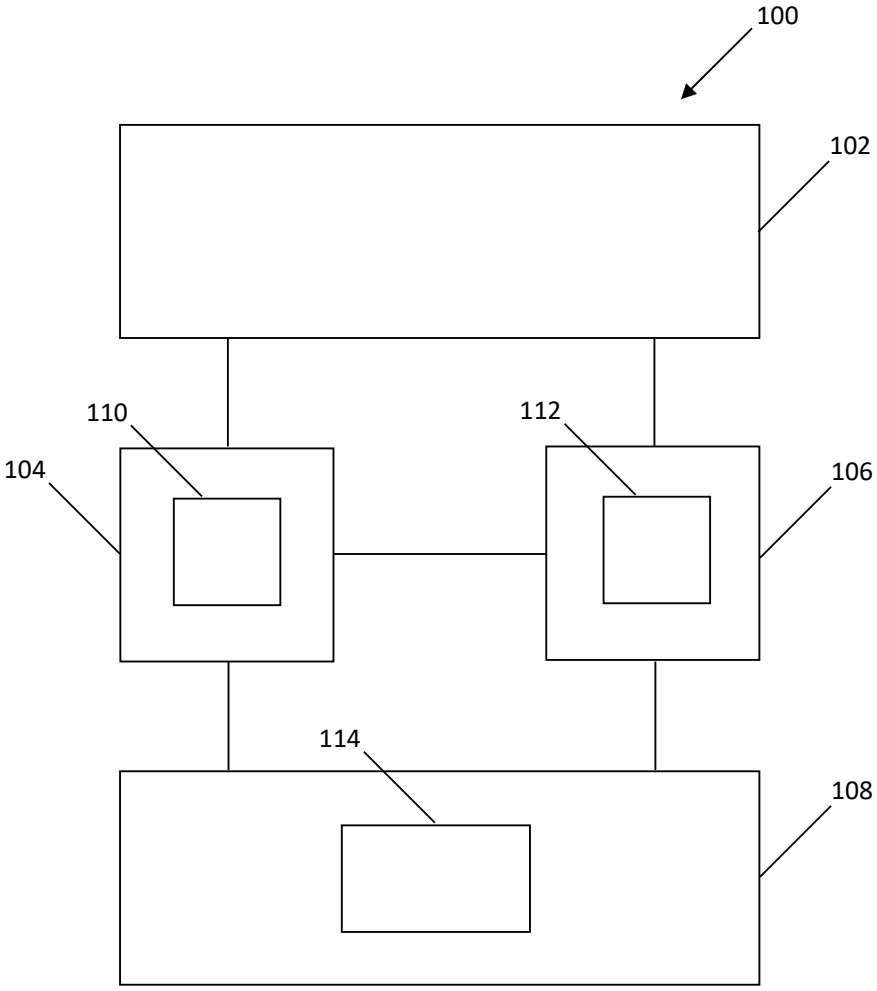

FIG. 1

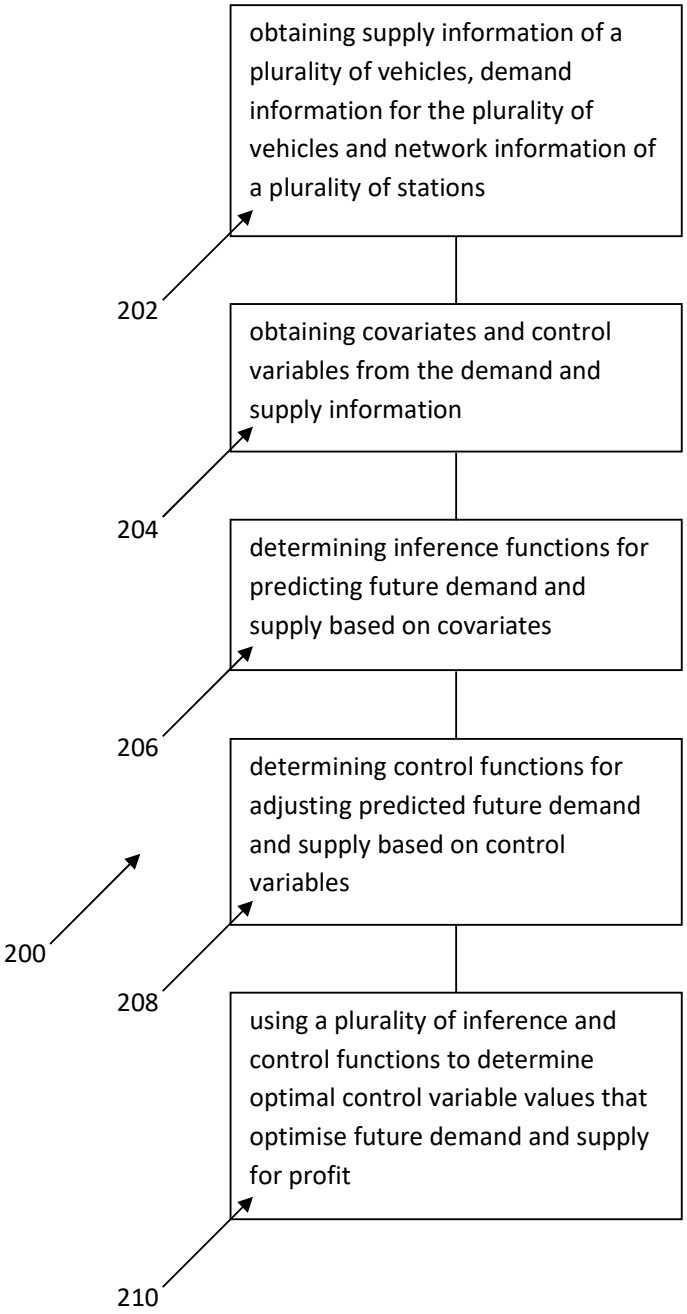
obtaining supply information of a plurality of vehicles, demand information for the plurality of vehicles and network information of a plurality of stations
202
obtaining covariates and control variables from the demand and supply information
204
determining inference functions for predicting future demand and supply based on covariates
206
determining control functions for adjusting predicted future demand and supply based on control variables
