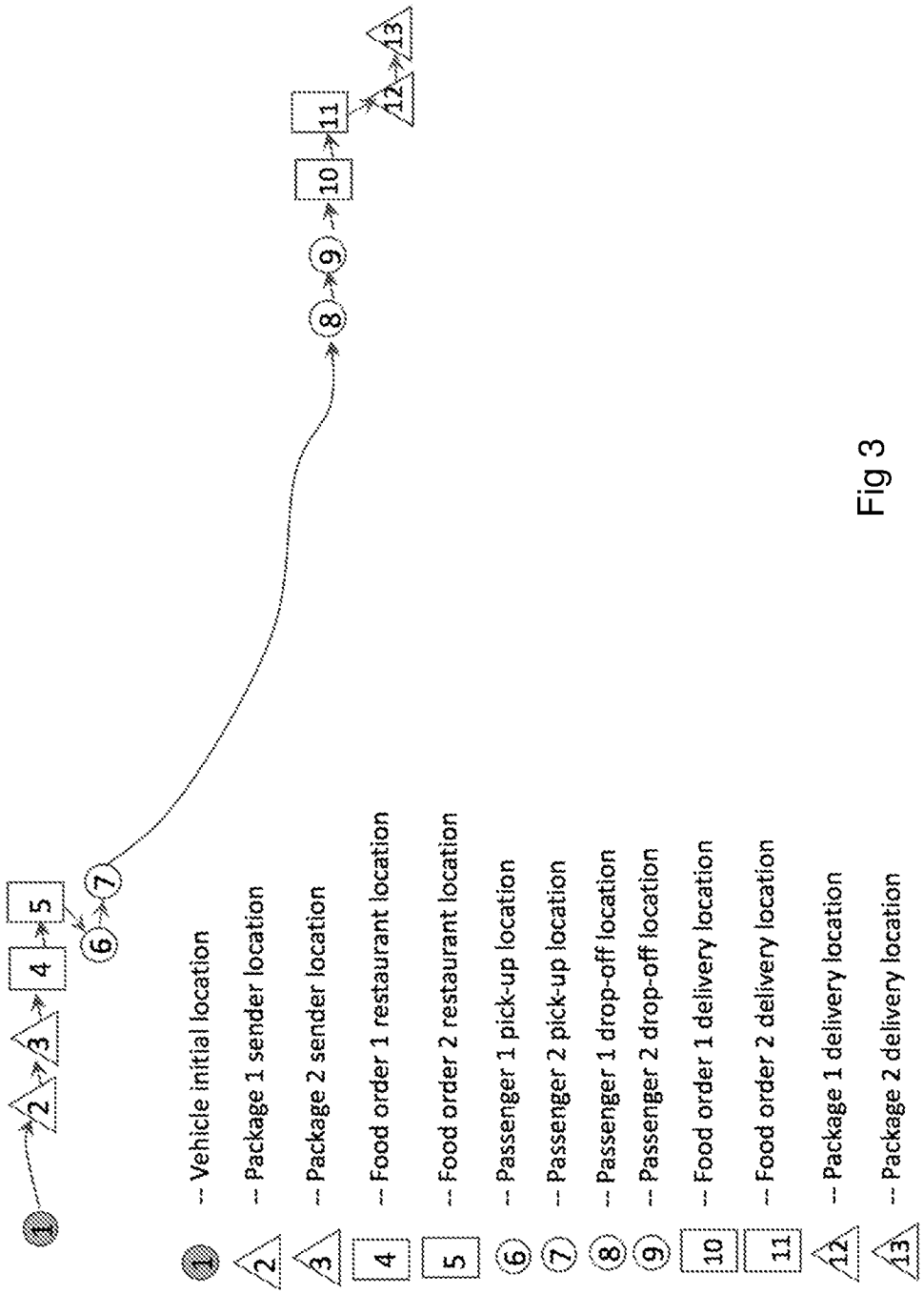
-- Vehicle initial location
-- Package 1 sender location
-- Package 2 sender location
-- Food order 1 restaurant location
-- Food order 2 restaurant location
-- Passenger 1 pick-up location
-- Passenger 2 pick-up location
-- Passenger 1 drop-off location
-- Passenger 2 drop-off location
-- Food order 1 delivery location
-- Food order 2 delivery location
-- Package 1 delivery location
-- Package 2 delivery location

