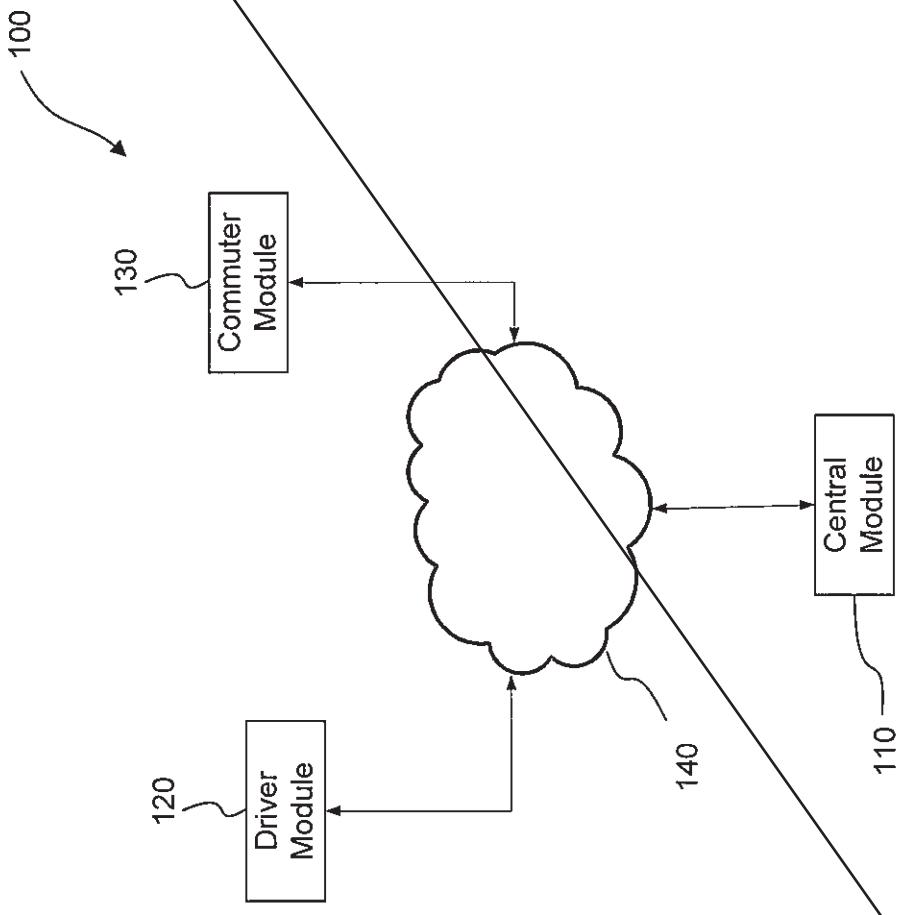

100
130
Commuter Module
120
Driver Module
140
Central Module
110

FIG. 1A

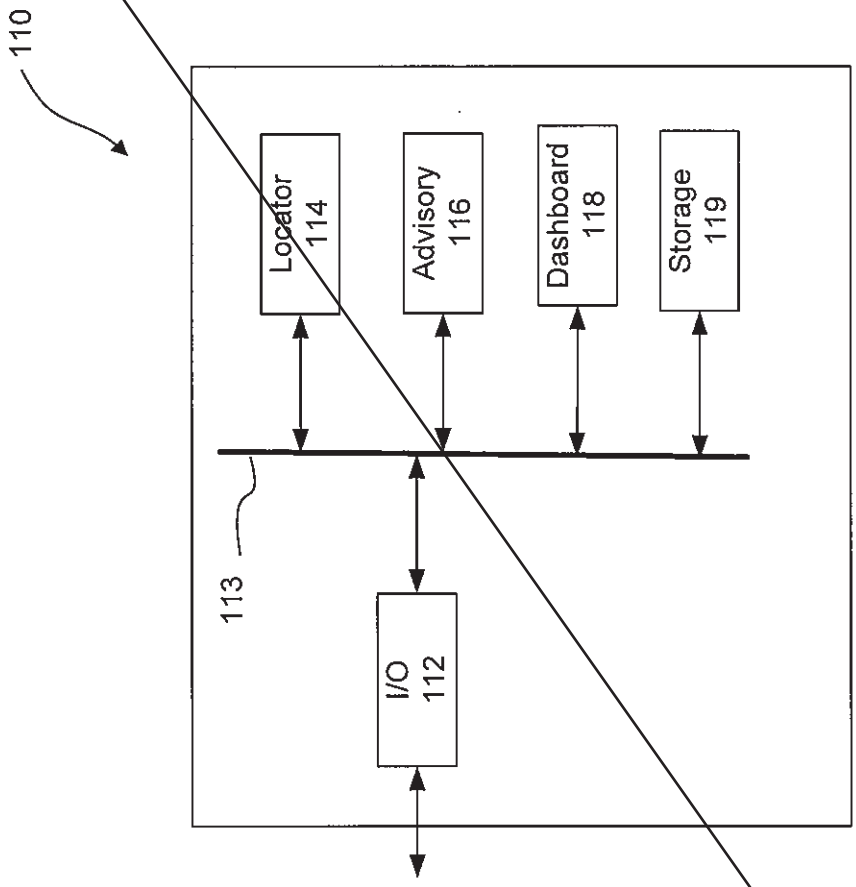

110
Locator 114
Advisory 116
Dashboard 118
Storage 119
113
I/O 112

FIG. 1B

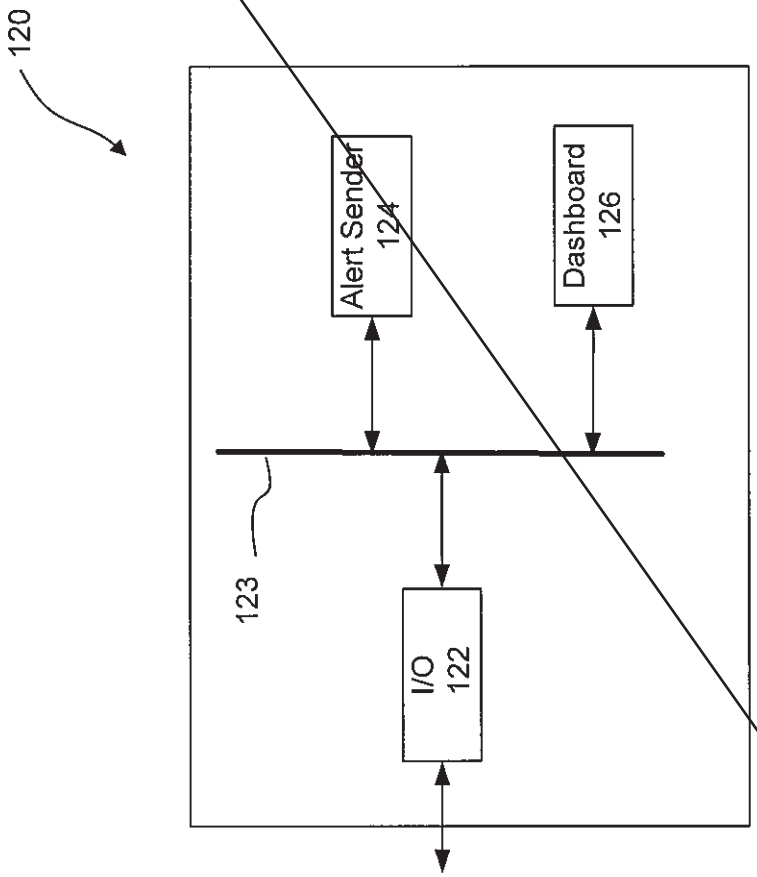


FIG. 1C

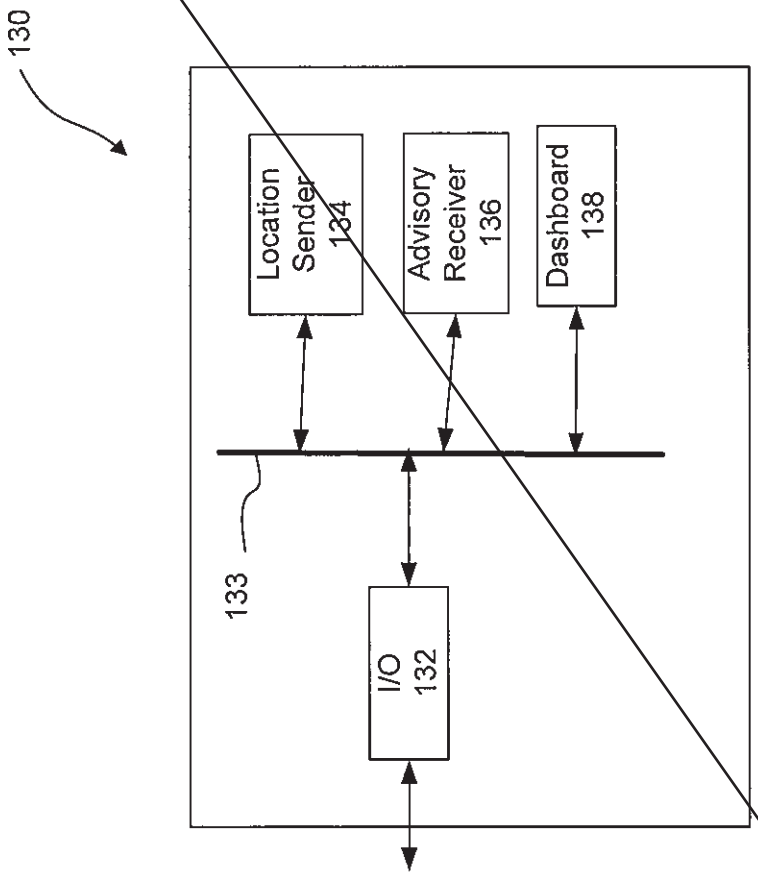

130
Location Sender 134
Advisory Receiver 136
Dashboard 138
133
I/O 132

FIG. 1D

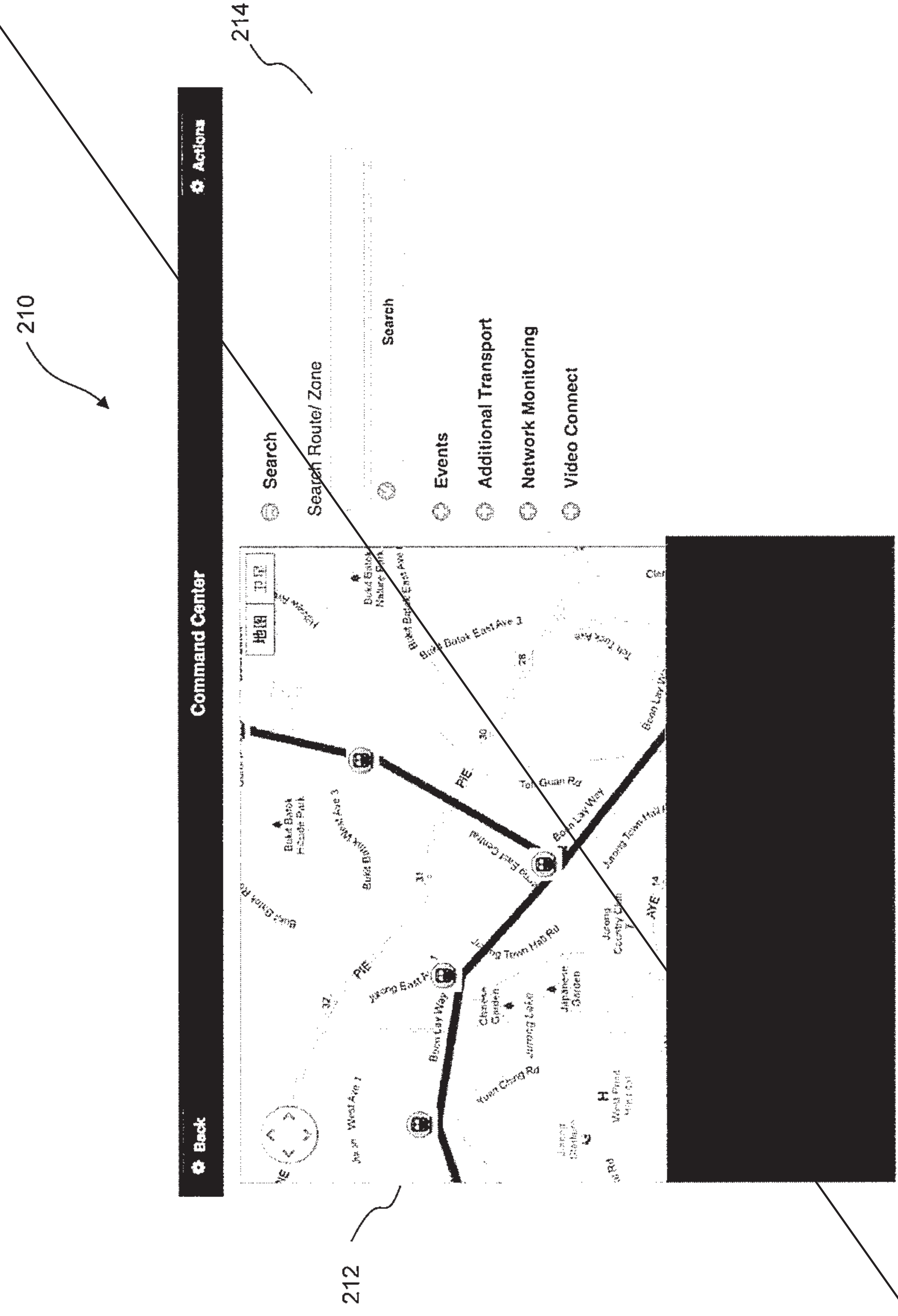

210
214
212
Back
Command Center
Actions
Search
Search Route/ Zone
Search
Events
Additional Transport
Network Monitoring
Video Connect
PIE
Toh Guan Rd
Boon Lay Way
AYE
Jurong Town Hall Rd
Jurong East Rd
Chinese Garden
Jurong Lake
Japanese Garden
Yuan Ching Rd
Bukit Batok East Ave 3
[redacted]

FIG. 2A

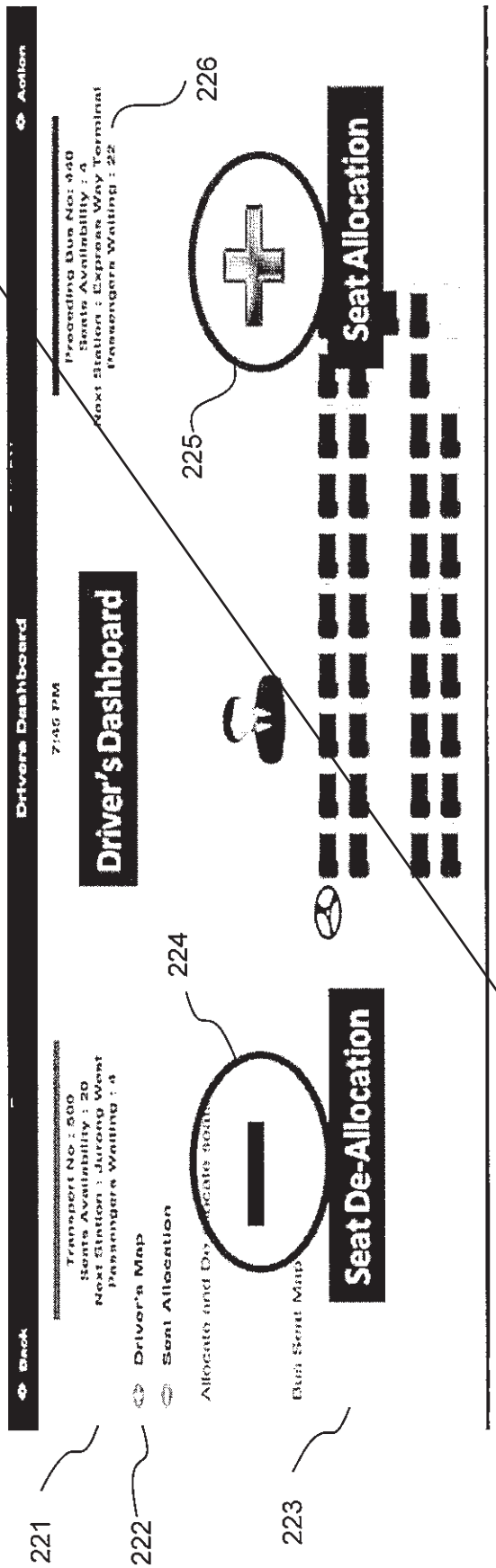

220
Drivers Dashboard
Back
Action
Driver's Dashboard
7:45 PM
Transport No : 500
Seats Availability : 20
Next Station : Jurong West
Passengers Waiting : 4
Preceding Bus No: 440
Seats Availability : 4
Next Station : Express Way Terminal
Passengers Waiting : 22
226
225
Seat Allocation
Driver's Map
Seat Allocation
224
Seat De-Allocation
221
222
223