200
208
using a plurality of inference and control functions to determine optimal control variable values that optimise future demand and supply for profit
210

FIG. 2

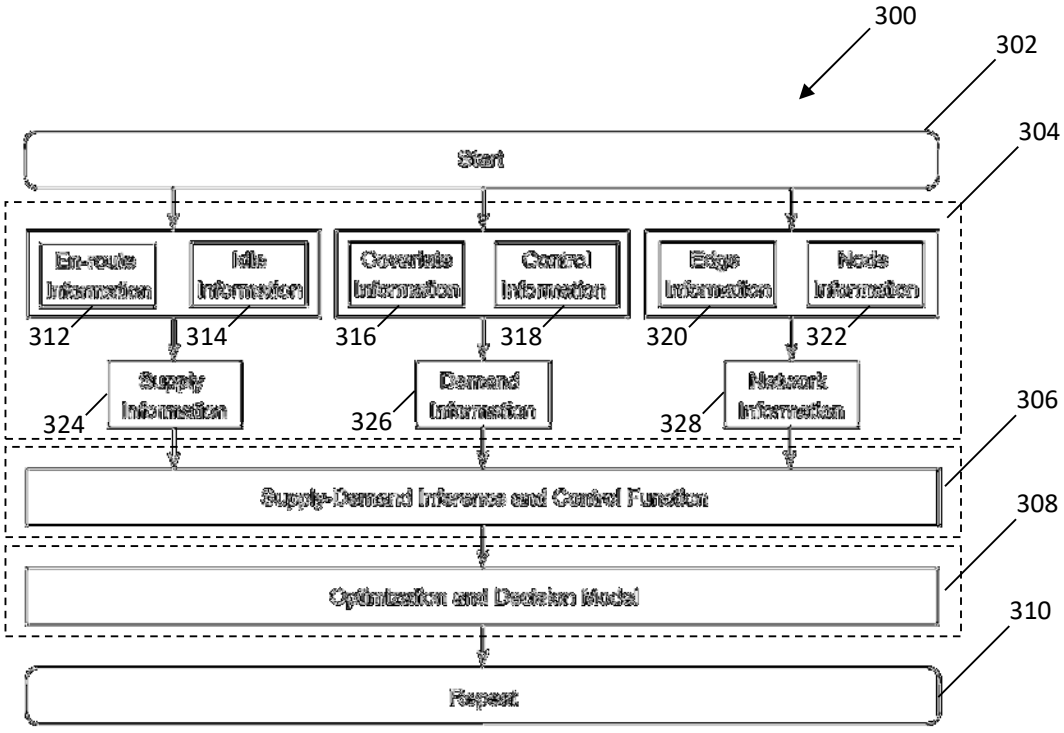
300
302
304
Start
En-route Information
Info Information
Coverable Information
Control Information
Edge Information
Node Information
312
314
316
318
320
322
Supply Information
Demand Information
Network Information
324
326
328
306
Supply-Demand Inference and Control Function
308
Optimization and Decision Model
310
Repeat

