

YOUR VALUE CHAIN PARTNER

At Hyundai Glovis, we create customer satisfaction based on trust to the world's leading logistics company in the 21st century.



SESSION 3A Connected For Delivery Outbound IT and Technology

2:00 PM, Wednesday, April 24, 2019

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HYUNDAI
GLOVIS



Where is my car?
When am I going to get it?

Key in a Logistics Operation: Managing the Inventory.

- Marketplace Expectation
- “If a small package can be tracked across the country while its being delivered, why not a car?”
- Inventory management,
 - Factory
 - Ports
 - Rail Ramps
 - Delivery
- Knowing where your inventory is at is key to moving it to the next step in the process.
- Essential to successful vehicle processing and shipments.
- Key: Managing Exceptions





- RFID, Radio Frequency Identification
 - Passive
 - Active
- GPS, Global Position System
- Vehicle Data
- Network Data
- Each of these have advantages, and some limitations, and can assist an operation in different ways.

- Passive RFID
 - RFID tags can be inexpensively printed
 - Printing can be part of an existing work order of transit document that is already printed
 - It requires fixed “readers” that can detect and identify a tag as it passes.
 - This system can detect a car as it passes key locations where readers are installed. It will not help with identifying a specific vehicle to a specific location.

WORK ORDER

VIN: 5NMS53AA2KH032387 HMA
 Allocation Flag: YES Model: Santa Fe Color: WW8, Quartz White

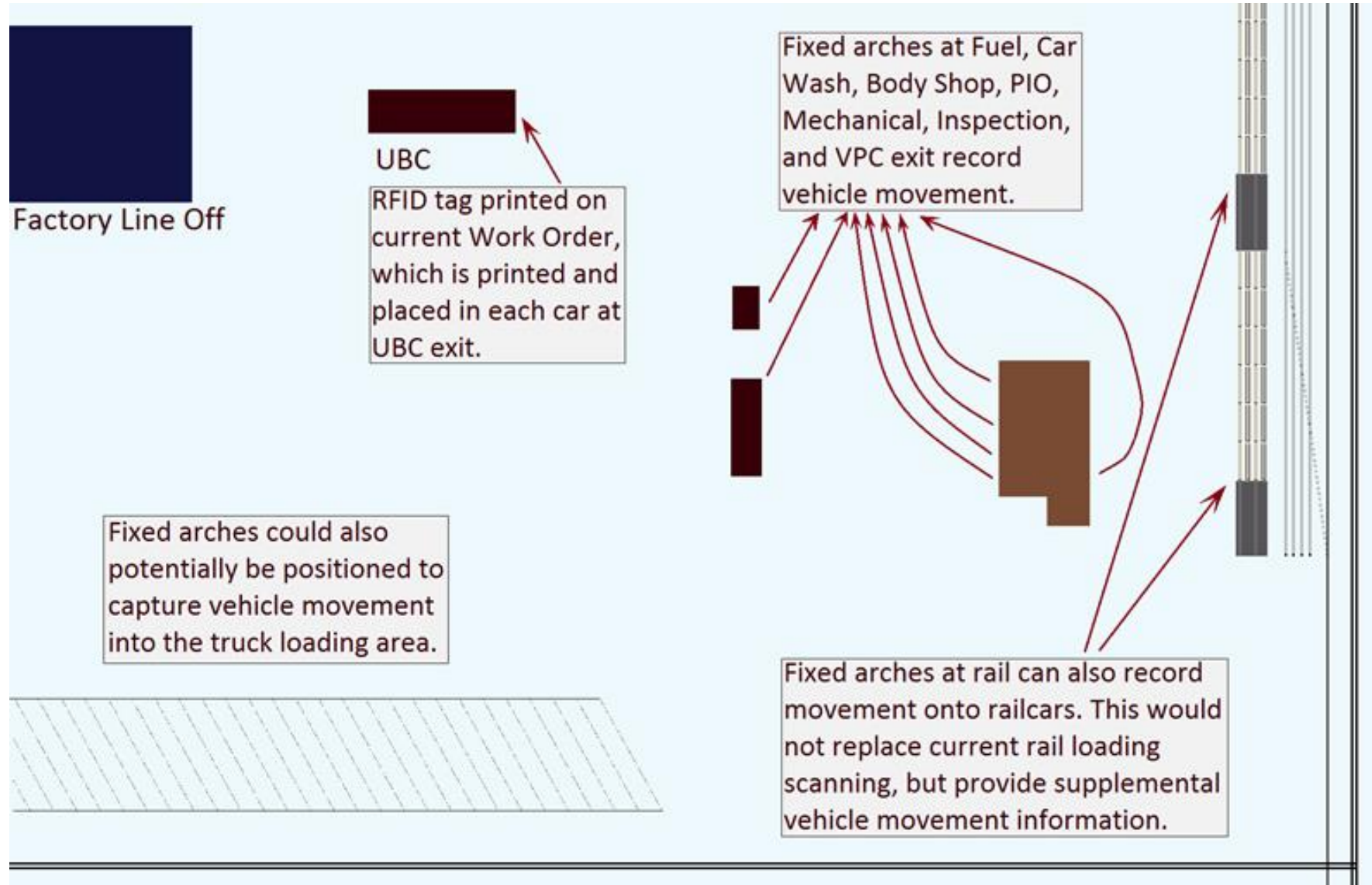



5NMS53AA2KH032387

Region: SO Control Gate (Arrival) Date: 08/29/2018 05:44:37
 Sold To: FL136 Allocation Date: 08/29/2018 03:40:45
 Ship To: FL136
 Bradenton, FL
 Truck: Hansen & Adkins

| CODE | DESCRIPTION | PART NUMBER | |
|------|---------------------|--------------|--|
| 14 | Final Inspection | | |
| CF | Carpeted Floor Mats | S2F14AU000 | |
| CT | Cargo Tray | 4Z012ADU10 | |
| CV | Cargo Cover | S2F15AU000 | |
| FK | First Aid Kit | J0F73AU00018 | |
| | | | |
| | | | |
| | | | |
| | | | |

- Fixed “Readers” Positioned at Key Points in a Facility



- Active RFID
 - Active tags require a power source (battery)
 - Are more expensive than passive tags
 - Send out a periodic signal
 - System calculates a longitude and latitude
 - Longitude and latitude are translated into a parking spot location
 - Infrastructure is required to support (towers, power supply, etc.)