FIG. 2B

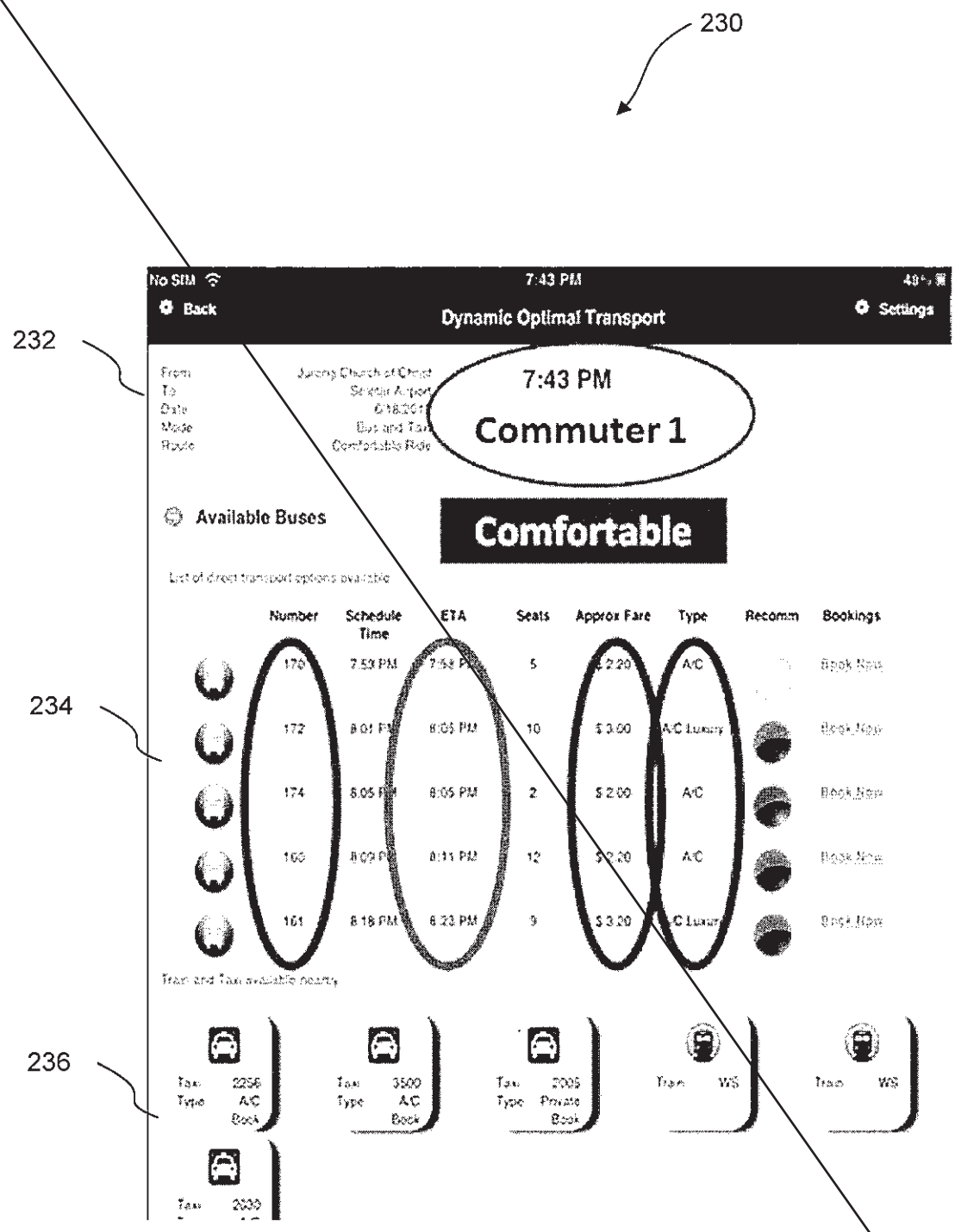

230
232
234
236
No SIM
7:43 PM
Back
Dynamic Optimal Transport
Settings
7:43 PM
Commuter 1
Comfortable
Available Buses
Number
Schedule Time
ETA
Seats
Approx Fare
Type
Recomm
Bookings
170
172
174
160
161
5
10
2
12
9
A/C
A/C Luxury
A/C
A/C
A/C Luxury
Book Now
Taxi 2256 Type A/C Book
Taxi 3500 Type A/C Book
Taxi 2005 Type Private Book
Train WS
Train WS
Taxi 2030

FIG. 2C

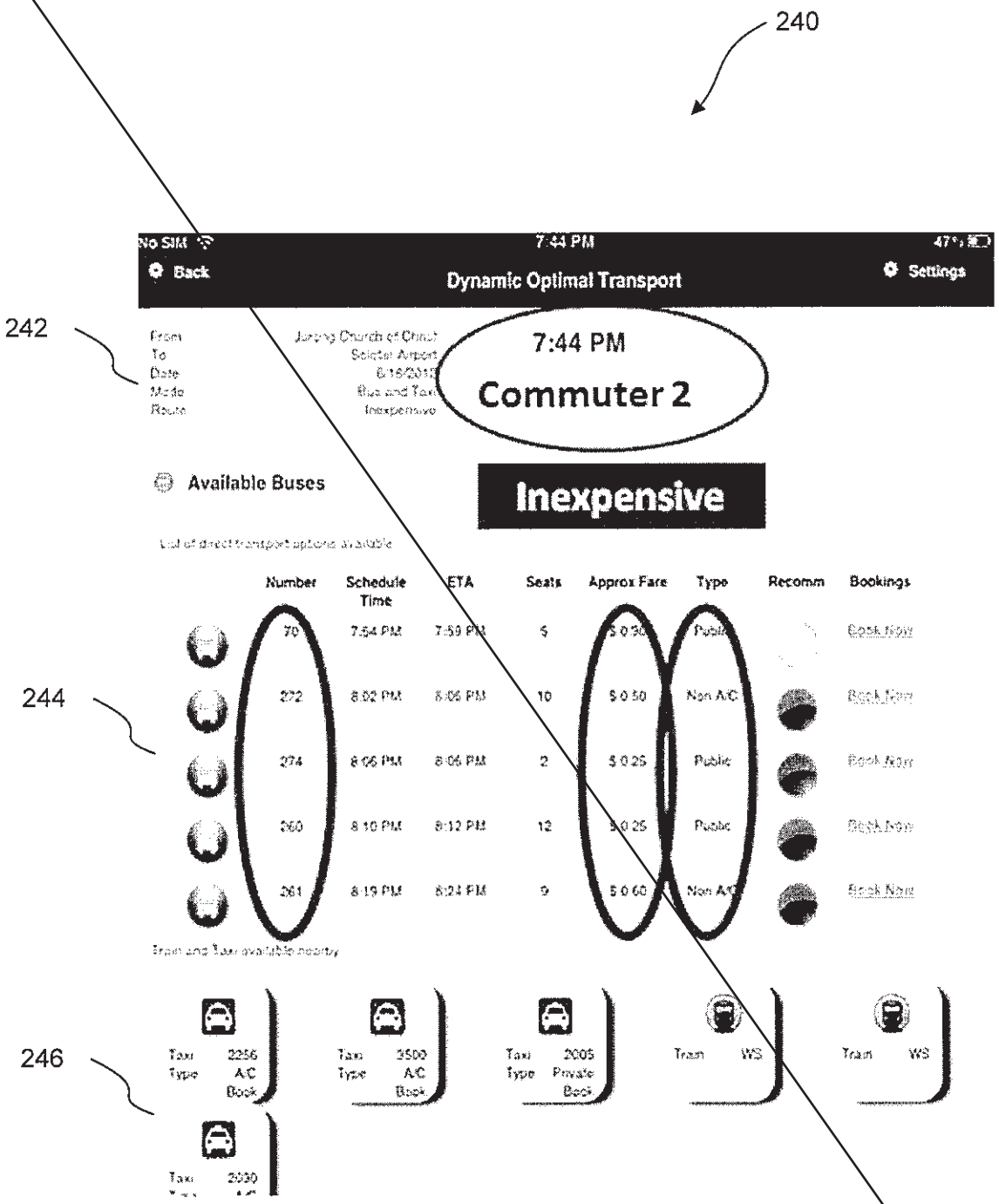

240
242
244
246
No SIM
7:44 PM
47%
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Jurong Church of Christ
Seletar Airport
8/16/2015
Bus and Taxi
Inexpensive
7:44 PM
Commuter 2
Available Buses
Inexpensive
List of direct transport options available
Number
Schedule Time
ETA
Seats
Approx Fare
Type
Recomm
Bookings
70
7:54 PM
7:59 PM
5
Public
Book Now
272
8:02 PM
8:06 PM
10
$ 0.50
Non A/C
Book Now
274
8:06 PM
8:06 PM
2
$ 0.25
Public
Book Now
260
8:10 PM
8:12 PM
12
$ 0.25
Public
Book Now
261
8:19 PM
8:24 PM
9
$ 0.60
Non A/C
Book Now
Train and Taxi available nearby
Taxi 2256
Type A/C
Book
Taxi 3500
Type A/C
Book
Taxi 2005
Type Private
Book
Train WS
Train WS
Taxi 2030

FIG. 2D

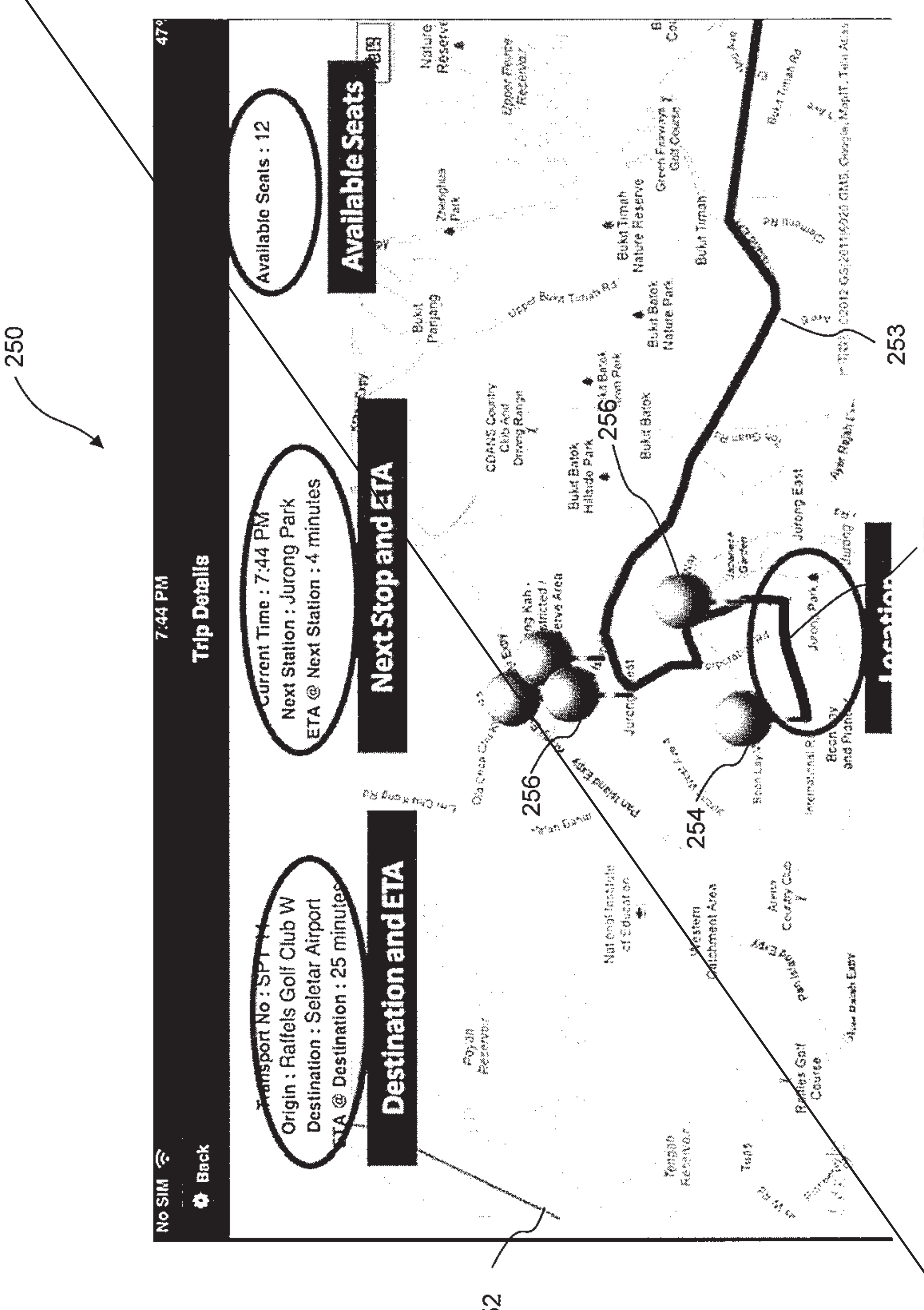

250
No SIM
7:44 PM
47%
Back
Trip Details
Transport No : SPT
Origin : Raffels Golf Club W
Destination : Seletar Airport
ETA @ Destination : 25 minutes
Destination and ETA
Current Time : 7:44 PM
Next Station : Jurong Park
ETA @ Next Station : 4 minutes
Next Stop and ETA
Available Seats : 12
Available Seats
252
253
254
256
256
257

FIG. 2E

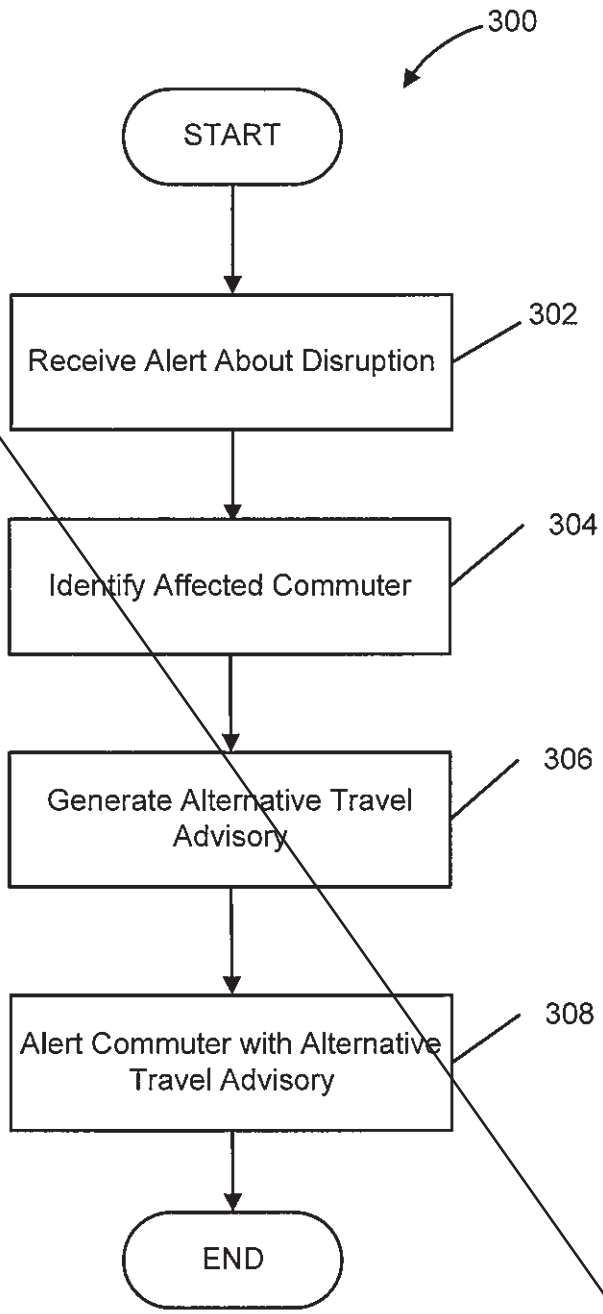

300
START
Receive Alert About Disruption
302
Identify Affected Commuter
304
Generate Alternative Travel Advisory
306
Alert Commuter with Alternative Travel Advisory
308
END