FIG. 3

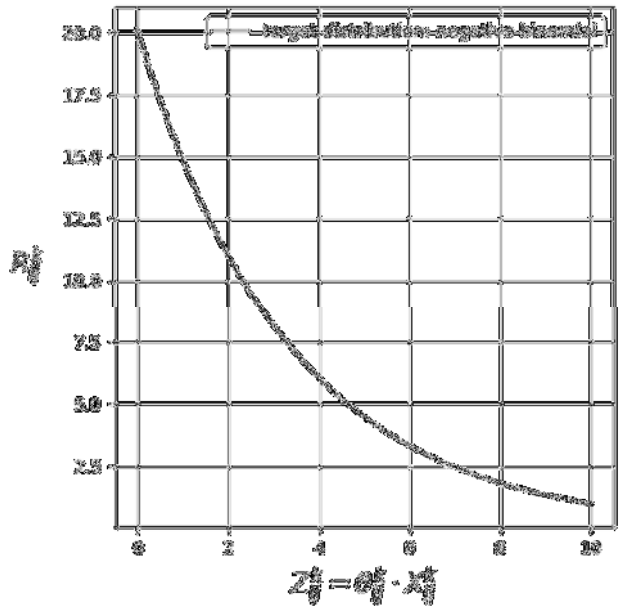

FIG. 4

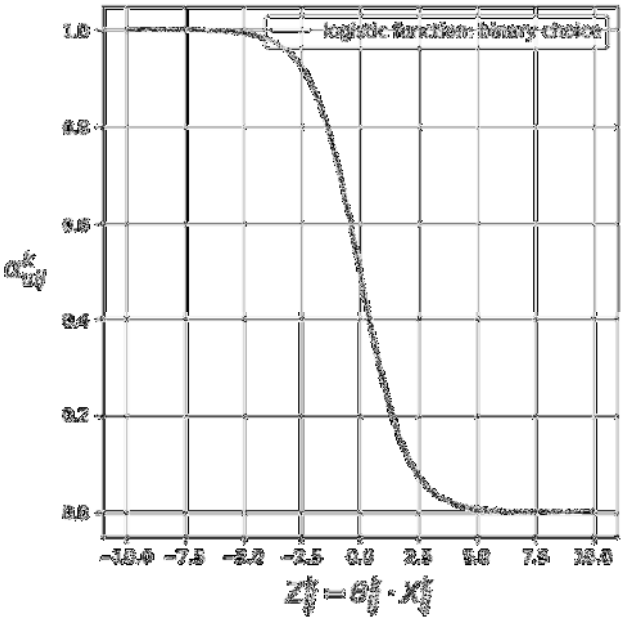
logistic function: binary choice
1.0
0.8
0.6
0.4
0.2
0.0
−10.0 −7.5 −5.0 −2.5 0.0 2.5 5.0 7.5 10.0
$Z_i^t = \theta_i^t \cdot x_i^t$