Fig 3

5

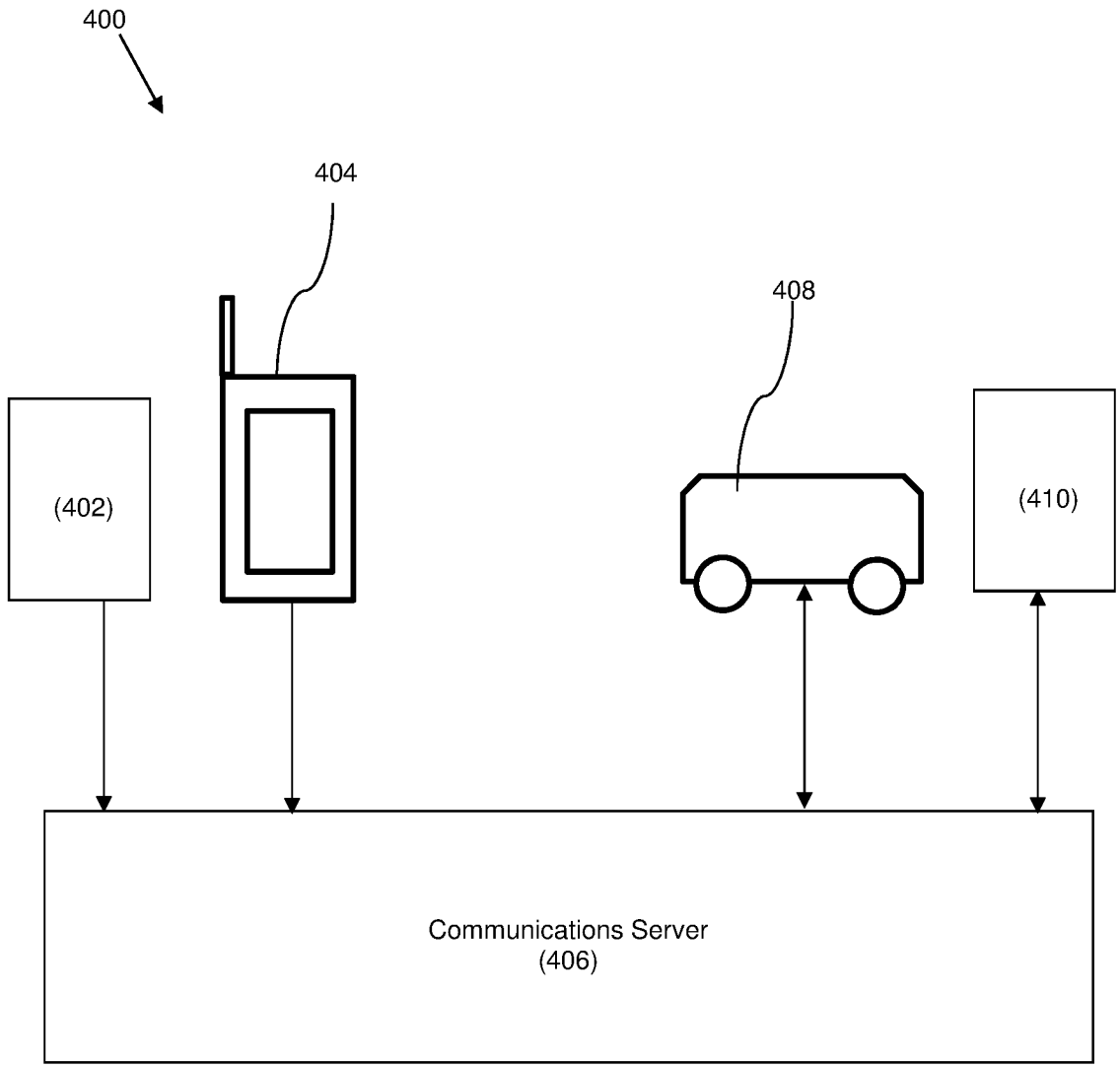

Fig 4

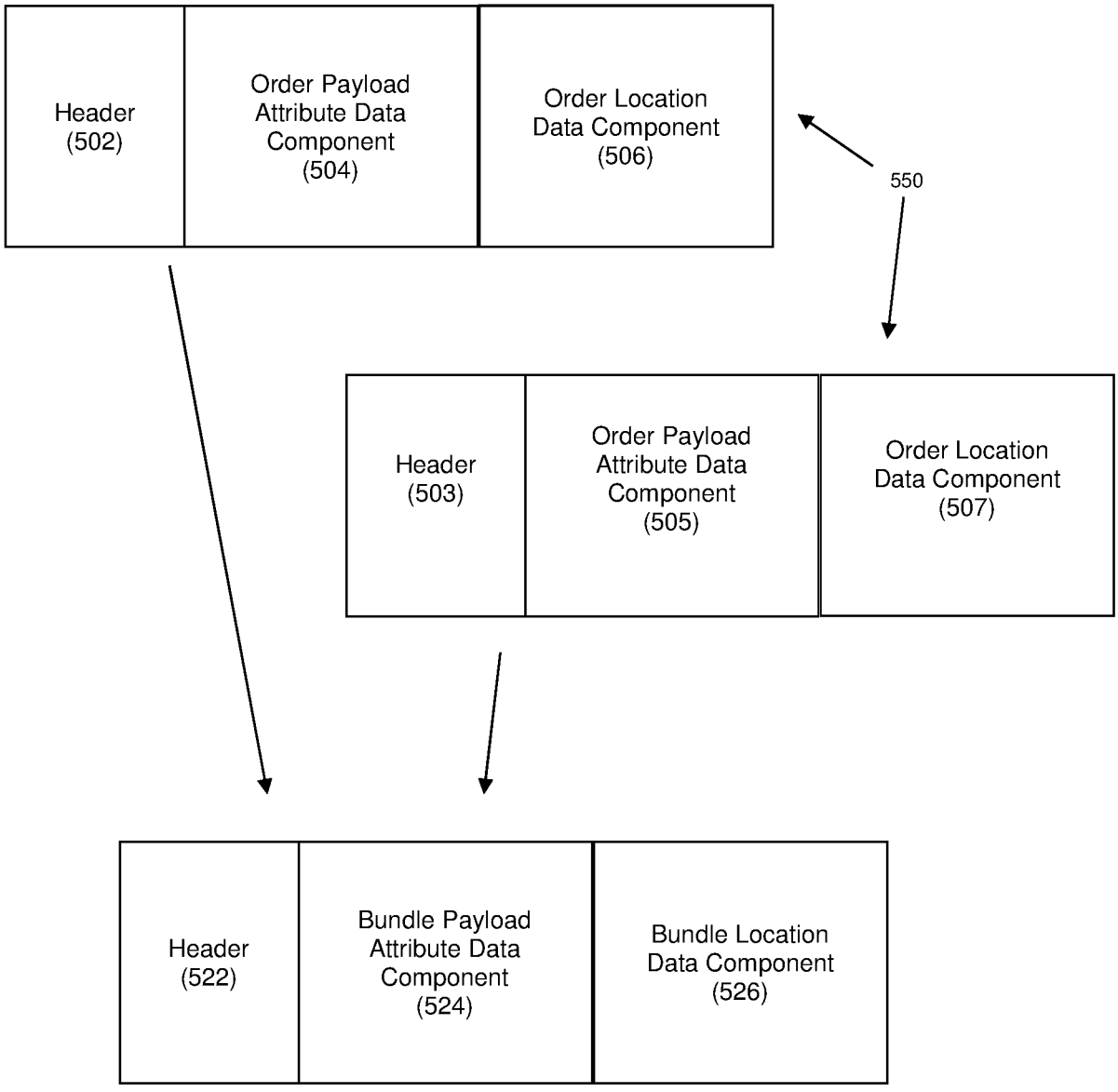
Header
(502)
Order Payload
Attribute Data
Component
(504)
Order Location
Data Component
(506)
550
Header
(503)
Order Payload
Attribute Data
Component
(505)
Order Location
Data Component
(507)
Header
(522)
Bundle Payload
Attribute Data
Component
(524)
Bundle Location
Data Component
(526)