FIG. 3

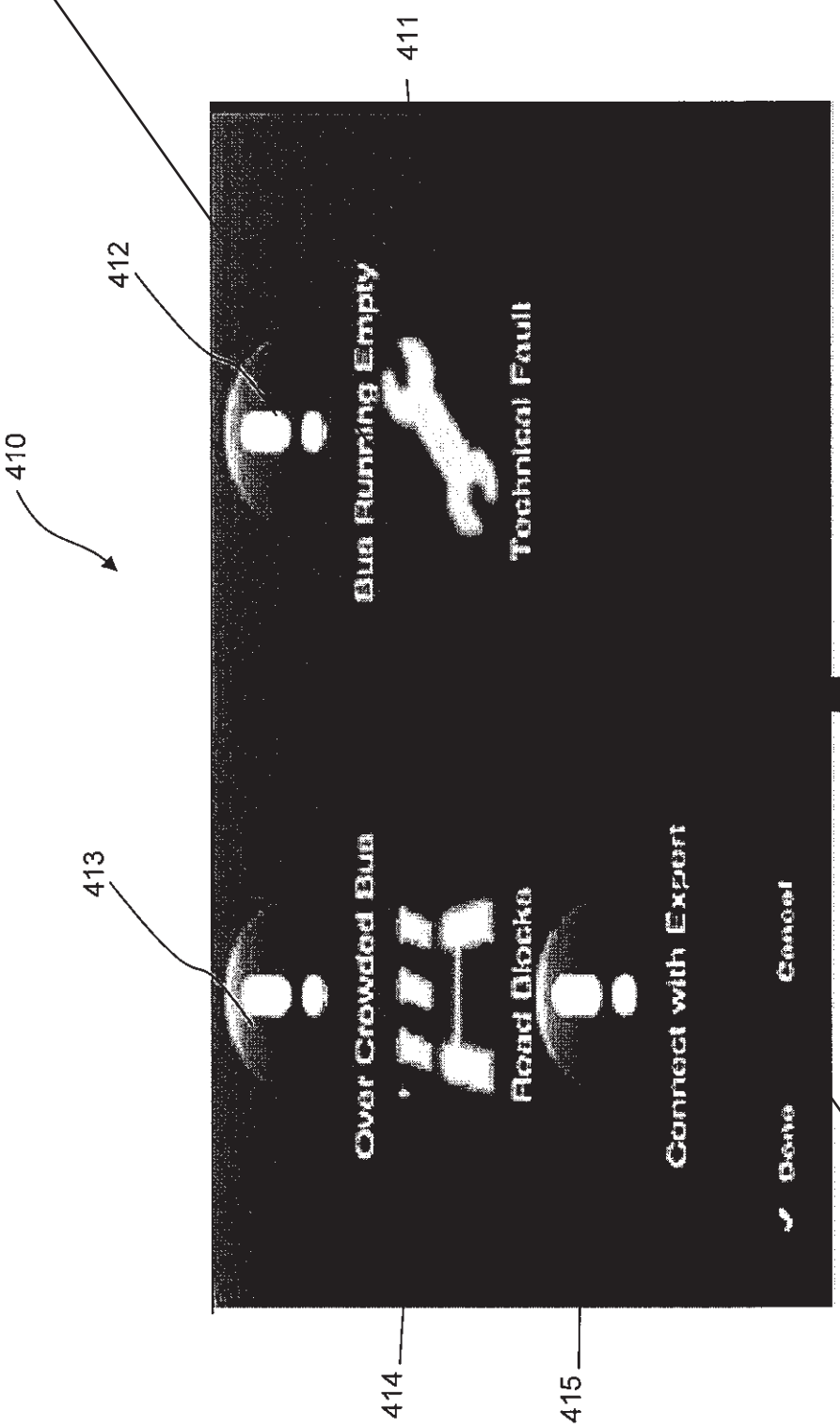

410
411
412
413
414
415
Bus Running Empty
Technical Fault
Over Crowded Bus
Road Blocks
Connect with Expert
Done
Cancel

FIG. 4A

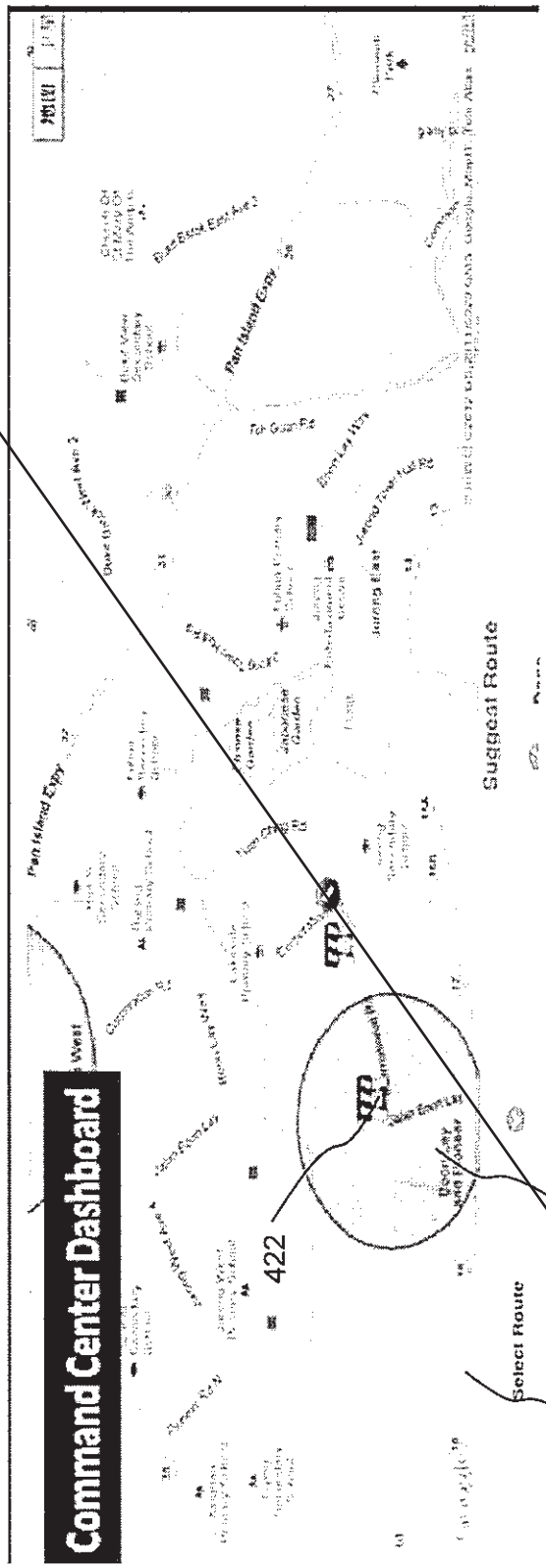

420
Command Center Dashboard
Suggest Route
Select Route
422
424
426

FIG. 4B

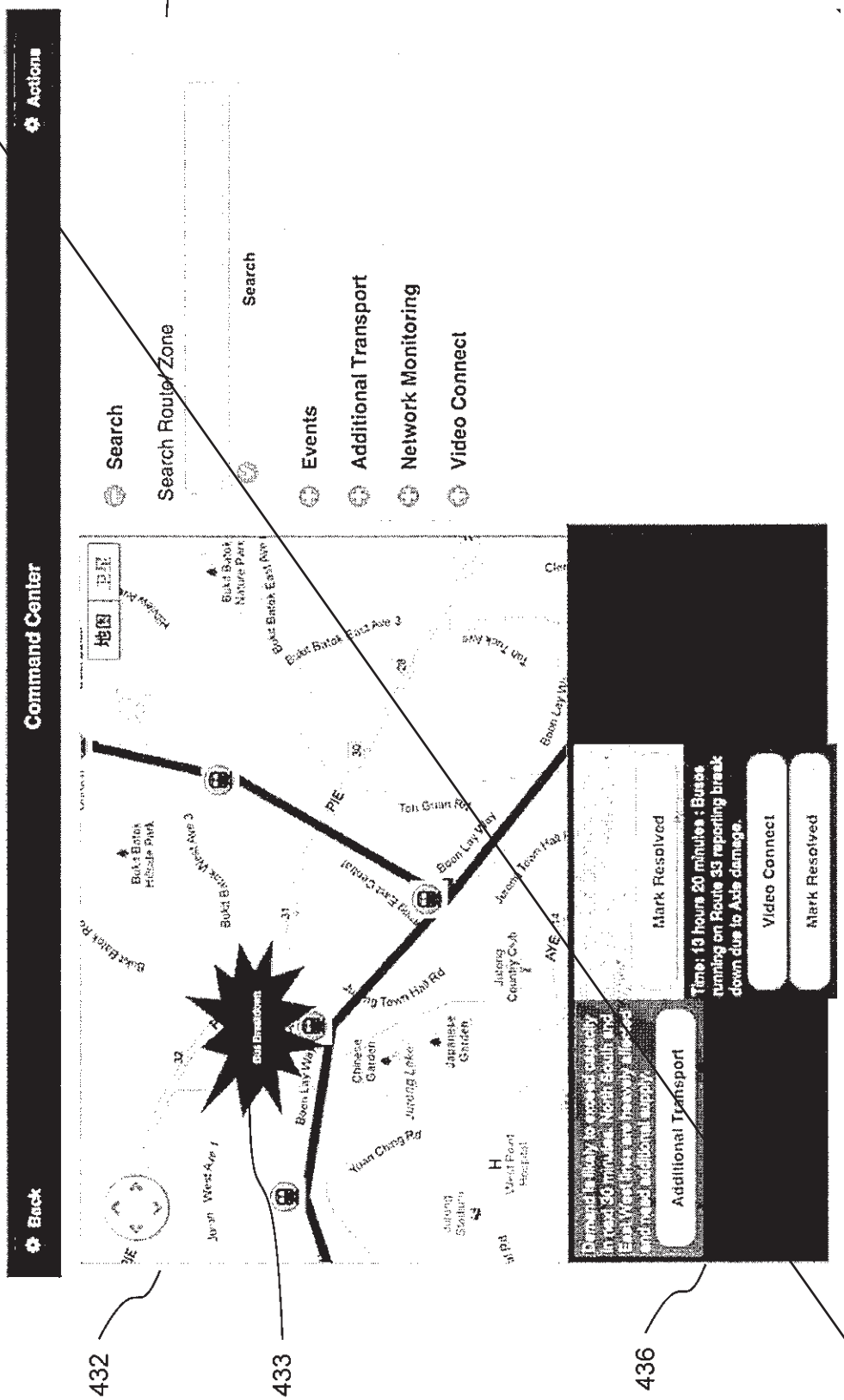

430
434
Back
Command Center
Actions
Search
Search Route Zone
Search
Events
Additional Transport
Network Monitoring
Video Connect
Bukit Batok Hillside Park
Bukit Batok East Ave 3
Bukit Batok Nature Park
Toh Guan Rd
Boon Lay Way
Jurong Town Hall Rd
Jurong Lake
Chinese Garden
Japanese Garden
Jurong Country Club
Yuan Ching Rd
AYE
PIE
Mark Resolved
Additional Transport
Time: 13 hours 20 minutes : Buses running on Route 33 reporting break down due to Axle damage.
Video Connect
Mark Resolved
432
433
436

FIG. 4C

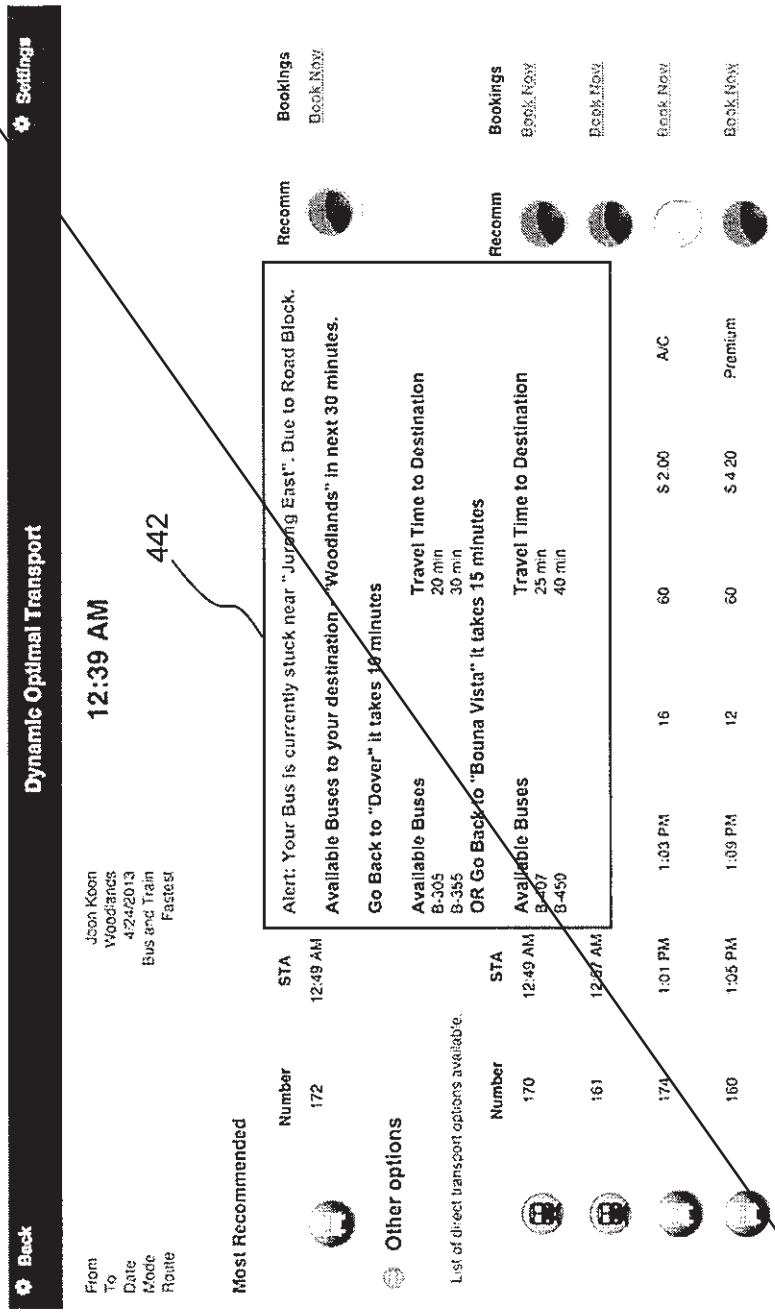

440
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Jcon Koon
Woodlands
4/24/2013
Bus and Train
Fastest
12:39 AM
442
Alert: Your Bus is currently stuck near "Jurong East". Due to Road Block.
Available Buses to your destination "Woodlands" in next 30 minutes.
Go Back to "Dover" it takes 10 minutes
Available Buses
B-305
B-355
Travel Time to Destination
20 min
30 min
OR Go Back to "Bouna Vista" it takes 15 minutes
Available Buses
B-407
B-450
Travel Time to Destination
25 min
40 min
Most Recommended
Number
STA
Recomm
Bookings
172
12:49 AM
Book Now
Other options
List of direct transport options available.
Number
STA
Recomm
Bookings
170
12:49 AM
Book Now
161
12:57 AM
Book Now
174
1:01 PM
1:03 PM
16
60
$ 2.00
A/C
Book Now
169
1:05 PM
1:09 PM
12
60
$ 4.20
Premium
Book Now
Train, Taxi and Cycle Stands available nearby