- At Kia Motor Manufacturing Georgia, Vehicle Processing Center, West Point we are conducting a trial using an active tag system made by Cognoscos, from Atlanta.
- Currently we are running a 3 month test with 1,700 plus tag devices.
- The entire manufacturing campus is covered by two gateway antennas.



Cognosos, Equipment

- For this test, Cognosos provided us with over 1,700 “Tracker Tags”, which is the active GPS device. They also provided 2 “Gateways”, These are the actual antennas that receive the signals from the “Tracker Tags”. Additionally Cognosos has provided several “Activator Beacons”. These are set at entrances to points where cars pass, such as the carwash, the processing building entrance, and body shop.



Tracker Tag

- Hangs from the rearview mirror
- Powered by a single “AA” battery
- Battery life, approximately 2 years
- Sends GPS coordinates when vehicle moves and checks in every 24 hours if no movement



Gateways

- These are the antennas and receivers for the location signals sent by the Tracker Tags.
- Two of these devices cover the entire manufacturing campus. There are no “dead spots”.

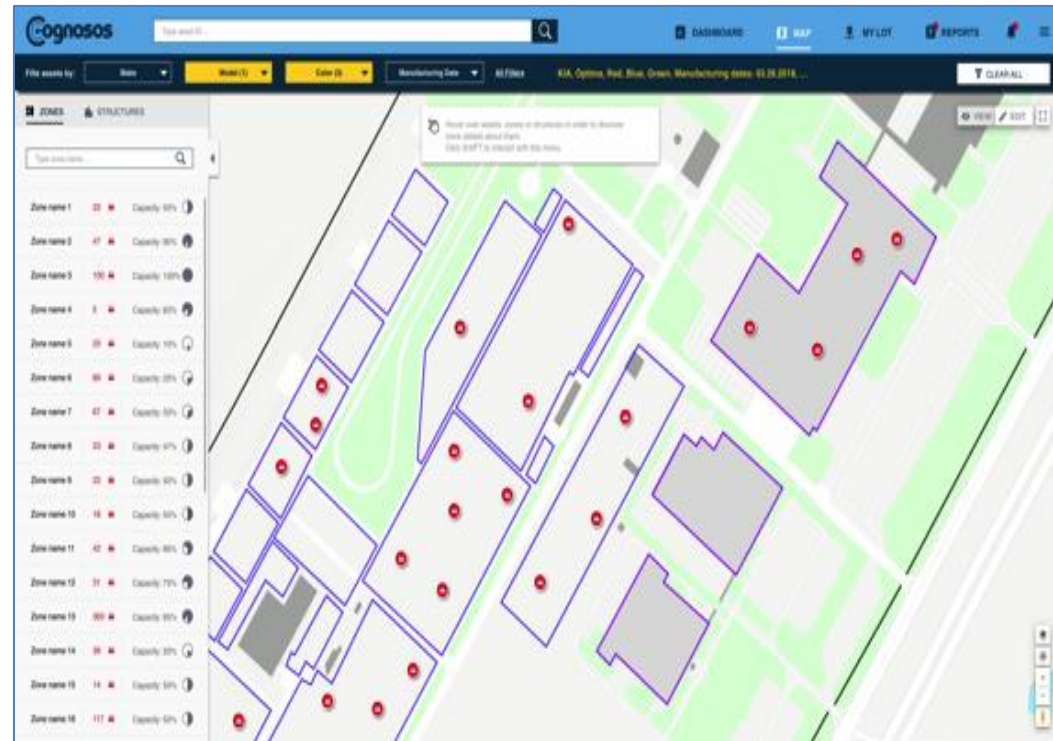


Activator Beacons

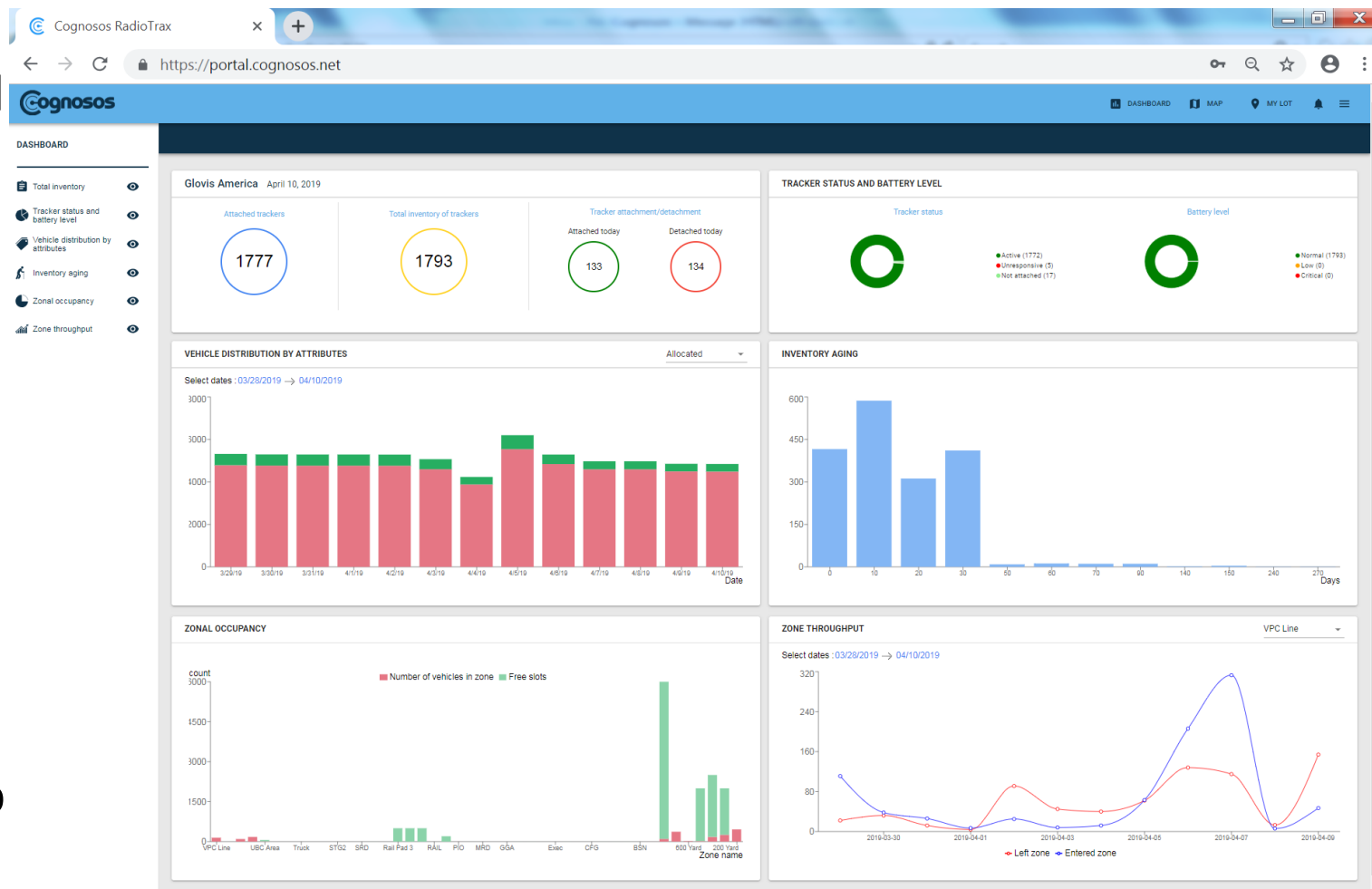
- These are located at fixed locations, such as entrances to production areas.
- Provides indoor location capability.
- The location is updated when a vehicle passes one of these devices.

Cognosos, Management Tools

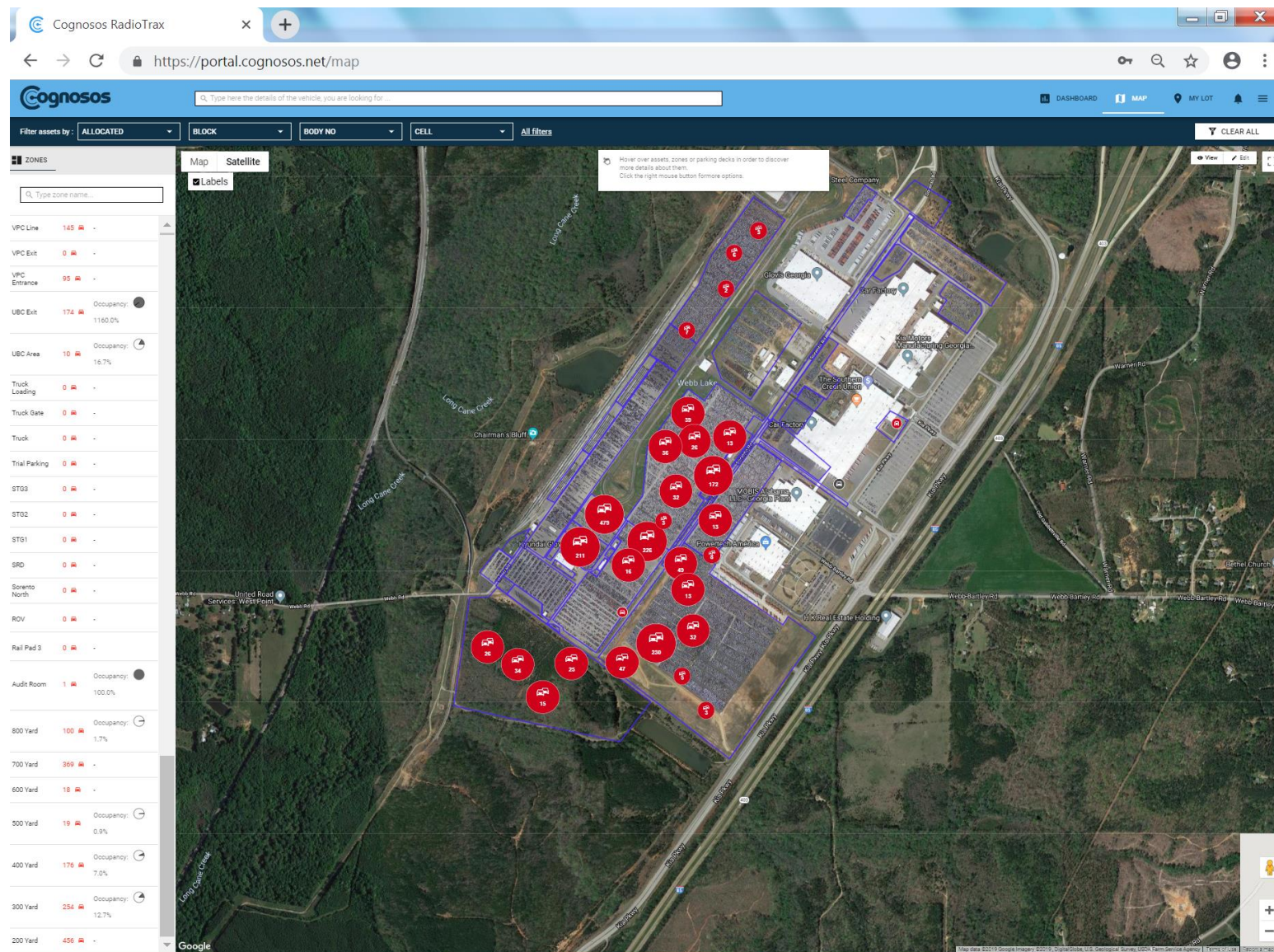
- “Geo Fences” were created around our storage lots to create zones.
- Alerts can be sent out via text or email when a specific car or group of cars you need to track move from one lot / production area to another.
- Inventories can be viewed either in a map view or satellite view of the manufacturing campus.
- Our vehicle operating system, VELES, receives a location updates, which can be real time or batch updated. GPS data is sent by the tracker tag. Cognosos translates its GPS location data to our parking location standard.
- “Activator Beacon” data is also sent to VELES indicating vehicles that are located in specific processing areas (e.g., the accessory area, at carwash, etc.).