FIG. 5

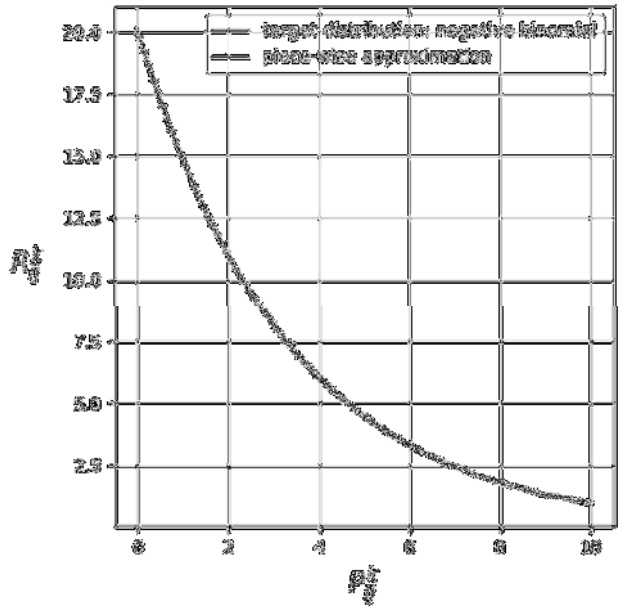
target distribution: negative binomial
piece-wise approximation
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0
2
4
6
8
10
P_i^t
R_i^t

FIG. 6

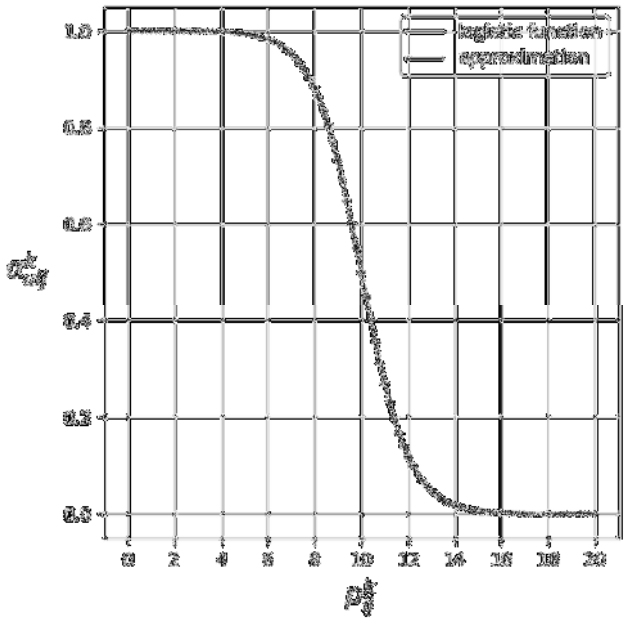
logistic function
approximation
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
12
14
16
18
20