FIG. 4D

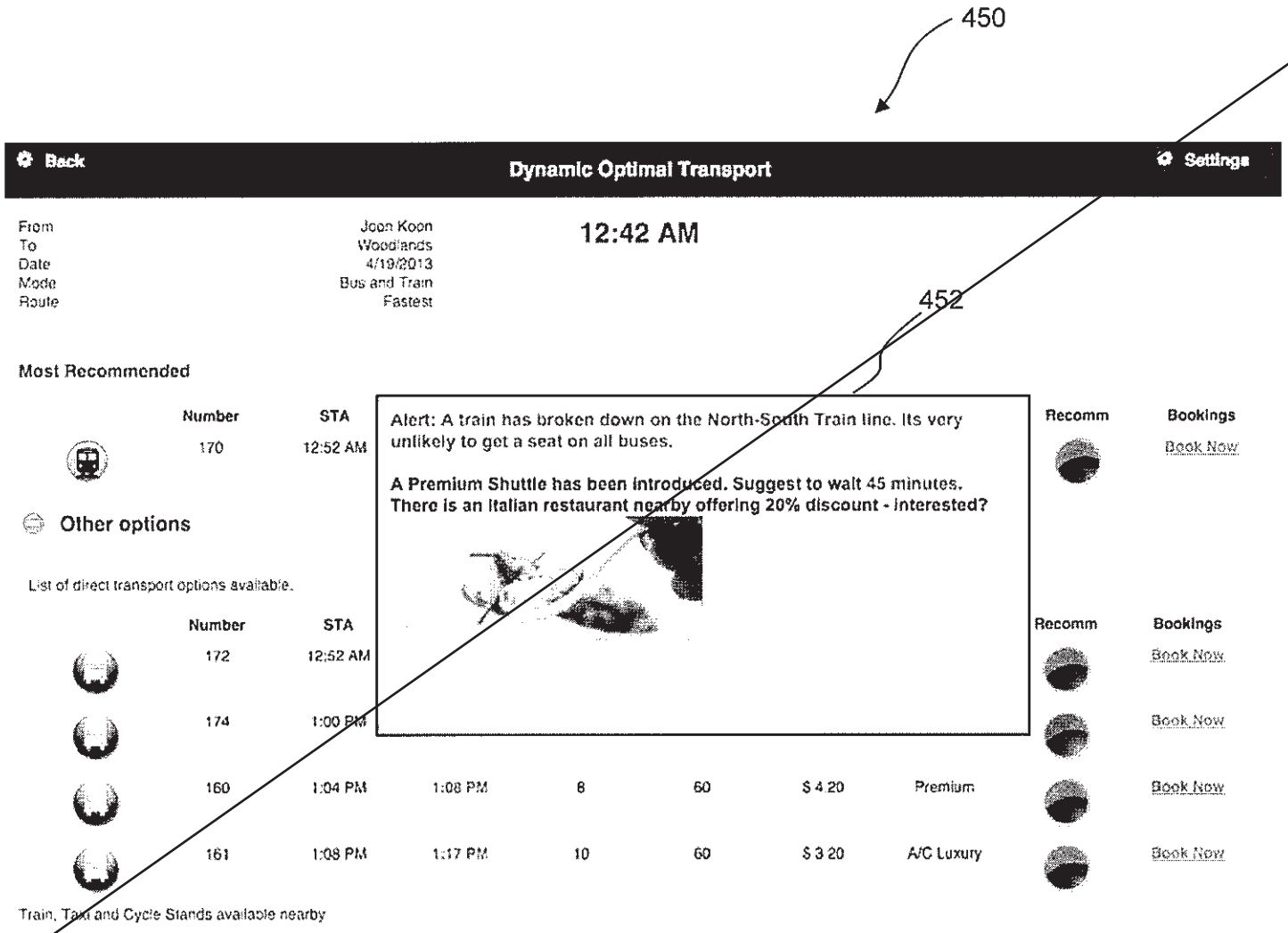

450
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Joon Koon
Woodlands
4/19/2013
Bus and Train
Fastest
12:42 AM
452
Most Recommended
Number
STA
Recomm
Bookings
170
12:52 AM
Book Now
Alert: A train has broken down on the North-South Train line. Its very unlikely to get a seat on all buses.
A Premium Shuttle has been introduced. Suggest to wait 45 minutes.
There is an Italian restaurant nearby offering 20% discount - interested?
Other options
List of direct transport options available.
Number
STA
Recomm
Bookings
172
12:52 AM
Book Now
174
1:00 PM
Book Now
160
1:04 PM
1:08 PM
8
60
$ 4.20
Premium
Book Now
161
1:08 PM
1:17 PM
10
60
$ 3.20
A/C Luxury
Book Now
Train, Taxi and Cycle Stands available nearby

FIG. 4E

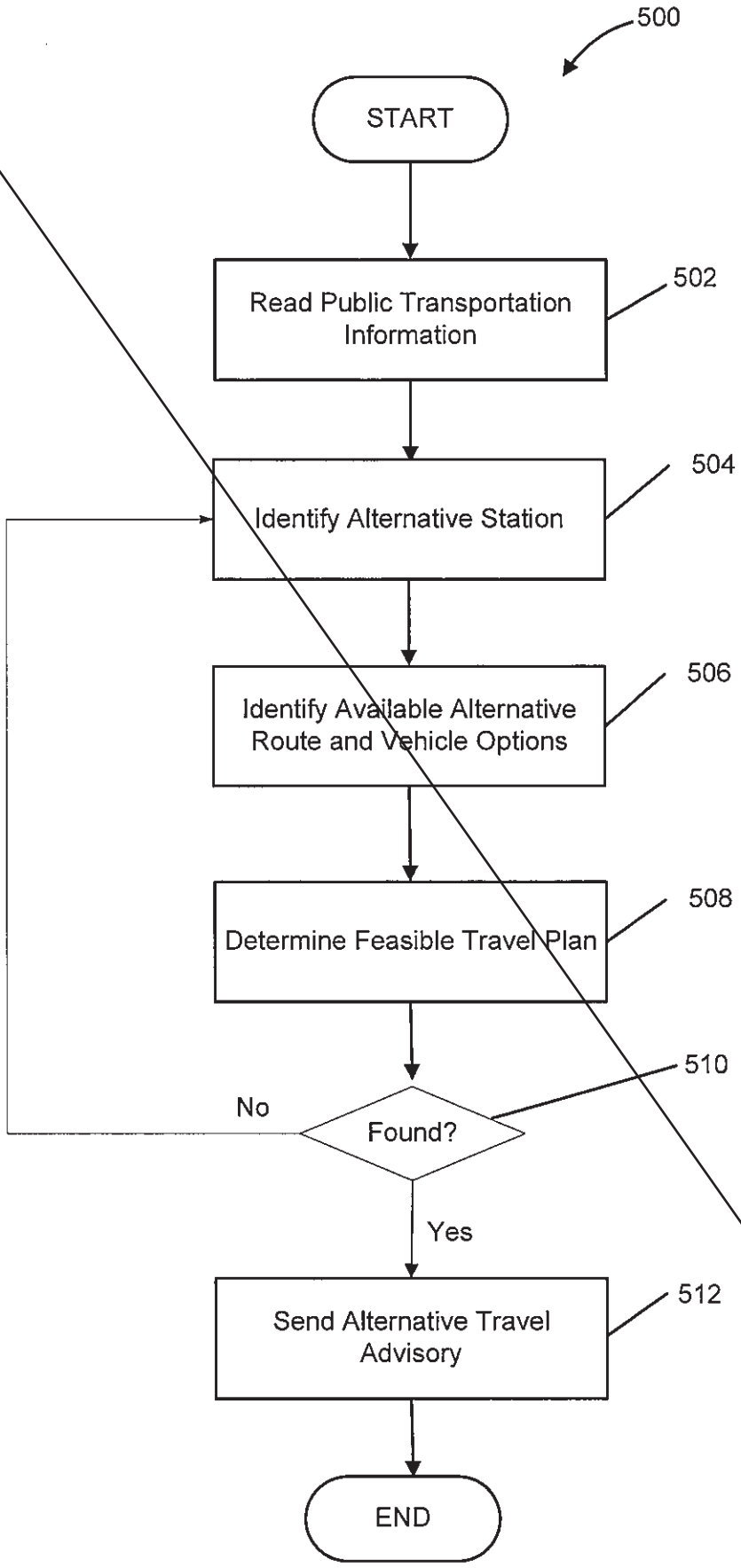

500
START
Read Public Transportation Information
502
Identify Alternative Station
504
Identify Available Alternative Route and Vehicle Options
506
Determine Feasible Travel Plan
508
Found?
510
No
Yes
Send Alternative Travel Advisory
512
END

FIG. 5

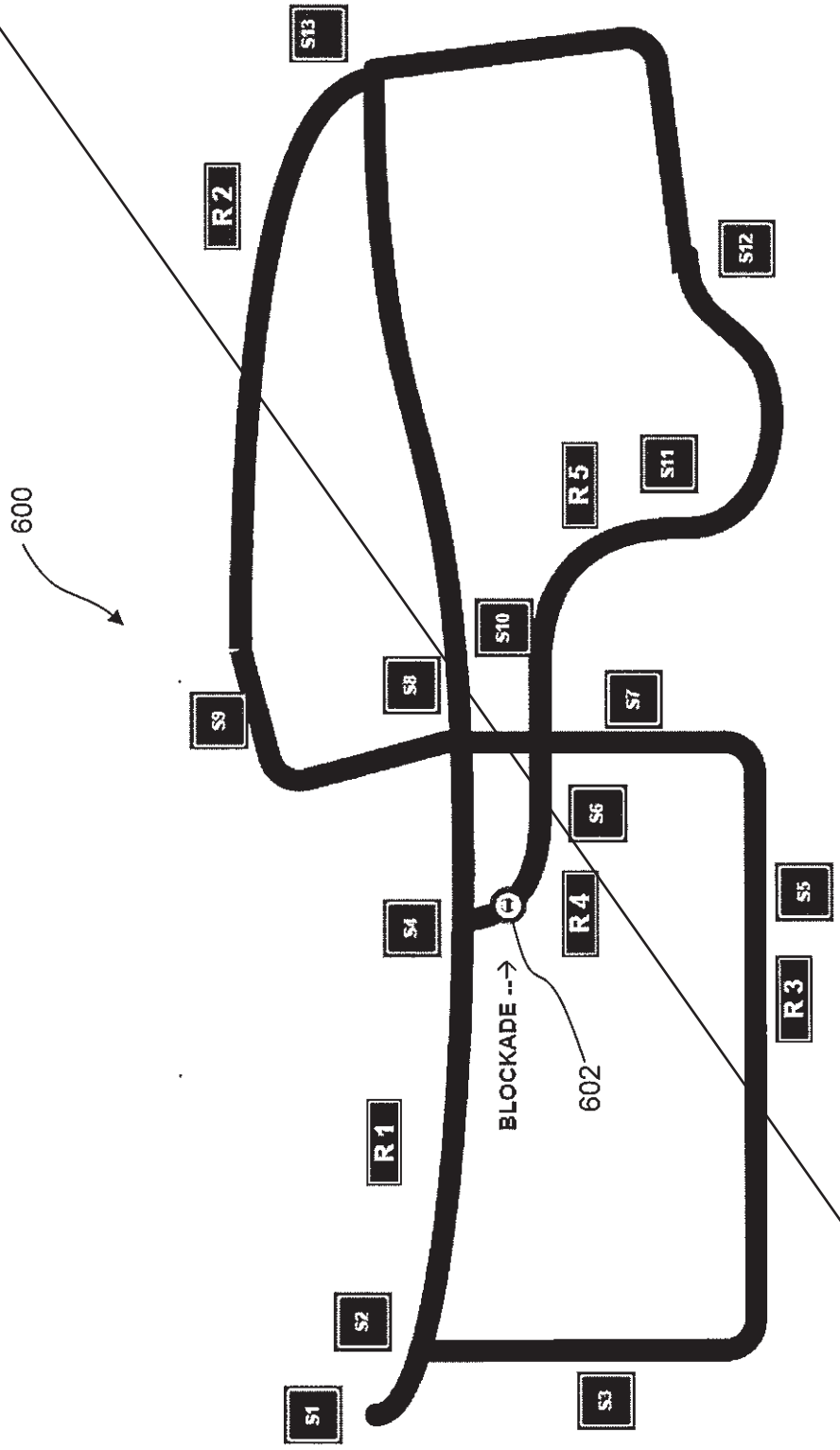
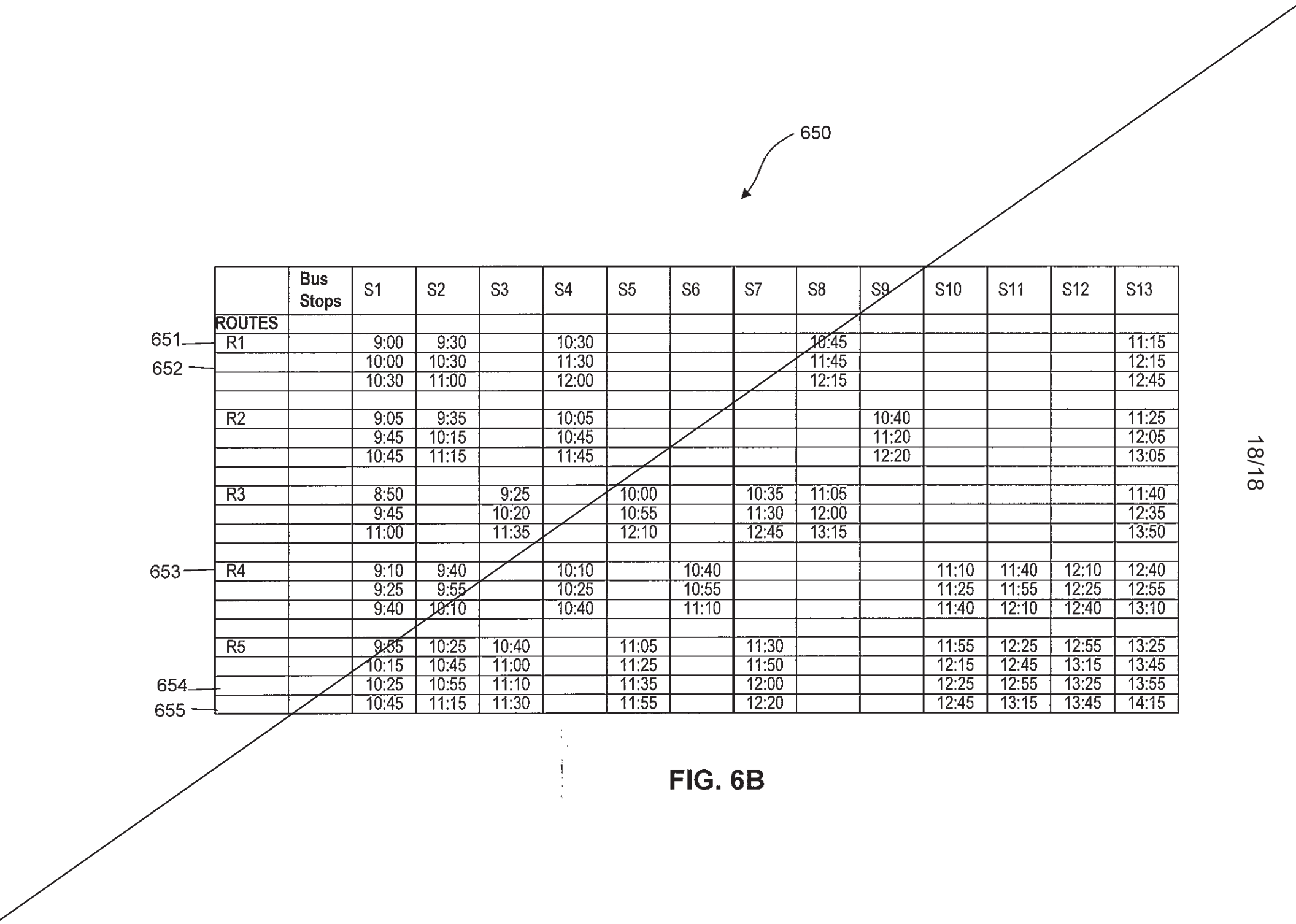

600
S13
R2
S12
R5
S11
S10
S8
S9
S7
S6
S4
R4
S5
R3
BLOCKADE -->
602
R1
S2
S1
S3

FIG. 6A



	Bus Stops	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
ROUTES														
R1		9:00	9:30		10:30				10:45					11:15
		10:00	10:30		11:30				11:45					12:15
		10:30	11:00		12:00				12:15					12:45
R2		9:05	9:35		10:05					10:40				11:25
		9:45	10:15		10:45					11:20				12:05
		10:45	11:15		11:45					12:20				13:05
R3		8:50		9:25		10:00		10:35	11:05					11:40
		9:45		10:20		10:55		11:30	12:00					12:35
		11:00		11:35		12:10		12:45	13:15					13:50
R4		9:10	9:40		10:10		10:40				11:10	11:40	12:10	12:40
		9:25	9:55		10:25		10:55				11:25	11:55	12:25	12:55
		9:40	10:10		10:40		11:10				11:40	12:10	12:40	13:10
R5		9:55	10:25	10:40		11:05		11:30			11:55	12:25	12:55	13:25
		10:15	10:45	11:00		11:25		11:50			12:15	12:45	13:15	13:45
		10:25	10:55	11:10		11:35		12:00			12:25	12:55	13:25	13:55
		10:45	11:15	11:30		11:55		12:20			12:45	13:15	13:45	14:15