- The Cognosos team created customized dashboard reports for our local team. The dashboard identifies where cars are at.
- Vehicles are tracked as they are prepared for shipment.
- The dashboard can identify the number of cars in a lot, by map or satellite view.

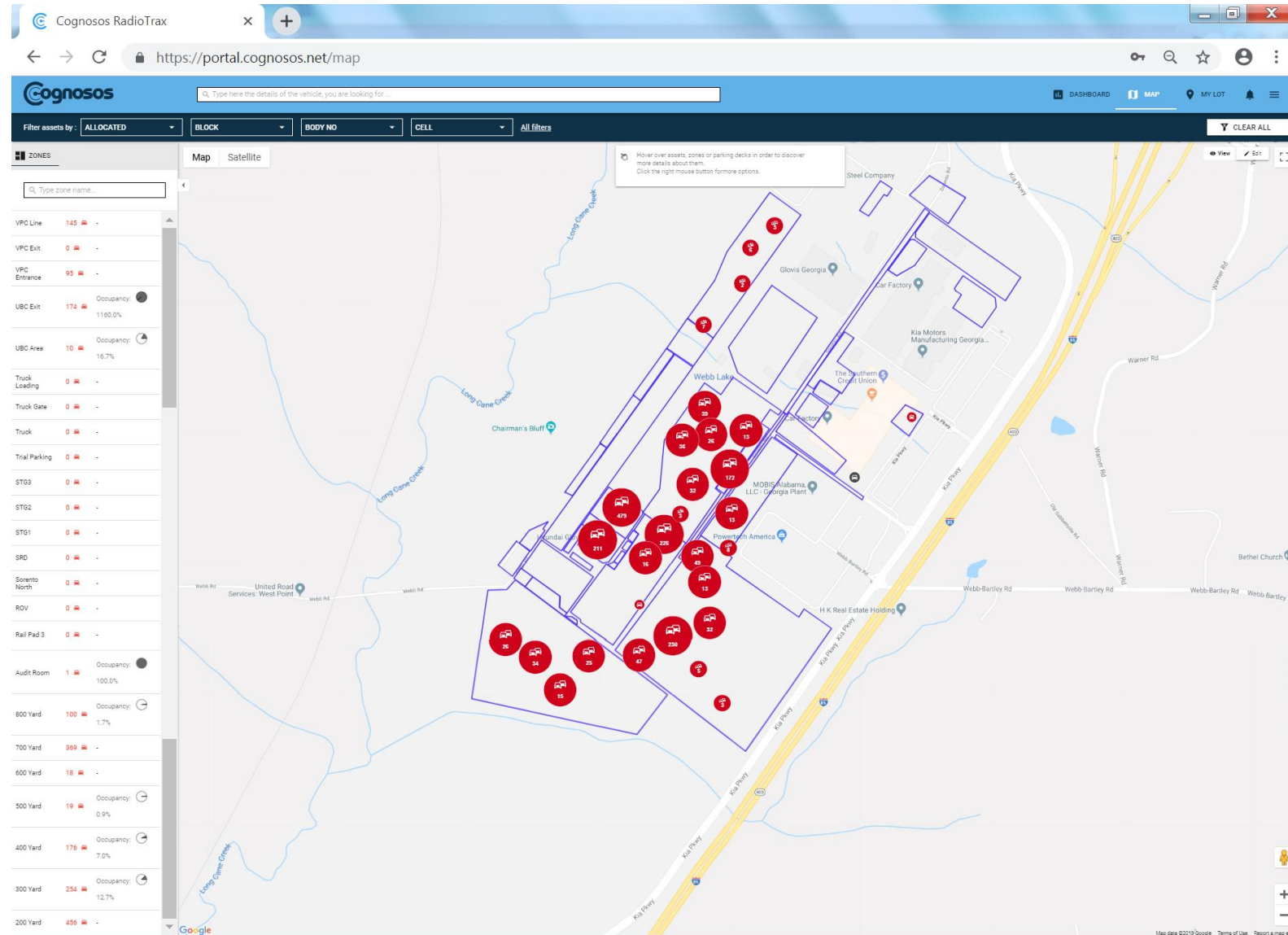


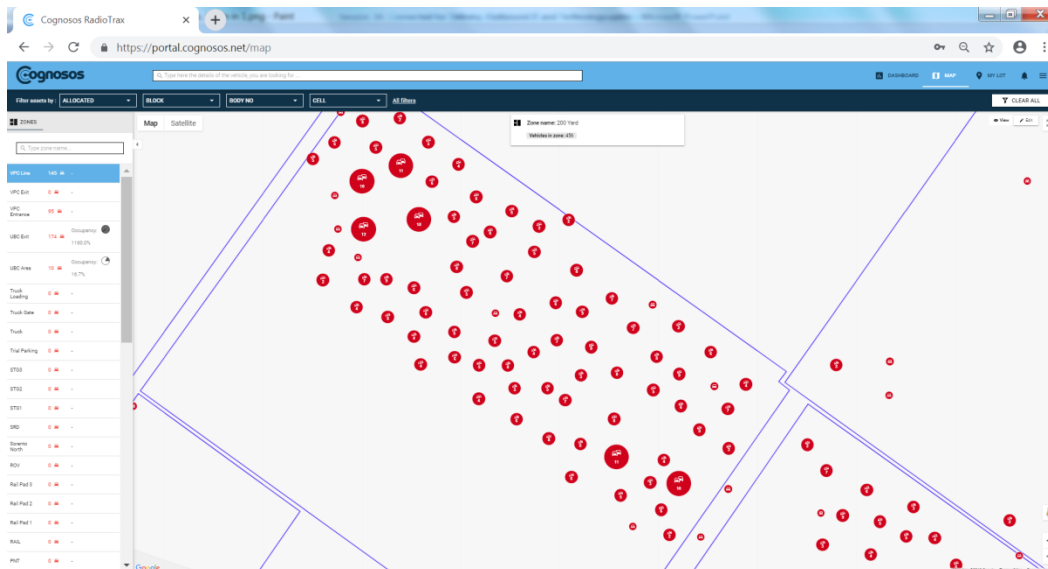
- Satellite view of the Kia Motor Manufacturing campus.