FIG. 7

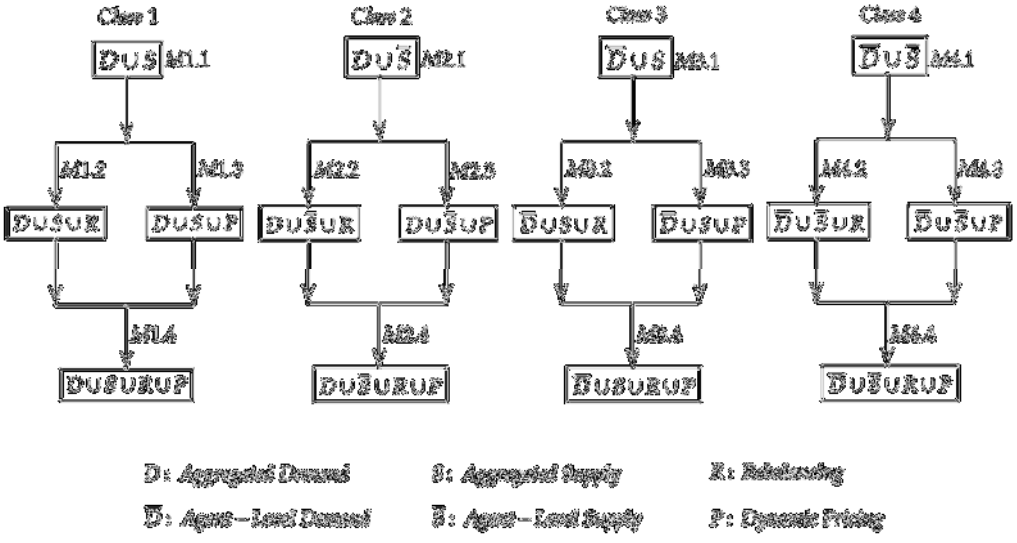
Class 1
Class 2
Class 3
Class 4
D: Aggregated Demand
S: Aggregated Supply
R: Rebalancing
D: Agent-Level Demand
S: Agent-Level Supply
P: Dynamic Pricing

FIG. 8

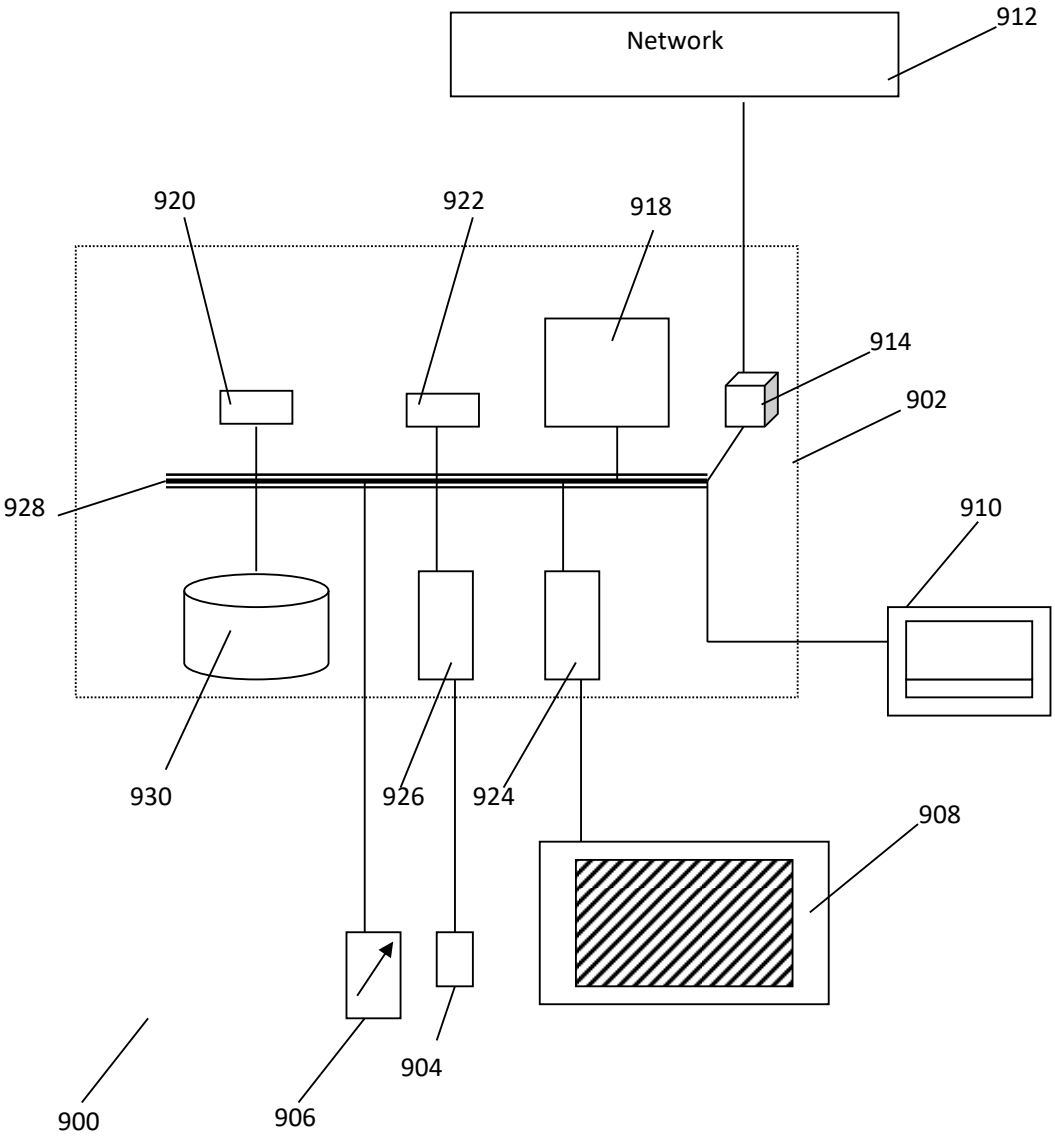
Network
912
920
922
918
914
902
928
910
930
926
924
908
904
900
906