FIG. 6B

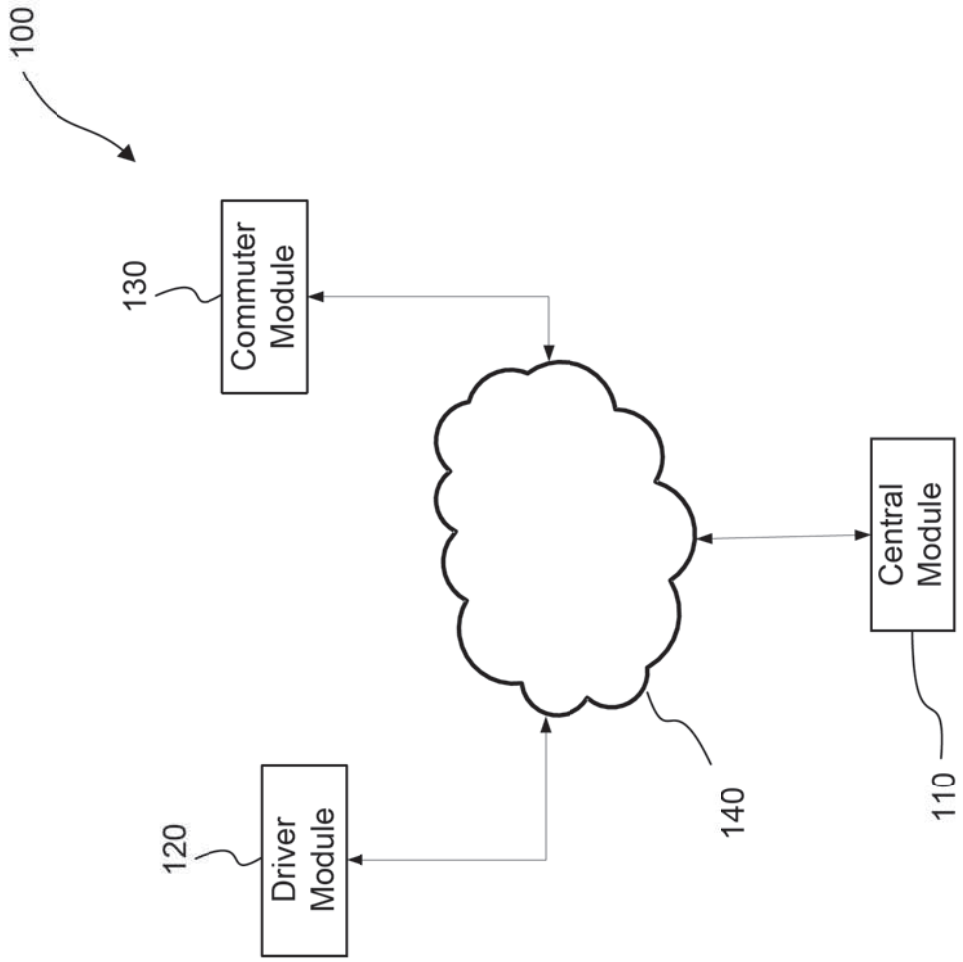

100
130
Commuter Module
120
Driver Module
140
110
Central Module

FIG. 1A

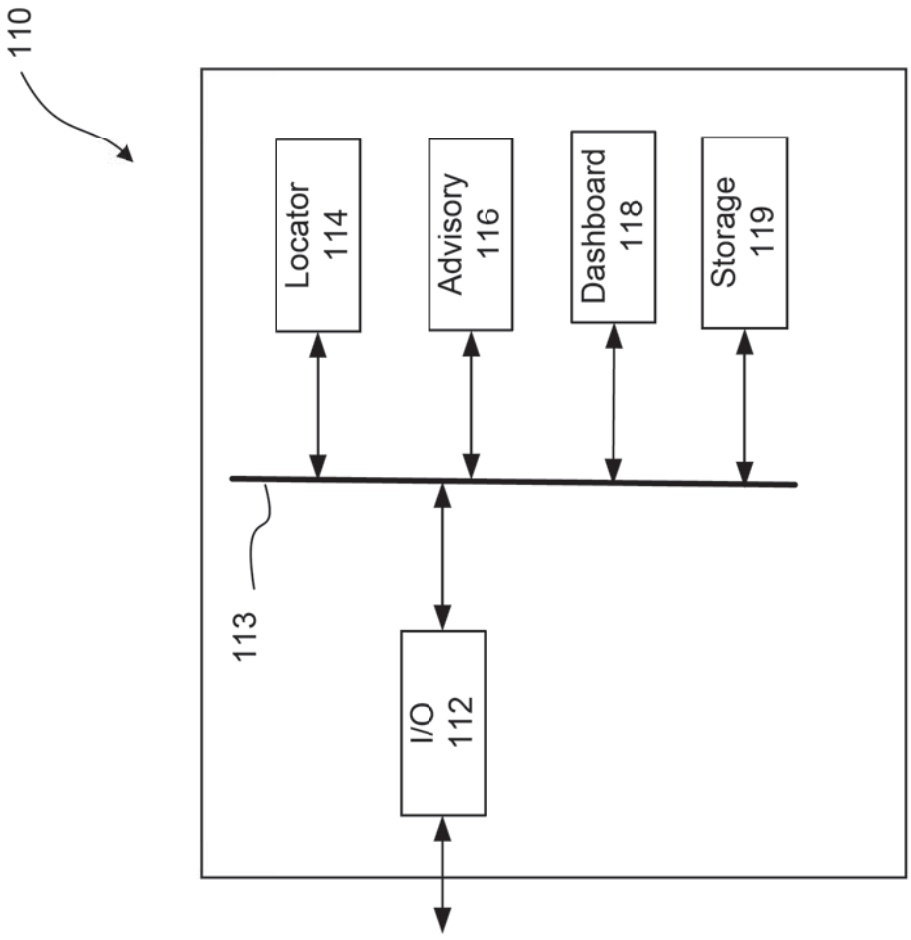

110
Locator
114
Advisory
116
Dashboard
118
Storage
119
113
I/O
112

FIG. 1B

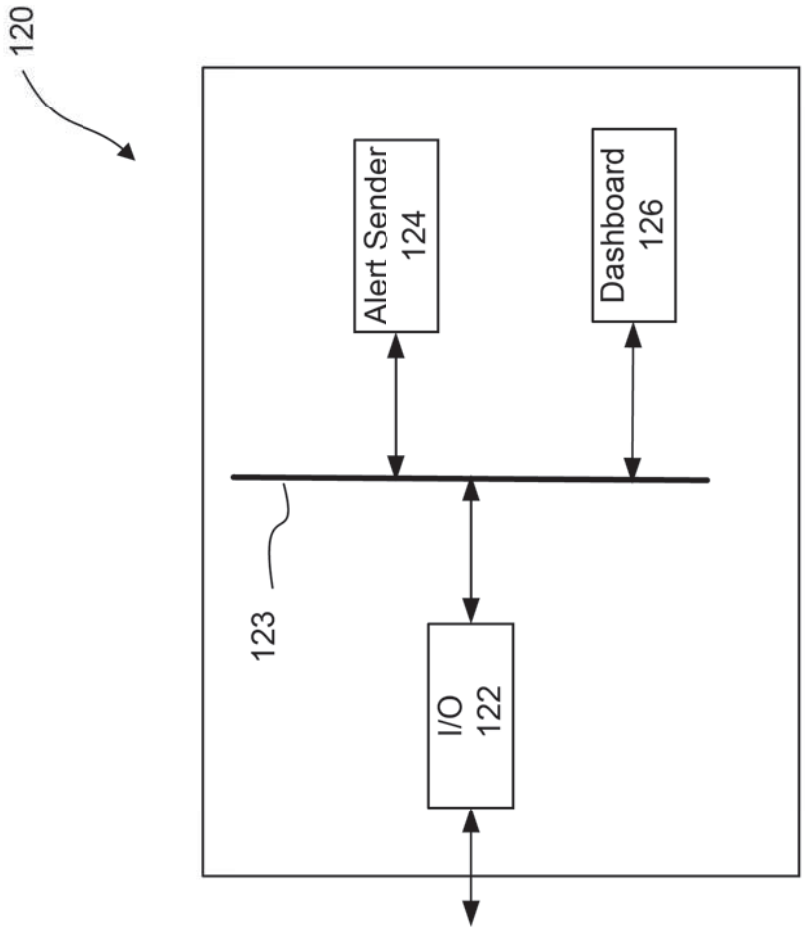


FIG. 1C

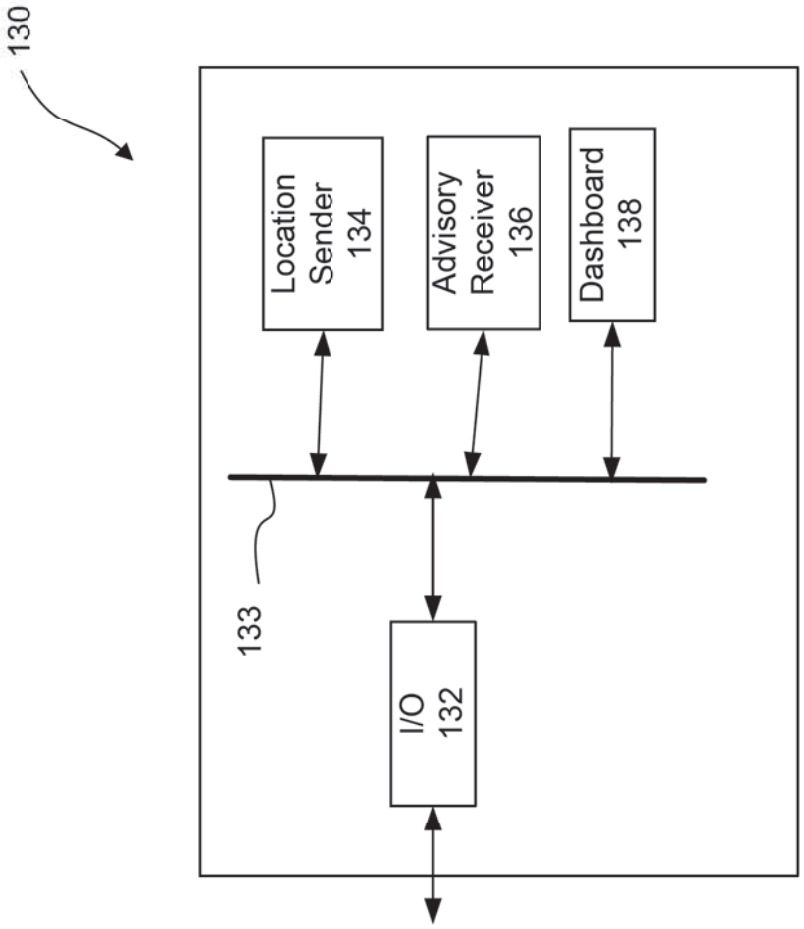

130
Location Sender 134
Advisory Receiver 136
Dashboard 138
133
I/O 132

FIG. 1D

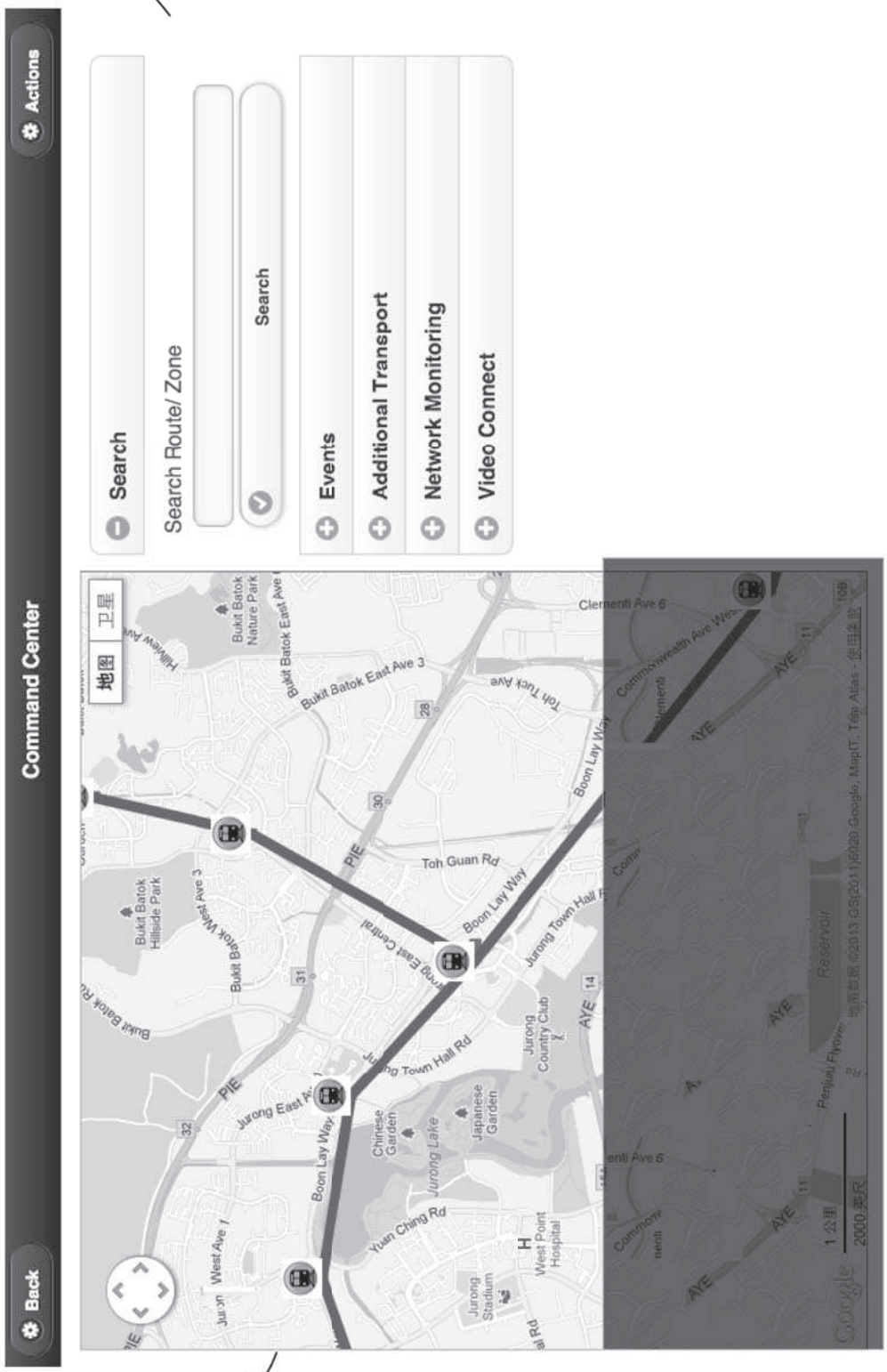

210
214
212
Command Center
Back
Actions
Search
Search Route/ Zone
Search
Events
Additional Transport
Network Monitoring
Video Connect
地图
卫星
Bukit Batok Nature Park
Bukit Batok East Ave 3
Toh Tuck Ave
Bukit Batok Hillside Park
Bukit Batok West Ave 3
PIE
Toh Guan Rd
Boon Lay Way
Jurong East Central
Jurong Town Hall Rd
Jurong Country Club
Chinese Garden
Jurong Lake
Japanese Garden
Yuan Ching Rd
West Point Hospital
Jurong Stadium
AYE
Clementi Ave 6
Commonwealth Ave West
Reservoir
Google