Cognosco, Management Tools, Continued

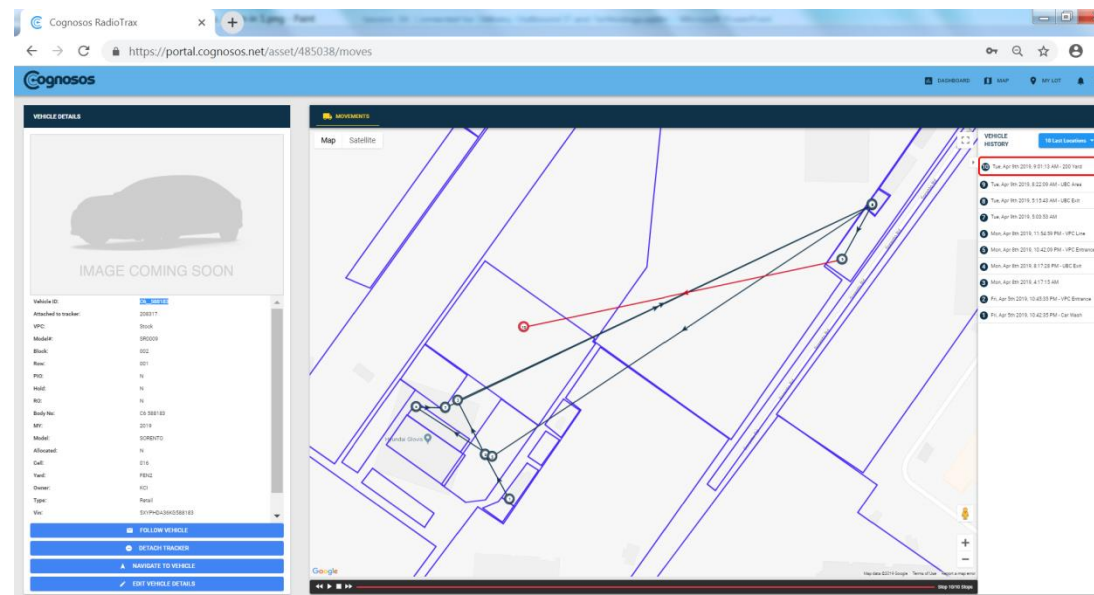
- A map view can also be displayed.
- Vehicle inventory quantities are shown by lot location.
- Each red circle has the number of cars in that area.





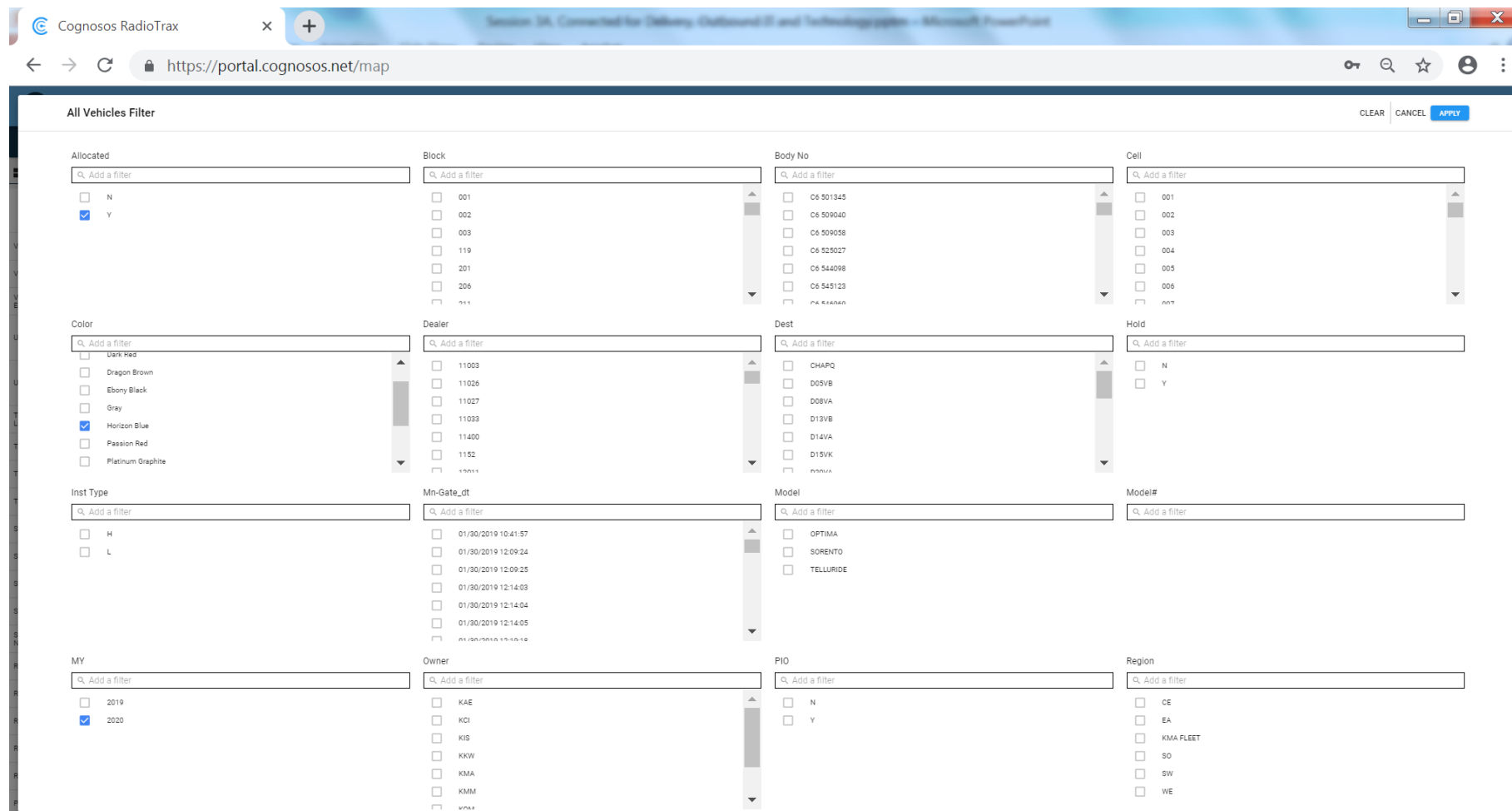
- Zooming in provides greater detail on the inventory, down to the single vehicle level.