FIG. 9

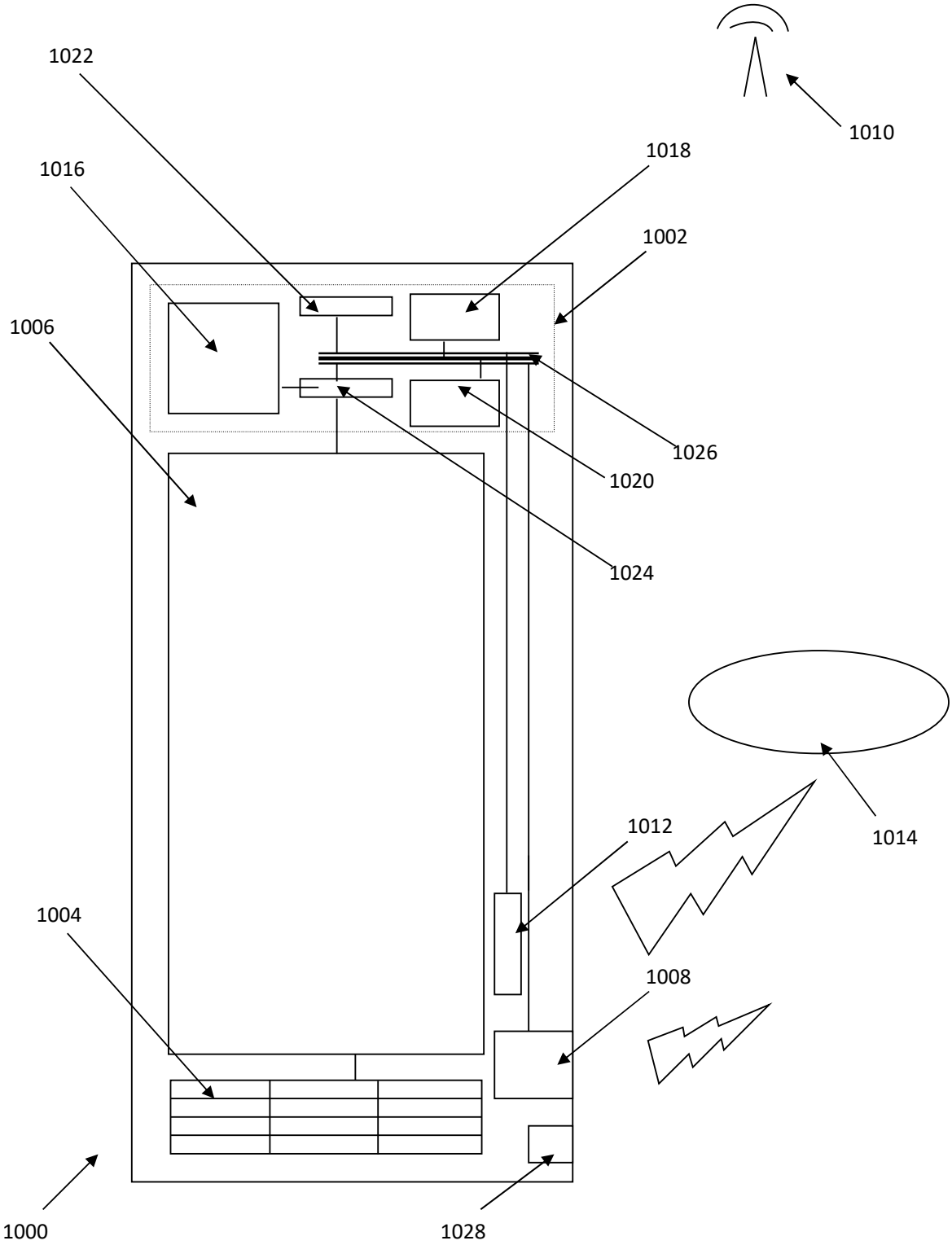
1022
1010
1018
1016
1002
1006
1026
1020
1024
1014
1012
1004
1008
1000
1028