FIG. 2A

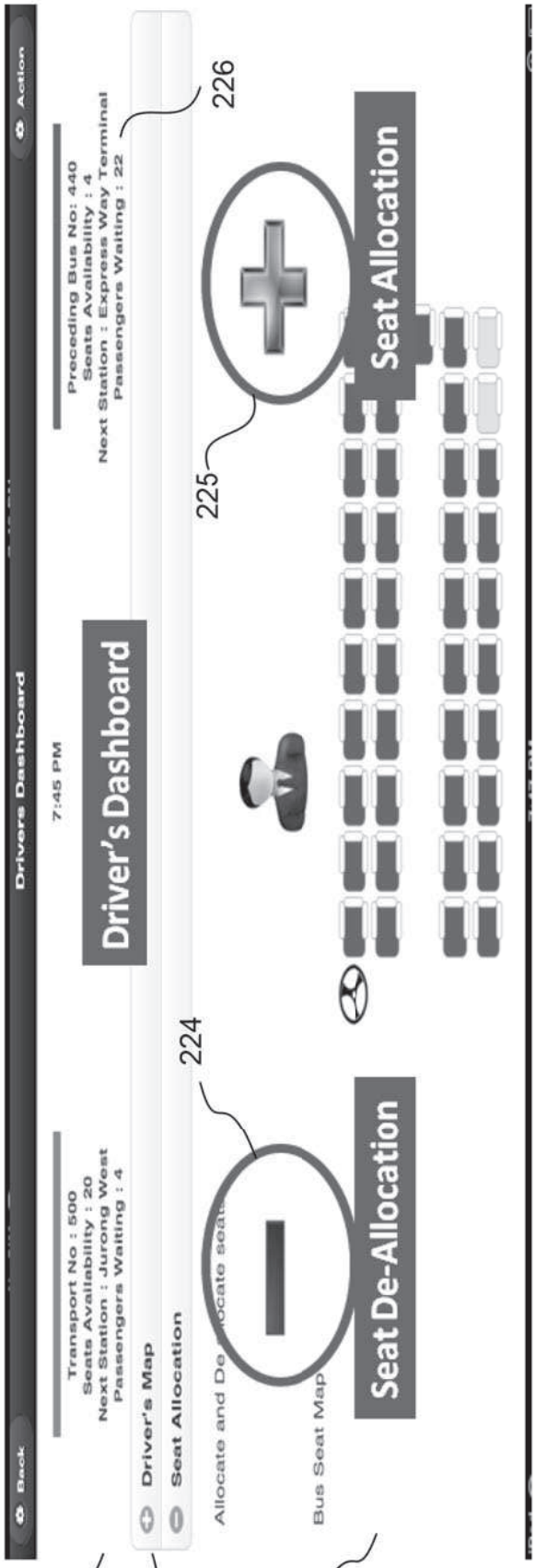

220
Back
Drivers Dashboard
Action
Transport No : 500
Seats Availability : 20
Next Station : Jurong West
Passengers Waiting : 4
7:45 PM
Preceding Bus No: 440
Seats Availability : 4
Next Station : Express Way Terminal
Passengers Waiting : 22
Driver's Map
Seat Allocation
Allocate and De
Bus Seat Map
Driver's Dashboard
Seat De-Allocation
Seat Allocation
221
222
223
224
225
226

FIG. 2B

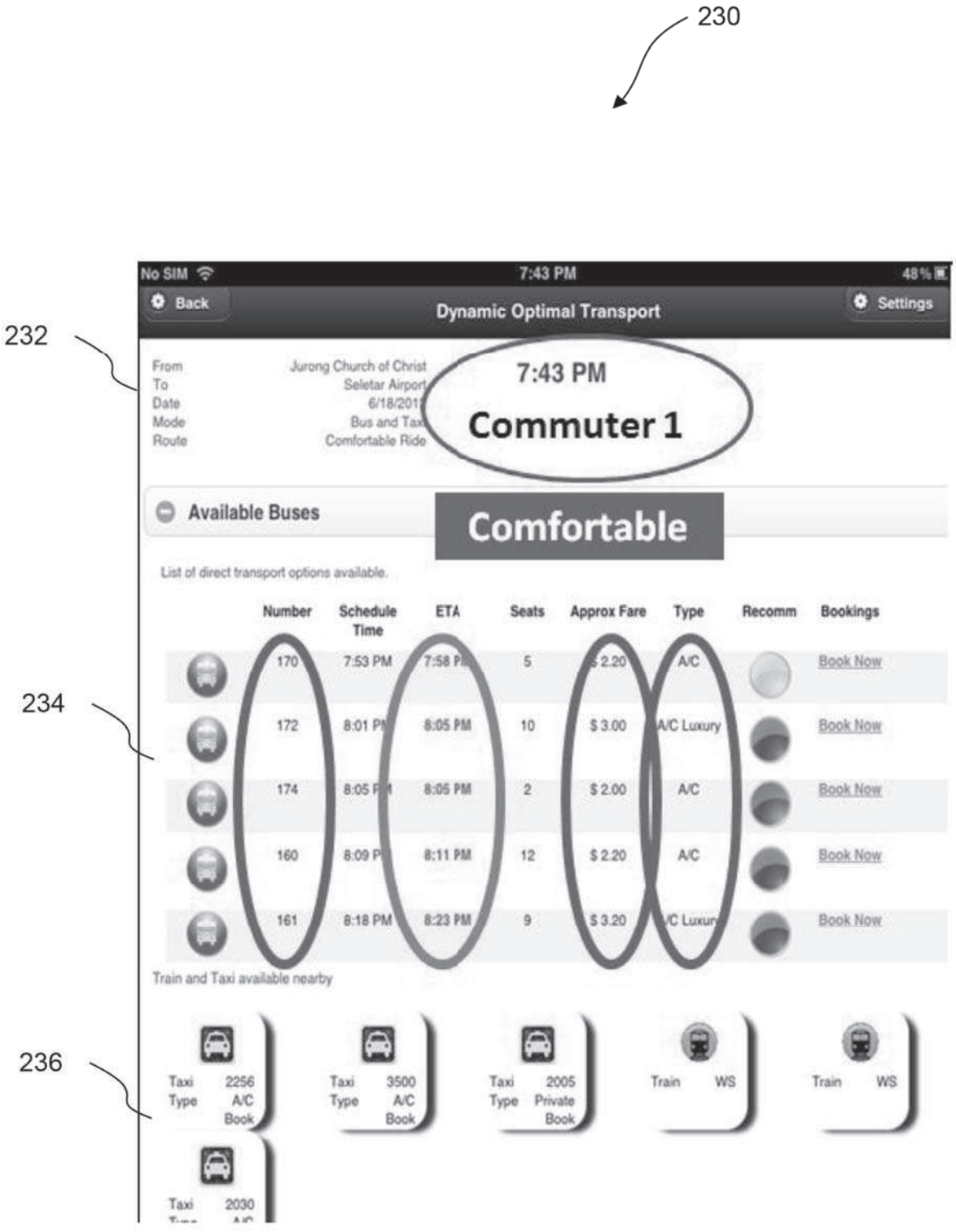

230
232
234
236
No SIM
7:43 PM
48 %
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Jurong Church of Christ
Seletar Airport
6/18/201
Bus and Tax
Comfortable Ride
7:43 PM
Commuter 1
Available Buses
Comfortable
List of direct transport options available.
Number
Schedule Time
ETA
Seats
Approx Fare
Type
Recomm
Bookings
170
7:53 PM
7:58 PM
5
$ 2.20
A/C
Book Now
172
8:01 PM
8:05 PM
10
$ 3.00
A/C Luxury
Book Now
174
8:05 PM
8:05 PM
2
$ 2.00
A/C
Book Now
160
8:09 PM
8:11 PM
12
$ 2.20
A/C
Book Now
161
8:18 PM
8:23 PM
9
$ 3.20
Book Now
Train and Taxi available nearby
Taxi 2256 Type A/C Book
Taxi 3500 Type A/C Book
Taxi 2005 Type Private Book
Train WS
Train WS
Taxi 2030

FIG. 2C

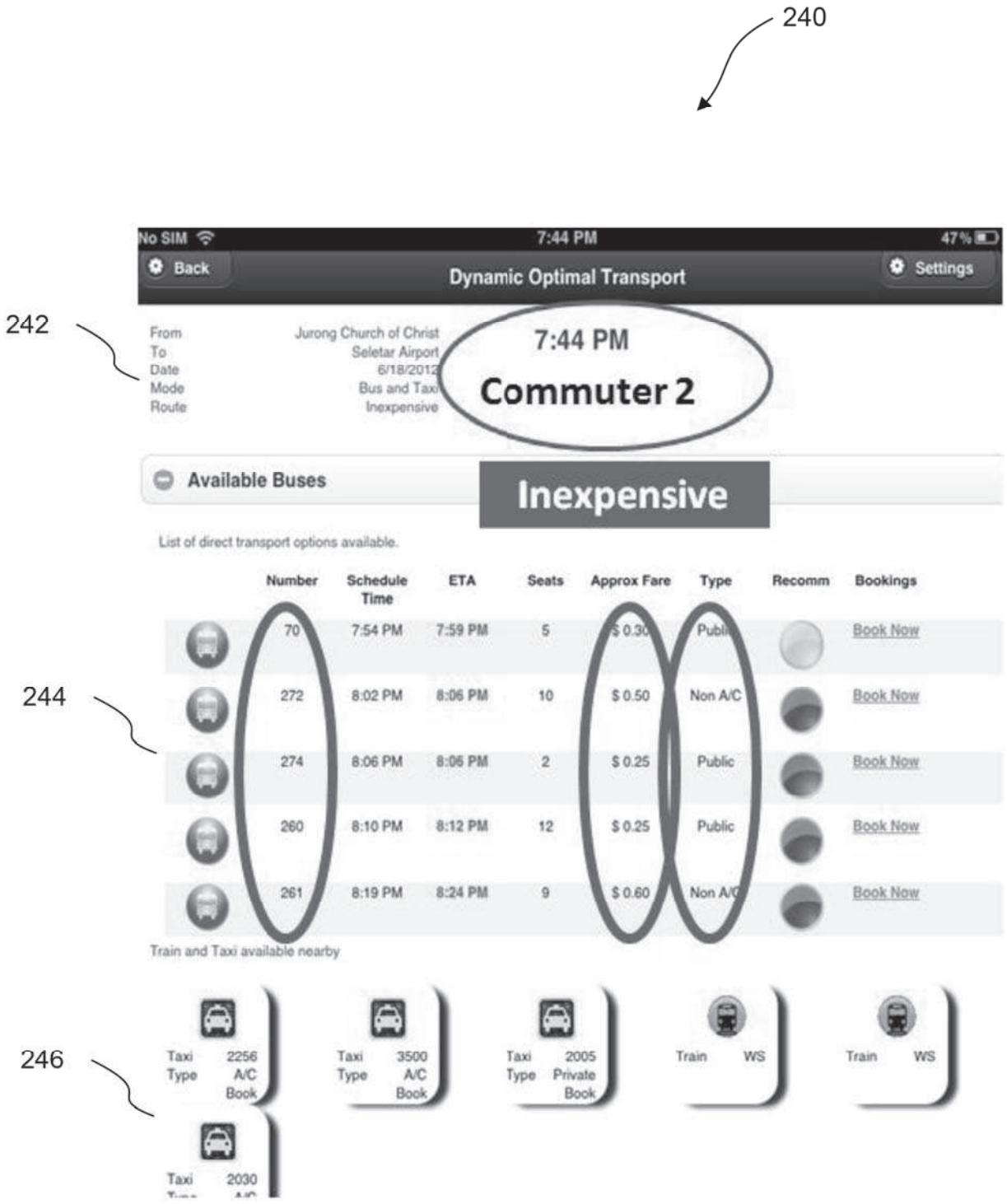

240
242
244
246
No SIM
7:44 PM
47%
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Jurong Church of Christ
Seletar Airport
6/18/2012
Bus and Taxi
Inexpensive
7:44 PM
Commuter 2
Available Buses
Inexpensive
List of direct transport options available.
Number
Schedule Time
ETA
Seats
Approx Fare
Type
Recomm
Bookings
70 7:54 PM 7:59 PM 5 $ 0.30 Publi Book Now
272 8:02 PM 8:06 PM 10 $ 0.50 Non A/C Book Now
274 8:06 PM 8:06 PM 2 $ 0.25 Public Book Now
260 8:10 PM 8:12 PM 12 $ 0.25 Public Book Now
261 8:19 PM 8:24 PM 9 $ 0.60 Non A/C Book Now
Train and Taxi available nearby
Taxi 2256 Type A/C Book
Taxi 3500 Type A/C Book
Taxi 2005 Type Private Book
Train WS
Train WS
Taxi 2030

FIG. 2D

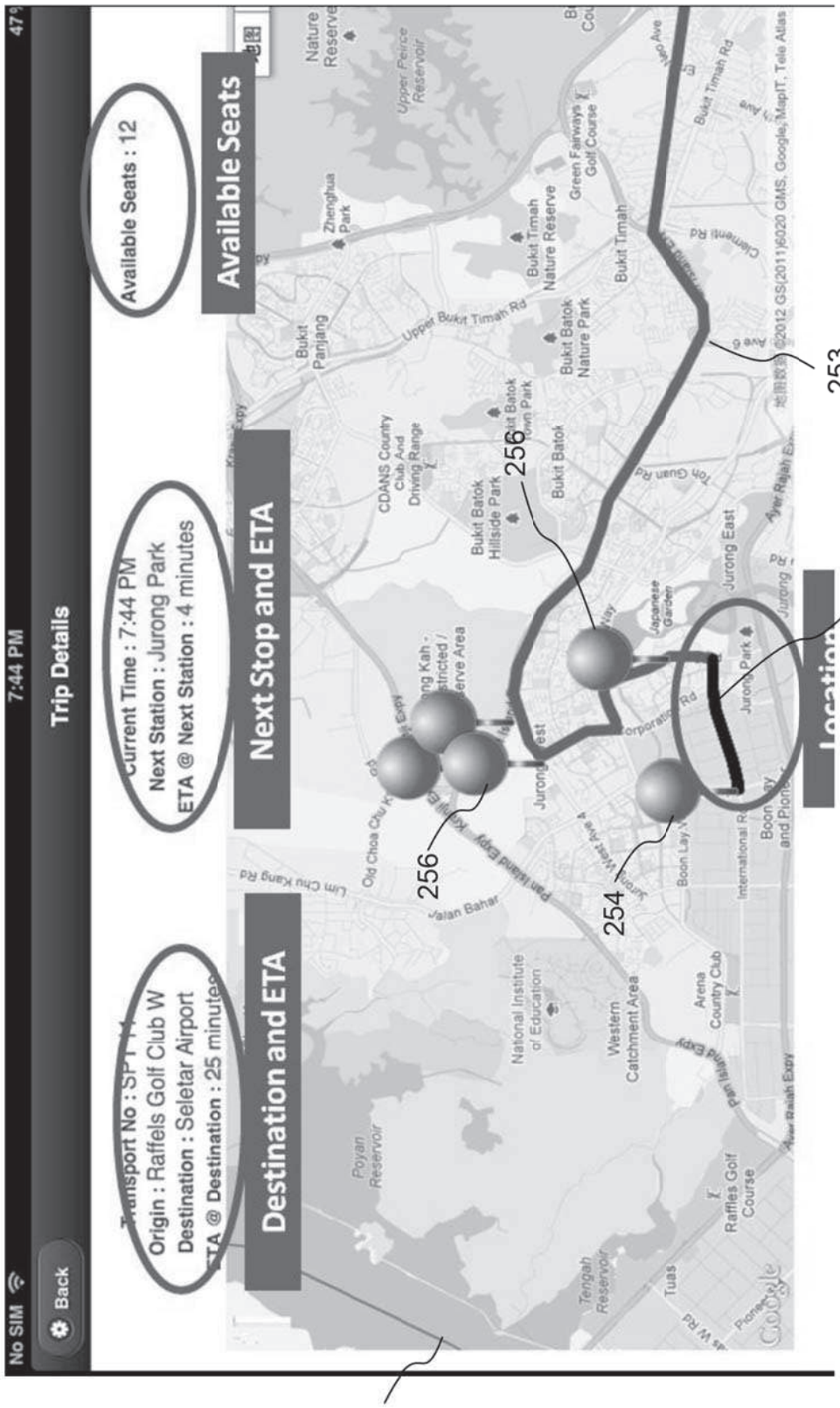

250
No SIM
7:44 PM
47%
Back
Trip Details
Origin : Raffels Golf Club W
Destination : Seletar Airport
Destination and ETA
Current Time : 7:44 PM
Next Station : Jurong Park
ETA @ Next Station : 4 minutes
Next Stop and ETA
Available Seats : 12
Available Seats
252
253
254
256
256
257
Location
Nature Reserve
Upper Peirce Reservoir
Zhenghua Park
Bukit Panjang
Upper Bukit Timah Rd
Bukit Timah Nature Reserve
Green Fairways Golf Course
Bukit Timah
Clementi Rd
CDANS Country Club And Driving Range
Bukit Batok Hillside Park
Bukit Batok
Bukit Batok Nature Park
Toh Guan Rd
Jurong East
Japanese Garden
Jurong Park
Jurong West
Pan Island Expy
Jalan Bahar
Lim Chu Kang Rd
Old Choa Chu Kang
Boon Lay
International
National Institute of Education
Western Catchment Area
Arena Country Club
Poyan Reservoir
Raffles Golf Course
Tengah Reservoir
Tuas
Pioneer
Ayer Rajah Expy
©2012 GS(2011)6020 GMS, Google, MapIT, Tele Atlas