- The system will provide movement history details for each vehicle.



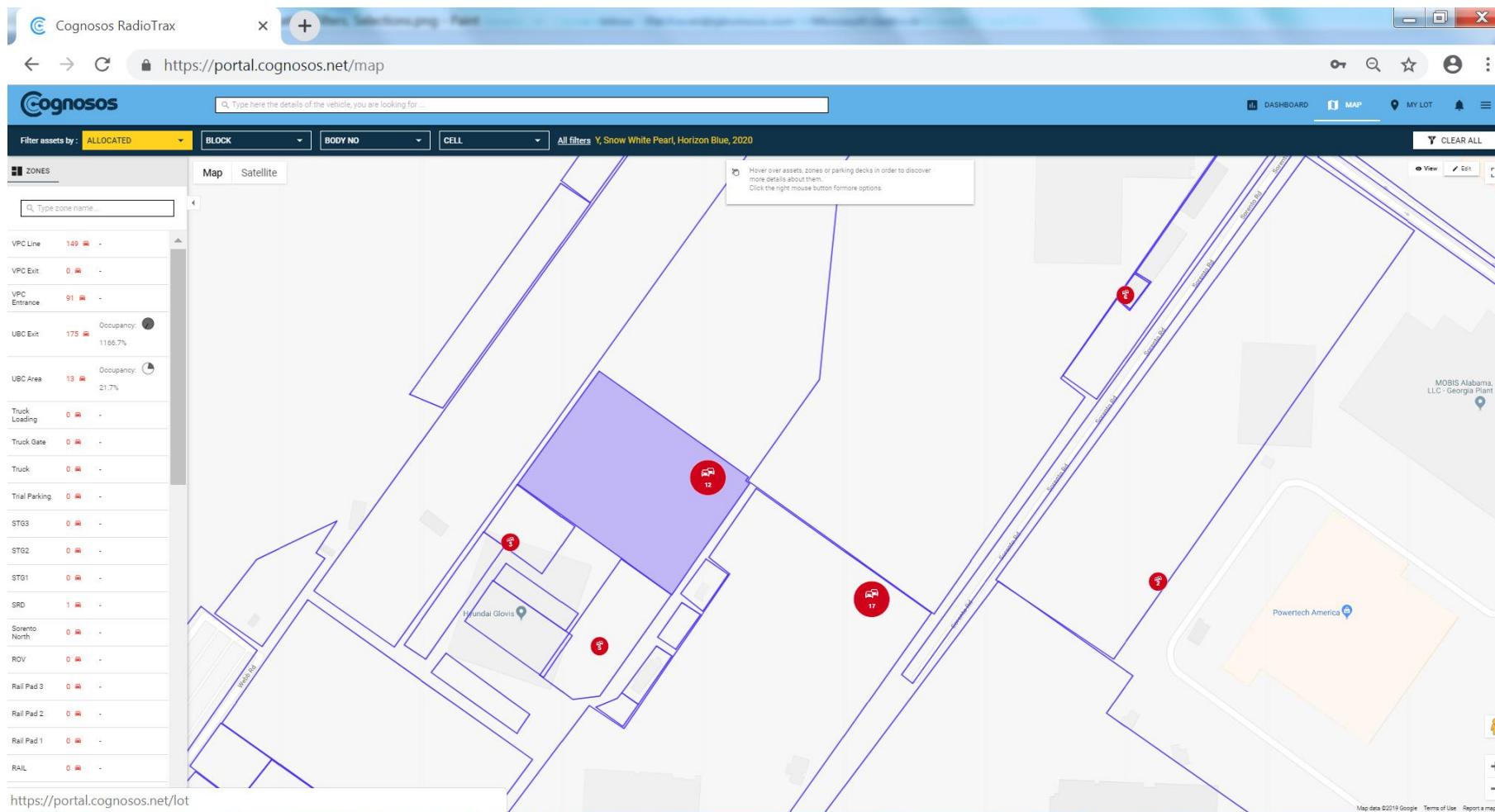
Cognosos, Management Tools, Continued

- The Cognosos system has a query system.
- Click on the selection filters for the cars (or groups of cars) you need to locate.