Fig 5a

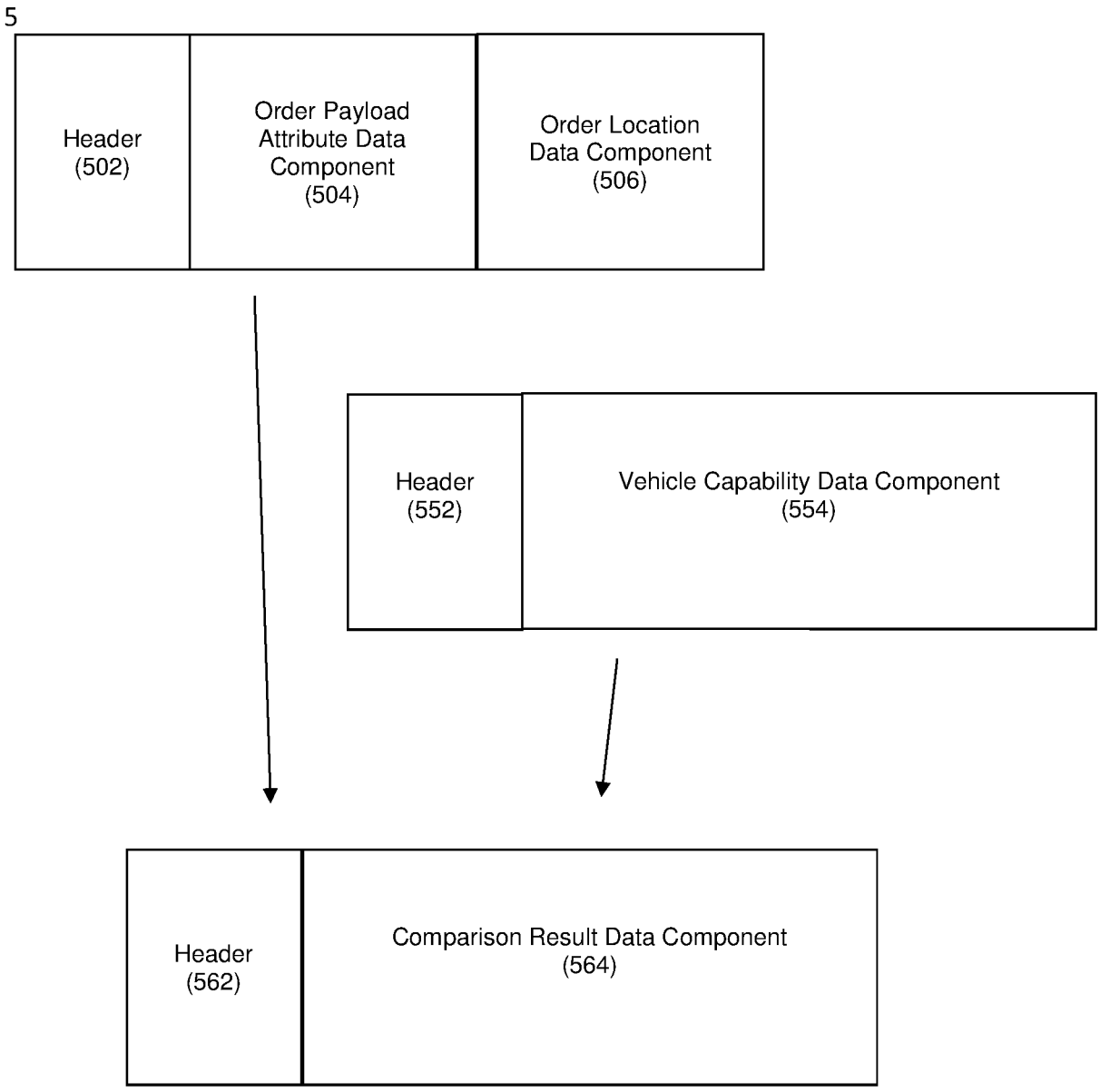
5
Header
(502)
Order Payload
Attribute Data
Component
(504)
Order Location
Data Component
(506)
Header
(552)
Vehicle Capability Data Component
(554)
Header
(562)
Comparison Result Data Component
(564)