FIG. 2E

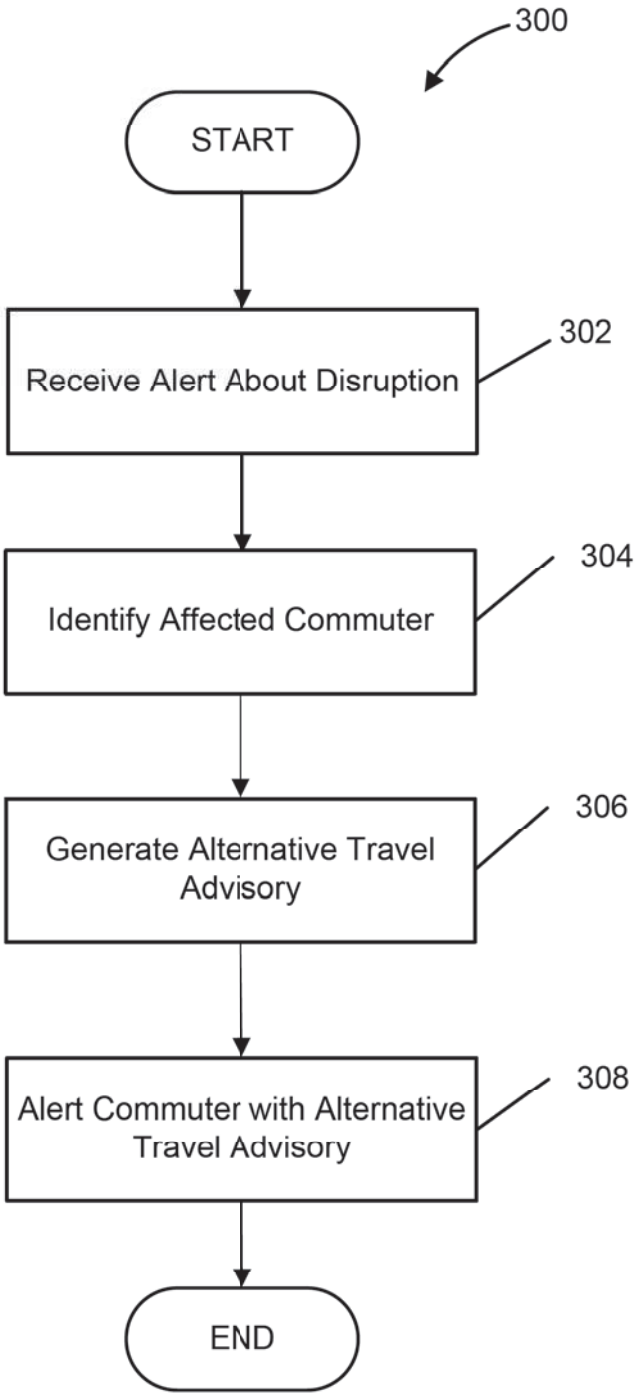

300
START
Receive Alert About Disruption
302
Identify Affected Commuter
304
Generate Alternative Travel Advisory
306
Alert Commuter with Alternative Travel Advisory
308
END

FIG. 3

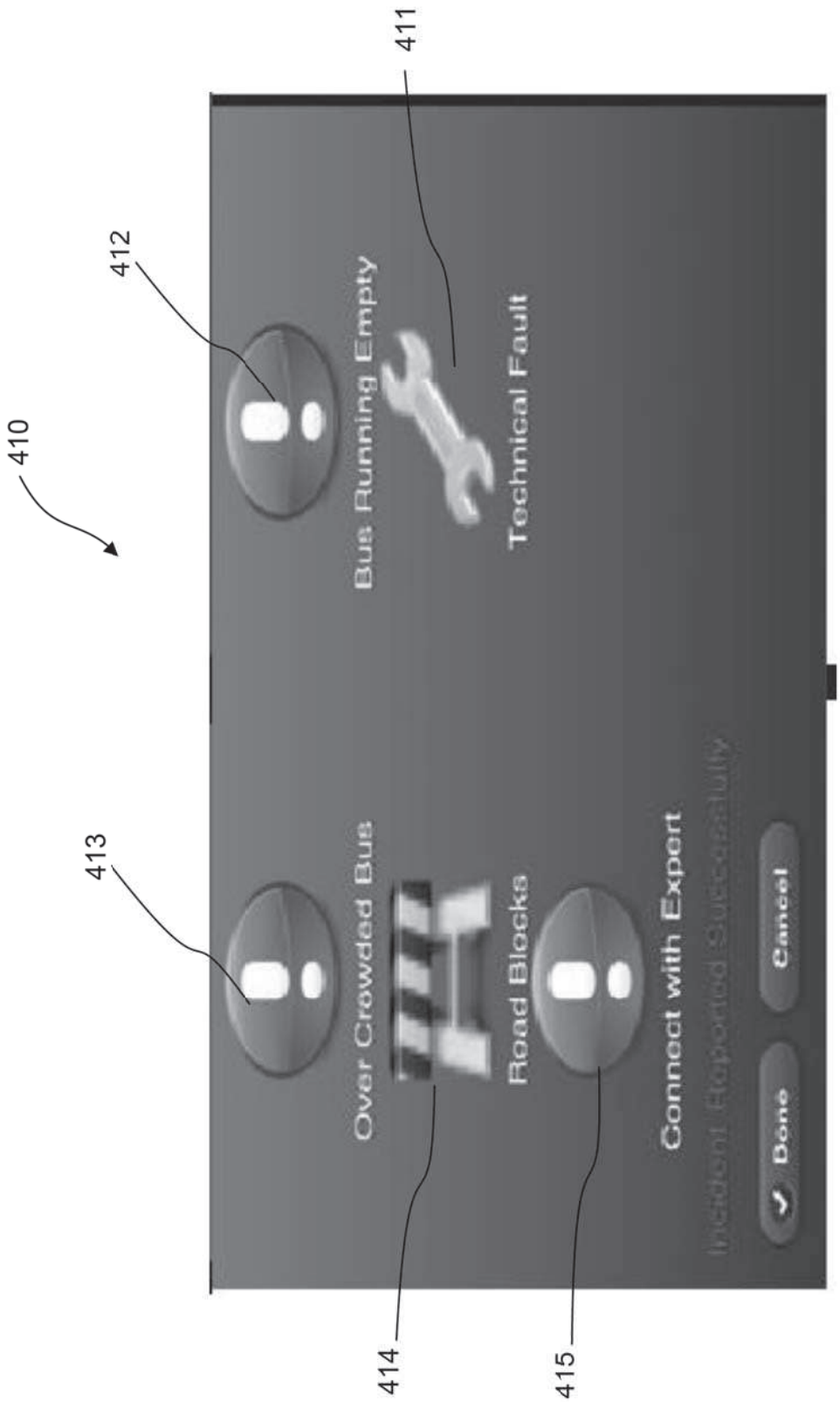

410
411
412
413
414
415
Bus Running Empty
Technical Fault
Over Crowded Bus
Road Blocks
Connect with Expert
Done
Cancel

FIG. 4A

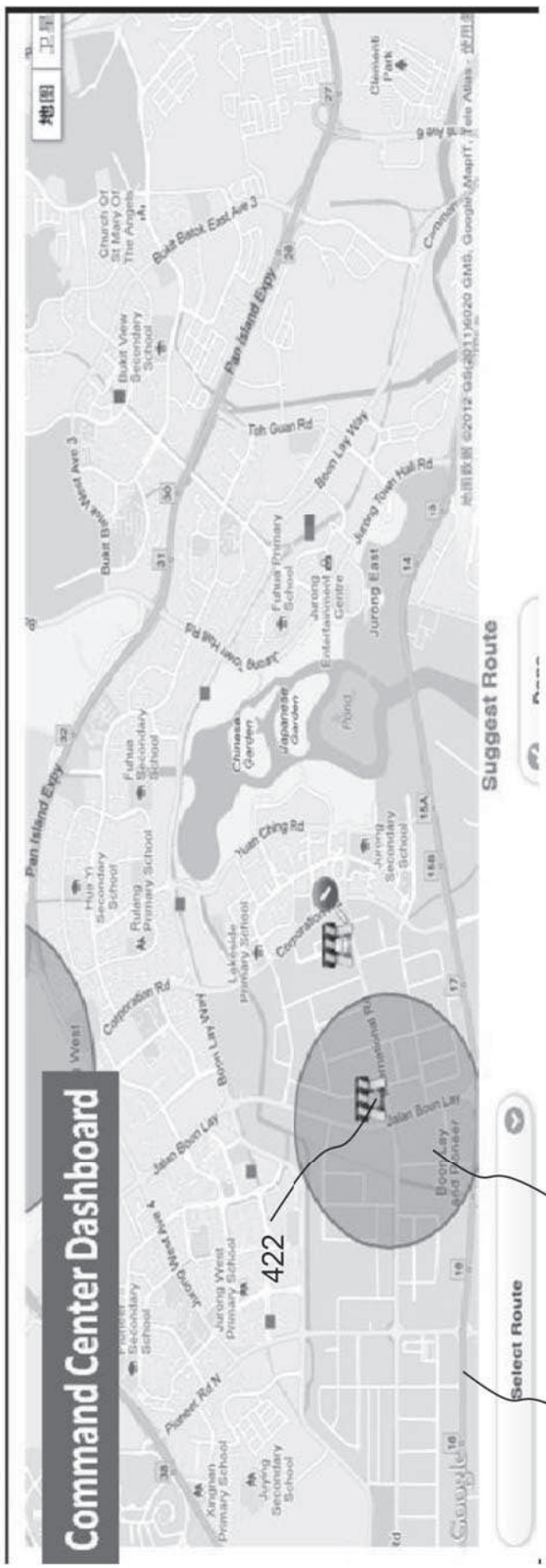

420
Command Center Dashboard
422
424
426
Select Route
Suggest Route
Pan Island Expy
Jurong East
Boon Lay Way
Jurong Town Hall Rd
Corporation Rd
Yuan Ching Rd
Jalan Boon Lay
Pioneer Rd N
Tuas West Ave 3
Toh Guan Rd
Buan Batok East Ave 3

FIG. 4B

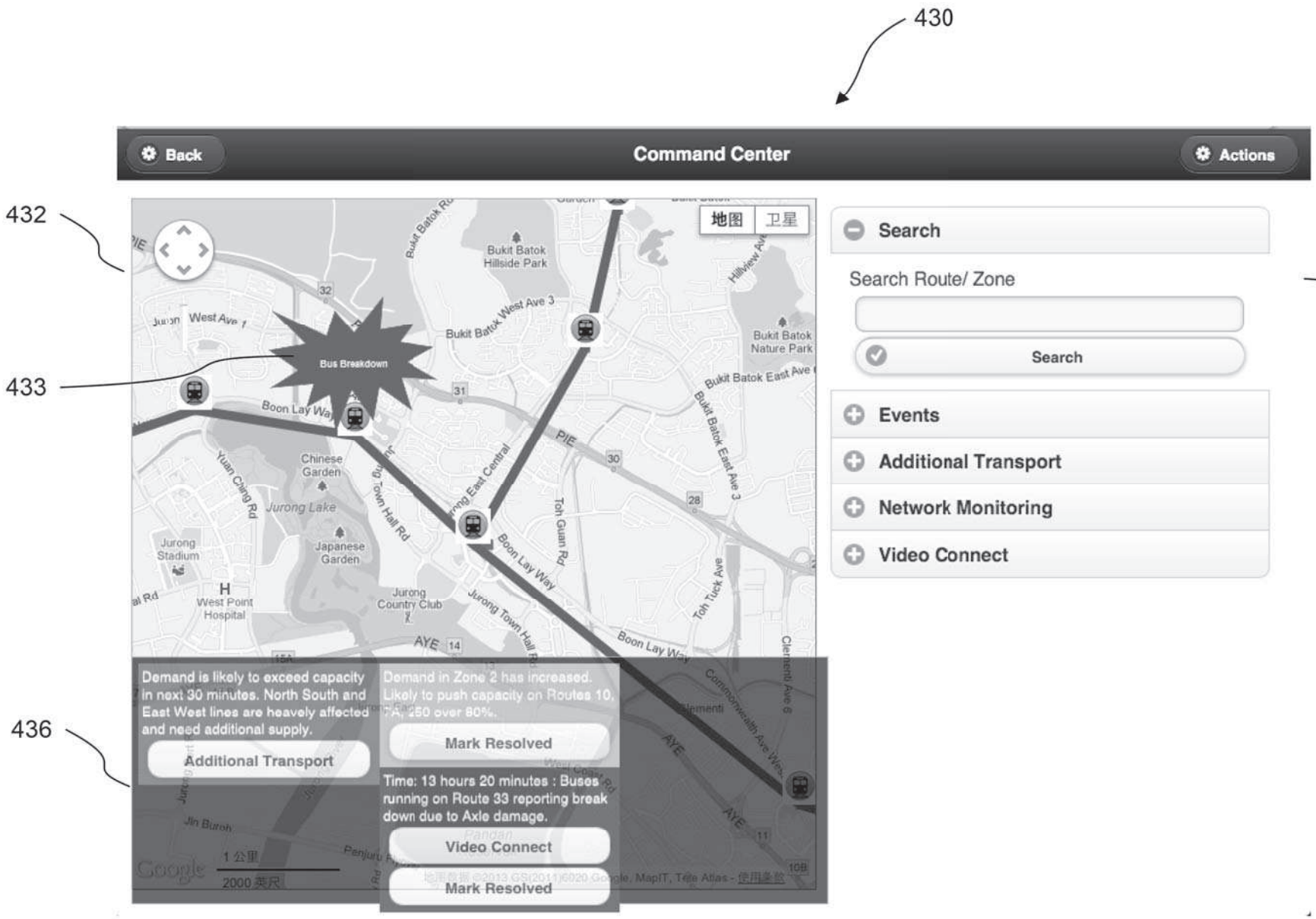

430
Back
Command Center
Actions
432
433
434
436
地图
卫星
Bus Breakdown
Search
Search Route/ Zone
Search
Events
Additional Transport
Network Monitoring
Video Connect
Demand is likely to exceed capacity in next 30 minutes. North South and East West lines are heavely affected and need additional supply.
Additional Transport
Demand in Zone 2 has increased. Likely to push capacity on Routes 10, 7A, 250 over 80%.
Mark Resolved
Time: 13 hours 20 minutes : Buses running on Route 33 reporting break down due to Axle damage.
Video Connect
Mark Resolved
Bukit Batok Hillside Park
Bukit Batok Nature Park
Bukit Batok West Ave 3
Bukit Batok East Ave 3
Boon Lay Way
PIE
Chinese Garden
Jurong Lake
Japanese Garden
Jurong Stadium
West Point Hospital
Jurong Country Club
Toh Guan Rd
Toh Tuck Ave
Jurong Town Hall Rd
Yuan Ching Rd
AYE
Google