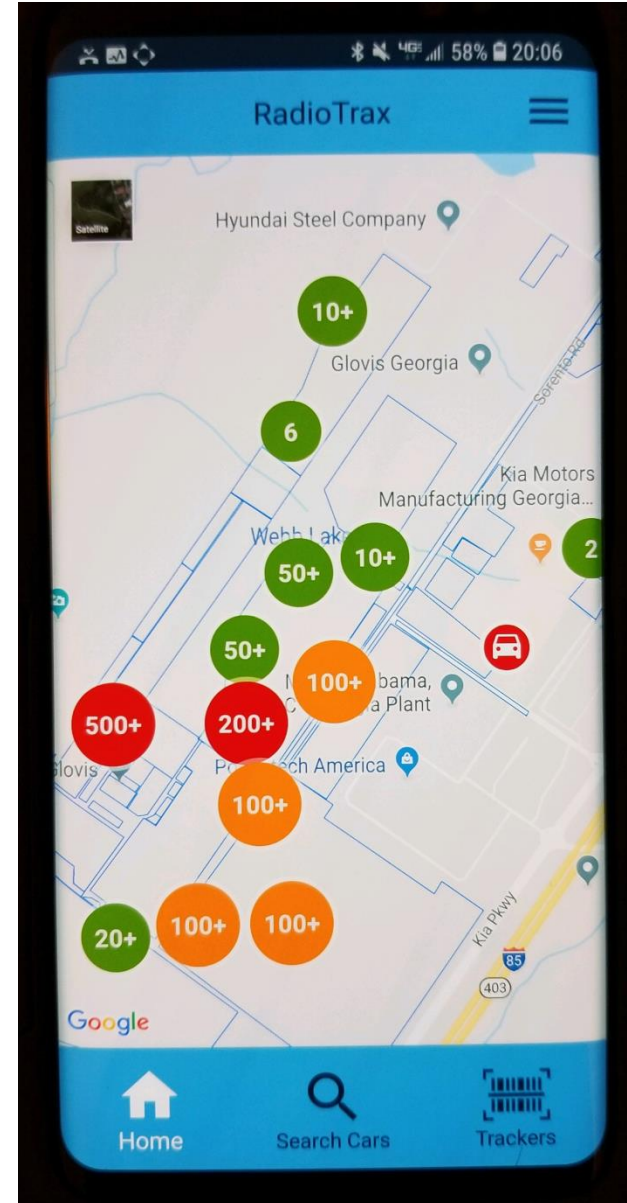


Cognosos, Management Tools, Continued

- Location results are provided.
- VIN list can be generated.
- Directions can be provided to a specific car(s) as needed.



- Cognosco provides iPhone and Android smartphone apps for use out in the lots.
- An employee can search by VIN, stock number, or other vehicle attributes.
- The app will provide directions to reach the car needed.
- We are about midway through our test period at West Point.
- So far the results look promising.



- Vehicle tracking data.
- Various brands are including various connected services.
- Location and vehicle data is periodically sent to the OEM (longitude latitude, battery power, tire pressure, etc.).
- Data prior to dealer delivery.
- Limitations include;
 - Transit Fuse
 - Data sent during “on/off” cycle.

Vehicle Data

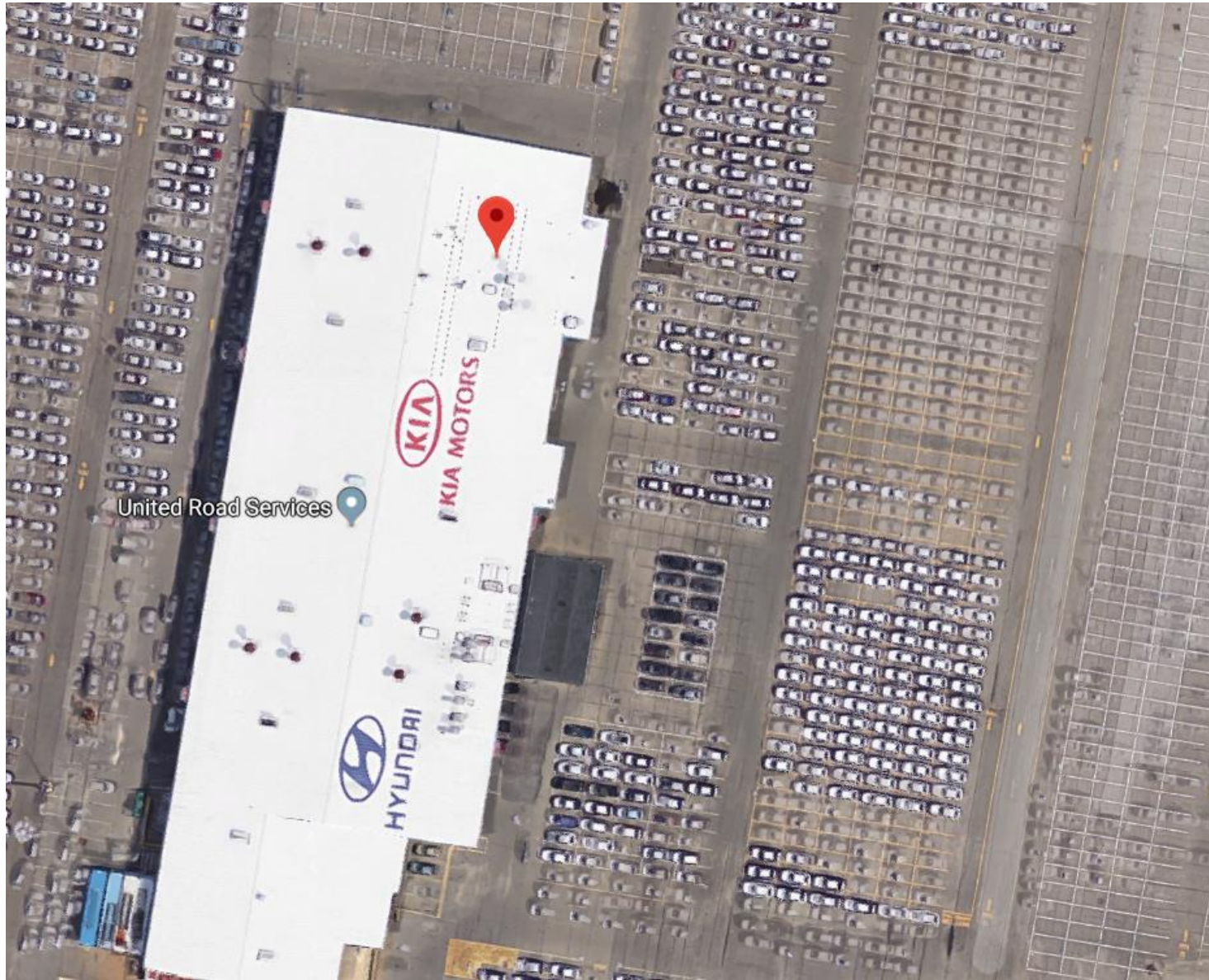
- Data provided on an individual car. Longitude / Latitude data plotted.
- Reported positions matched the vehicle's recorded locations.