Fig 5b

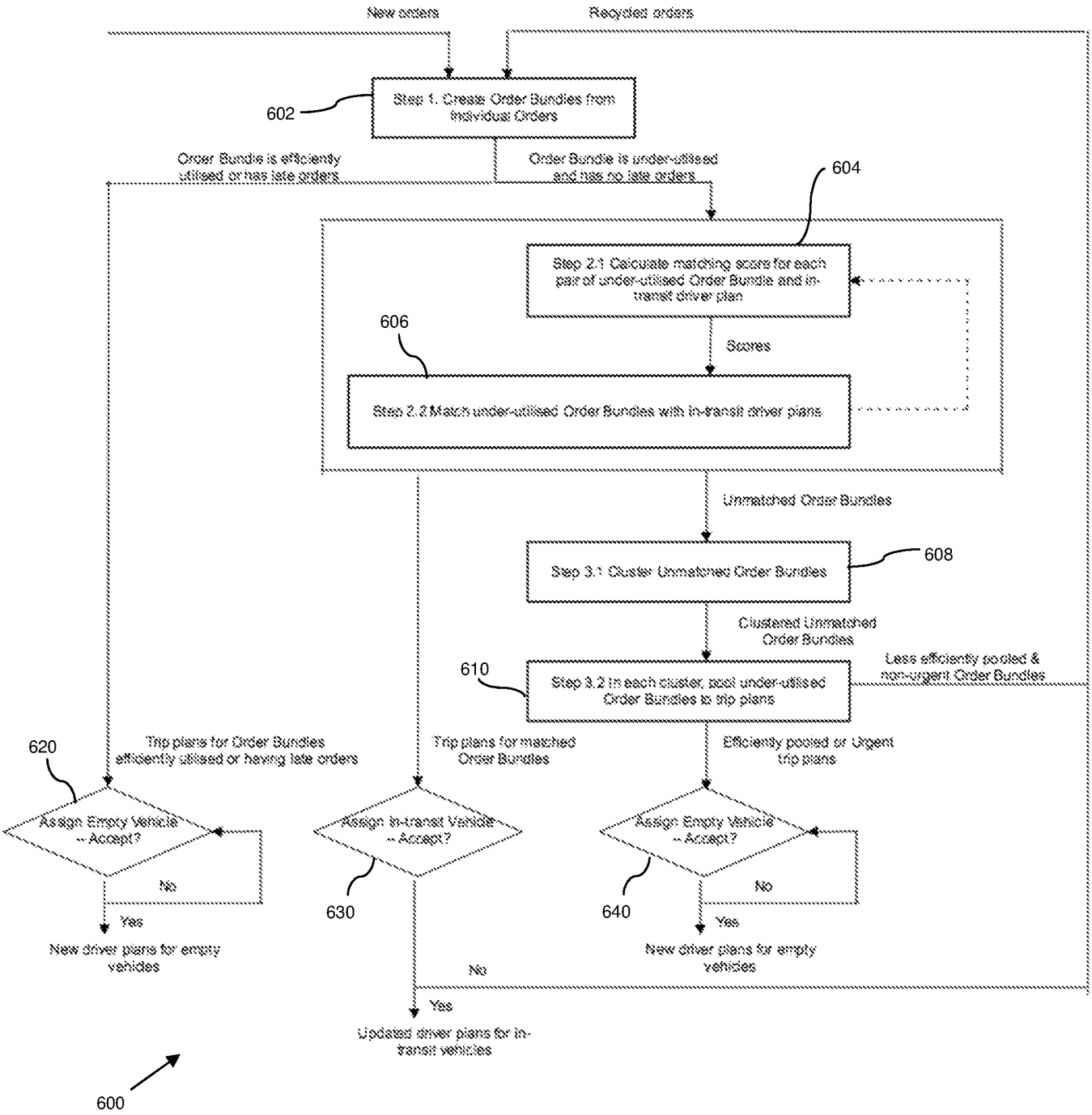
New orders
Recycled orders
602
Step 1. Create Order Bundles from Individual Orders
Order Bundle is efficiently utilised or has late orders
Order Bundle is under-utilised and has no late orders
604
Step 2.1 Calculate matching score for each pair of under-utilised Order Bundle and in-transit driver plan
606
Scores
Step 2.2 Match under-utilised Order Bundles with in-transit driver plans
Unmatched Order Bundles
Step 3.1 Cluster Unmatched Order Bundles
608
Clustered Unmatched Order Bundles
610
Step 3.2 In each cluster, pool under-utilised Order Bundles to trip plans
Less efficiently pooled & non-urgent Order Bundles
620
Trip plans for Order Bundles efficiently utilised or having late orders
Trip plans for matched Order Bundles
Efficiently pooled or Urgent trip plans
Assign Empty Vehicle -- Accept?
No
Yes
New driver plans for empty vehicles
Assign In-transit Vehicle -- Accept?
630
Assign Empty Vehicle -- Accept?
640
No
Yes
New driver plans for empty vehicles
No
Yes
Updated driver plans for in-transit vehicles
600

Fig 6