FIG. 4C

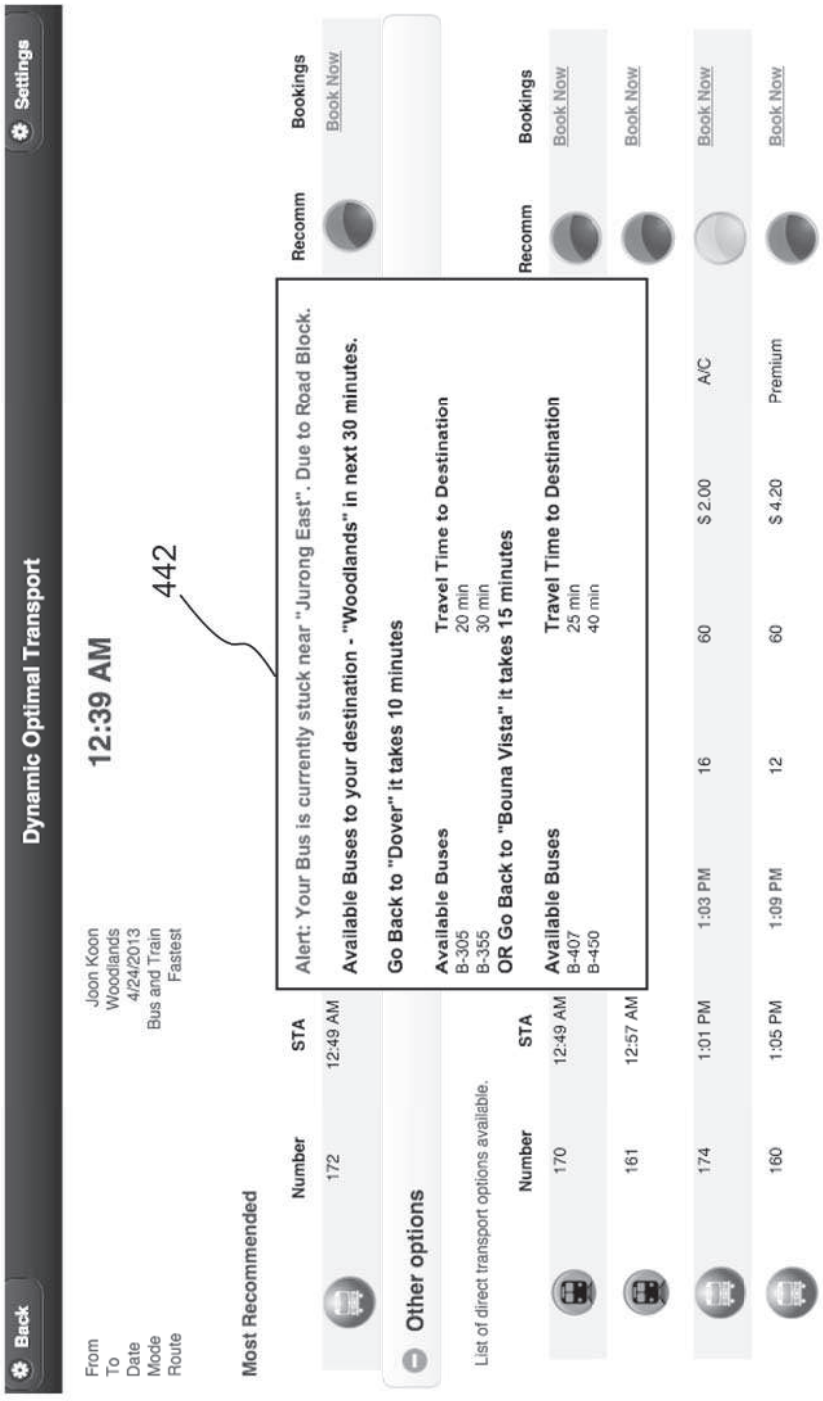

440
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Joon Koon
Woodlands
4/24/2013
Bus and Train
Fastest
12:39 AM
442
Most Recommended
Number
STA
Recomm
Bookings
172
12:49 AM
Book Now
Alert: Your Bus is currently stuck near "Jurong East". Due to Road Block.
Available Buses to your destination - "Woodlands" in next 30 minutes.
Go Back to "Dover" it takes 10 minutes
Available Buses
Travel Time to Destination
B-305
20 min
B-355
30 min
OR Go Back to "Bouna Vista" it takes 15 minutes
Available Buses
Travel Time to Destination
B-407
25 min
B-450
40 min
Other options
List of direct transport options available.
Number
STA
Recomm
Bookings
170
12:49 AM
Book Now
161
12:57 AM
Book Now
174
1:01 PM
1:03 PM
16
60
$ 2.00
A/C
Book Now
160
1:05 PM
1:09 PM
12
60
$ 4.20
Premium
Book Now
Train, Taxi and Cycle Stands available nearby

FIG. 4D

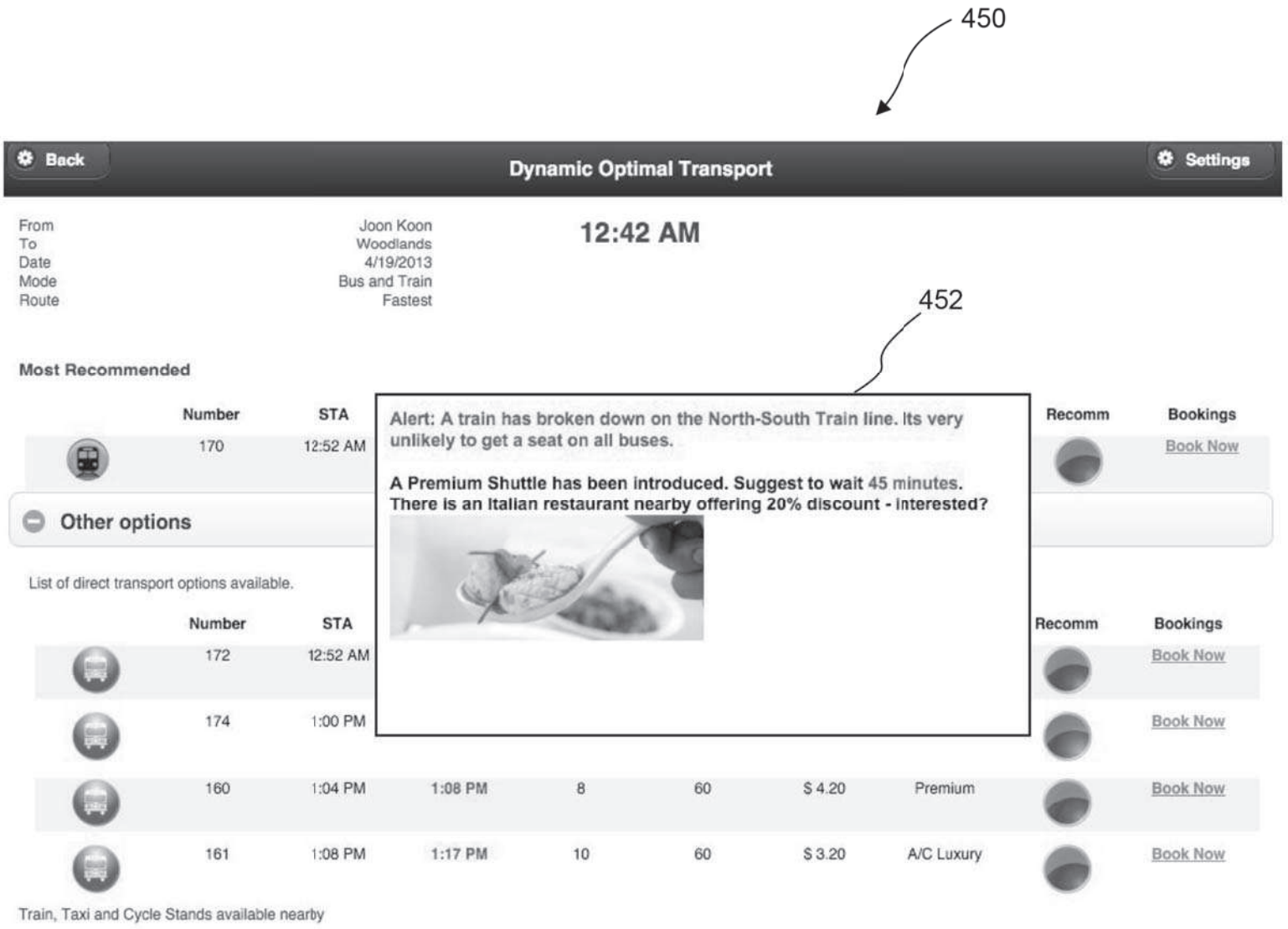

450
Back
Dynamic Optimal Transport
Settings
From
To
Date
Mode
Route
Joon Koon
Woodlands
4/19/2013
Bus and Train
Fastest
12:42 AM
452
Most Recommended
Number
STA
Recomm
Bookings
170
12:52 AM
Book Now
Alert: A train has broken down on the North-South Train line. Its very unlikely to get a seat on all buses.
A Premium Shuttle has been introduced. Suggest to wait 45 minutes.
There is an Italian restaurant nearby offering 20% discount - interested?
Other options
List of direct transport options available.
Number
STA
Recomm
Bookings
172
12:52 AM
Book Now
174
1:00 PM
Book Now
160
1:04 PM
1:08 PM
8
60
$ 4.20
Premium
Book Now
161
1:08 PM
1:17 PM
10
60
$ 3.20
A/C Luxury
Book Now
Train, Taxi and Cycle Stands available nearby

FIG. 4E

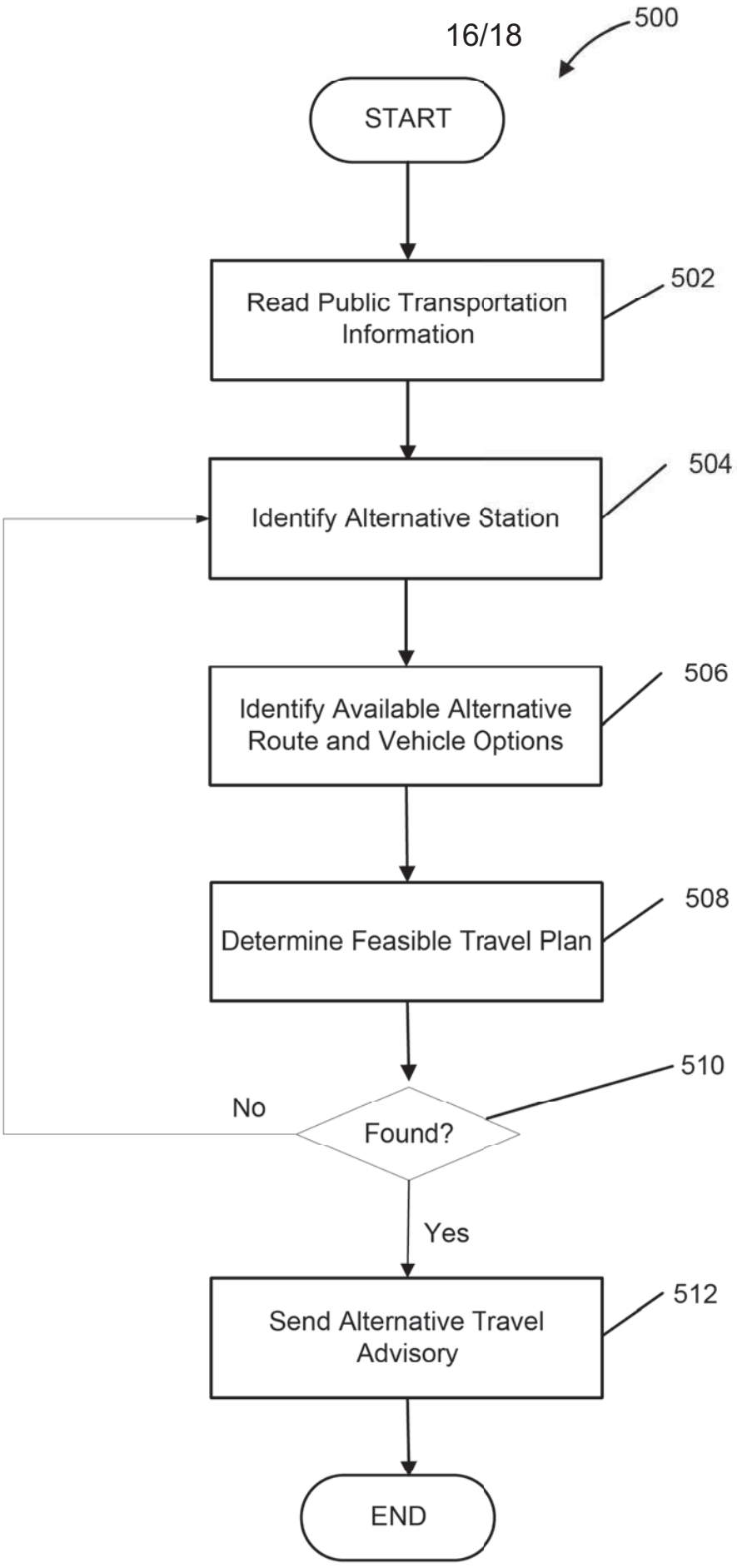

500
START
Read Public Transportation Information
502
Identify Alternative Station
504
Identify Available Alternative Route and Vehicle Options
506
Determine Feasible Travel Plan
508
Found?
510
No
Yes
Send Alternative Travel Advisory
512
END

FIG. 5

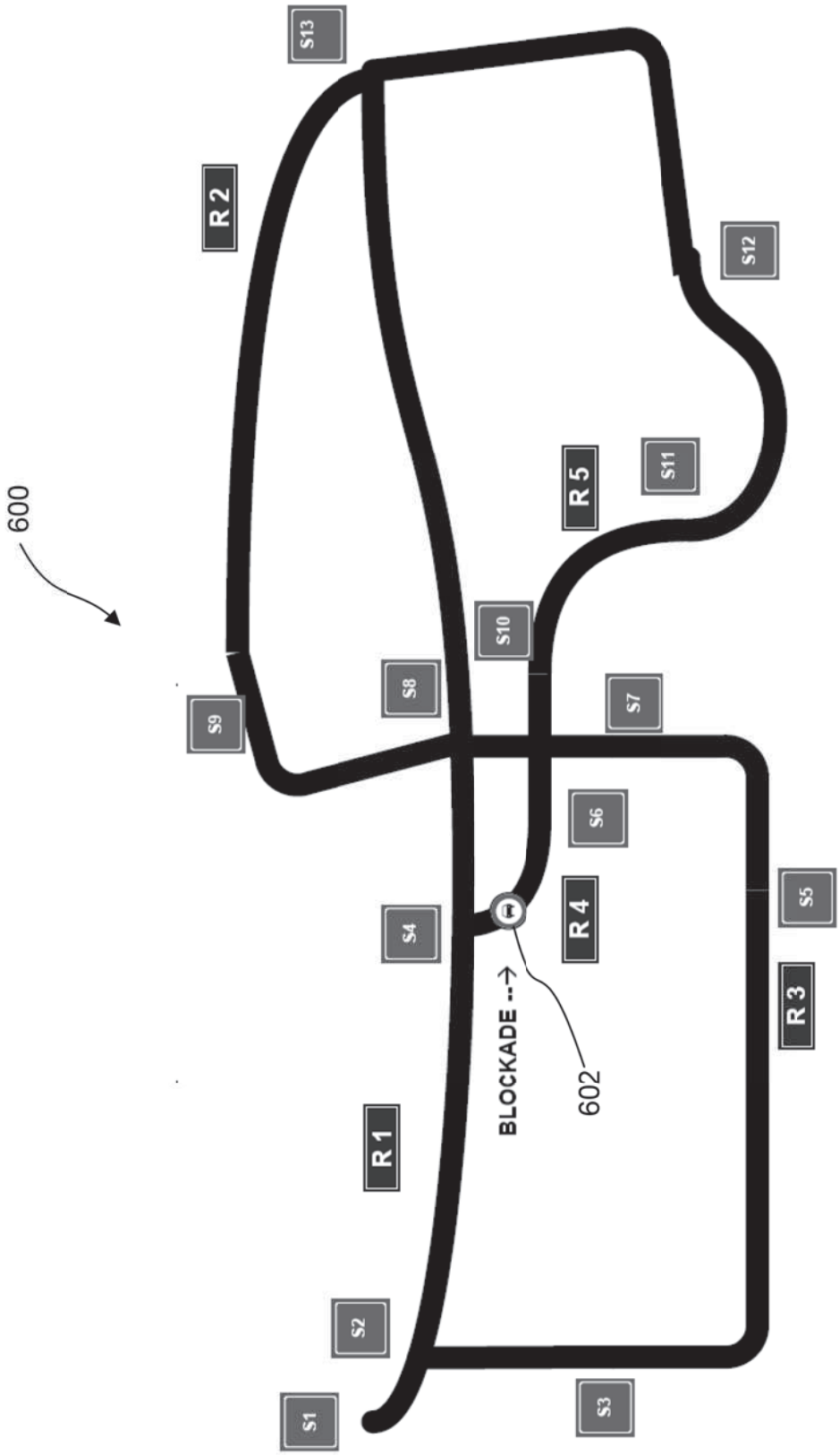

600
S13
R 2
S12
S11
R 5
S10
S8
S9
S7
S6
S5
S4
R 4
R 3
BLOCKADE -->
602
R 1
S2
S1
S3

FIG. 6A



	Bus Stops	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13
ROUTES														
R1		9:00	9:30		10:30				10:45					11:15
		10:00	10:30		11:30				11:45					12:15
		10:30	11:00		12:00				12:15					12:45
R2		9:05	9:35		10:05					10:40				11:25
		9:45	10:15		10:45					11:20				12:05
		10:45	11:15		11:45					12:20				13:05
R3		8:50		9:25		10:00		10:35	11:05					11:40
		9:45		10:20		10:55		11:30	12:00					12:35
		11:00		11:35		12:10		12:45	13:15					13:50
R4		9:10	9:40		10:10		10:40				11:10	11:40	12:10	12:40
		9:25	9:55		10:25		10:55				11:25	11:55	12:25	12:55
		9:40	10:10		10:40		11:10				11:40	12:10	12:40	13:10
R5		9:55	10:25	10:40		11:05		11:30			11:55	12:25	12:55	13:25
		10:15	10:45	11:00		11:25		11:50			12:15	12:45	13:15	13:45
		10:25	10:55	11:10		11:35		12:00			12:25	12:55	13:25	13:55
		10:45	11:15	11:30		11:55		12:20			12:45	13:15	13:45	14:15

651 652 653 654 655

FIG. 6B