FPOR Location

Location Prior to
Movement To
Processing Building





Location
Inside
Processing
Building



Truck-A-Way Location



Last Reported Location Prior to Shipment

Network Data, Vessel Tracking

- Vessel tracking, extremely accurate and timely.
- Multiple websites are available.

The screenshot shows the Vessel Finder website interface. The main map displays the East Coast of the United States, with numerous colored icons representing vessel positions and movement. A sidebar on the left provides detailed information for the selected vessel, GLOVIS COMET.

Vessel Details:

- Ship Name:** GLOVIS COMET
- Type:** Vehicles Carrier
- Destination:** Newark
- ETA:** Apr 12, 04:00
- PORT CALLS:** (Dropdown menu)
- AIS DATA:**

| Course | Speed | Current draught |
|--------|------------|-----------------|
| 92.5° | 9.3 kn | 8.6 m |
| GT | Built | IMO number |
| 55680 | 1996 | 9122942 |
| DWT | Size | MMSI |
| 21421 | 200 x 32 m | 440269000 |
- Last report:** 0 min (Apr 11, 2019 23:54 UTC)

Network Data, Railcar Tracking

- Class 1 Systems
 - Tracks & Traces Railcars

- RAILINC
 - Website Tracks & Traces Railcars
 - Across the rail network

Track and Trace - Internet Explorer
 https://www.railinc.com/steelroads/servlet/FrontServlet

File Edit View Favorites Tools Help

Track and Trace Results
 View trace results via: and Output to a format.
 Modify address(es) or fax number(s) of your report output.

Trace Name unknown,
 Description unknown, completed 04/11/2019 19:01:04 EDT, by JENGEL.
 The search returned: 97 events.

| Equipment Init Number | Location | Pr St | Date MM DD | Time (EST) HHMM | L E Event | Train/BO/HLD | Destination | Pr St | RR SCAC |
|-----------------------|----------|-------|------------|-----------------|---------------------|--------------|----------------|-------|---------|
| ETTX 801534 | SNOWDOWN | AL | 04 09 | 1606 | L Release from Cust | | SELKIRK | NY | CSXT |
| ETTX 710593 | SNOWDOWN | AL | 04 09 | 1436 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| ETTX 700816 | SNOWDOWN | AL | 04 09 | 1436 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| ETTX 705245 | SNOWDOWN | AL | 04 09 | 1436 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| ETTX 852776 | SNOWDOWN | AL | 04 09 | 1510 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| ETTX 704259 | SNOWDOWN | AL | 04 09 | 1511 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| WRWK 300228 | SNOWDOWN | AL | 04 09 | 1511 | L Release from Cust | | LORDSTOWN | OH | CSXT |
| ETTX 801649 | SNOWDOWN | AL | 04 09 | 1432 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 716533 | SNOWDOWN | AL | 04 09 | 1432 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| CTTX 690346 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 711727 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 704054 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 710028 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| CNA 703029 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 716588 | SNOWDOWN | AL | 04 09 | 1115 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 701342 | SNOWDOWN | AL | 04 09 | 0938 | L Release from Cust | | LOGISTICS PARK | IL | CSXT |
| ETTX 801173 | SNOWDOWN | AL | 04 09 | 0938 | L Release from Cust | | LOGISTICS PARK | IL | CSXT |
| CP 556257 | SNOWDOWN | AL | 04 09 | 0938 | L Release from Cust | | EAST BROOKFIEL | MA | CSXT |
| ETTX 716173 | SNOWDOWN | AL | 04 09 | 1102 | L Release from Cust | | SELKIRK | NY | CSXT |
| ETTX 704013 | SNOWDOWN | AL | 04 09 | 1102 | L Release from Cust | | SELKIRK | NY | CSXT |
| ETTX 851914 | SNOWDOWN | AL | 04 09 | 1102 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 702185 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 702328 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 705206 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| CTTX 693991 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| GTW 310198 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 705759 | SNOWDOWN | AL | 04 09 | 1040 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| TTGX 603999 | SNOWDOWN | AL | 04 09 | 1206 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| TTGX 985956 | SNOWDOWN | AL | 04 09 | 1206 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| TTGX 996695 | SNOWDOWN | AL | 04 09 | 1206 | L Release from Cust | | EAST BROOKFIEL | MA | CSXT |
| BNSF 301599 | SNOWDOWN | AL | 04 09 | 1206 | L Release from Cust | | LOGISTICS PARK | IL | CSXT |
| ETTX 716523 | SNOWDOWN | AL | 04 08 | 1442 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 909842 | SNOWDOWN | AL | 04 08 | 1442 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 909527 | SNOWDOWN | AL | 04 08 | 1442 | L Release from Cust | | TWIN OAKS | PA | CSXT |
| ETTX 715042 | SNOWDOWN | AL | 04 08 | 1442 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 716317 | SNOWDOWN | AL | 04 08 | 1443 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 703787 | SNOWDOWN | AL | 04 08 | 1442 | L Release from Cust | | ANNAPOLIS JCT | MD | CSXT |
| ETTX 951060 | SNOWDOWN | AL | 04 09 | 1000 | L Release from Cust | | SELKIRK | NY | CSXT |

- Truck Carriers
- The available data can assist us in tracking shipments and managing the exceptions.
- Combining the data from these various sources will provide answers to these questions;

Where is my car?

When am I going to get it?