FIG. 10

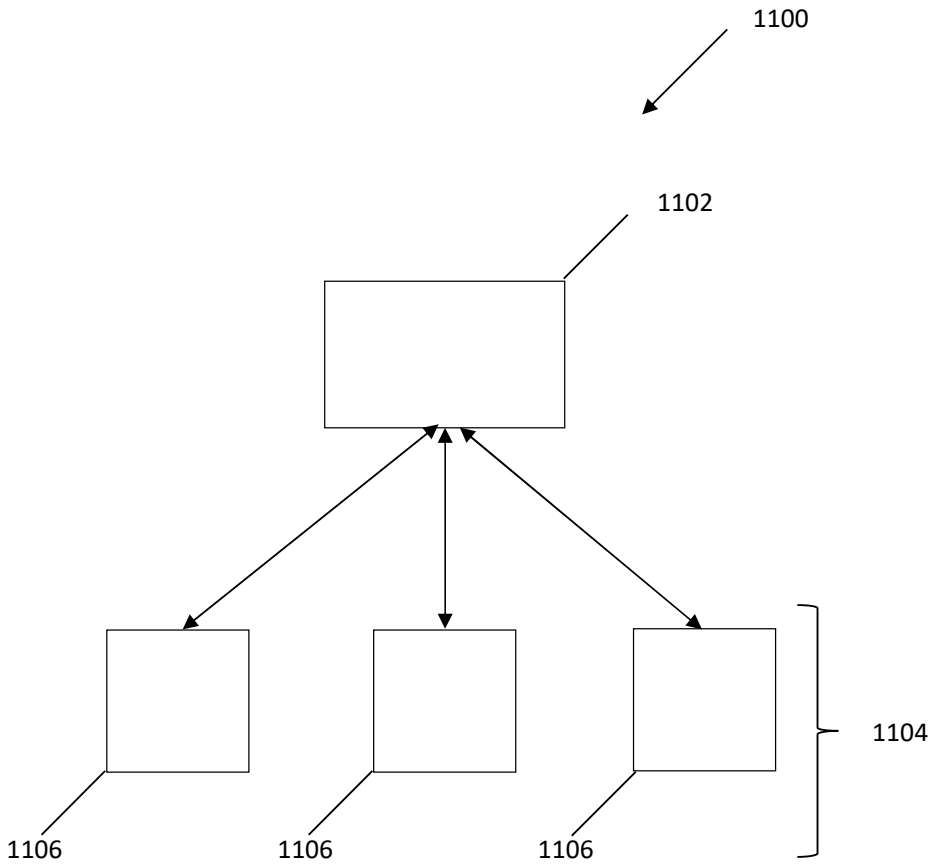

FIG. 11