Life in The Fast Lane
Self Driving Freight Transportation

14th Annual Midwest Supply Chain Management Conference, Grand Rapids MI
March 16, 2017
AGENDA

› BluJay Solutions Overview
› Autonomous Vehicle Landscape:
  ▪ What is happening in the Marketplace
  ▪ Driverless Trucks / Autonomous Vehicles
  ▪ Truck Platooning
  ▪ Uberization of Trucking
› Implications to Transportation & Supply Chains
  ▪ Role of Truck Drivers
  ▪ Transportation Infrastructure
  ▪ Distribution Networks
› Questions & Answers
About BluJay Solutions

- **40+ years** in supply chain industry
- Consistently profitable for **20+ quarters**
- **20%** of employees have **15+ years** at BluJay
- Heritage of innovation: **first global trade network**
BluJay by the numbers

100+ countries where BluJay is deployed

40K+ members in BluJay Global Trade Network

7500 customers worldwide

1.9B transportation transactions processed annually

6500 freight forwarding network members in 189 countries

4.5B boxes shipped
Collaborate, optimize, innovate for supply chain success

GLOBAL TRADE NETWORK
CONTROL TOWER
INTEGRATION / EDI
INTELLIGENCE & ANALYTICS
TRANSPORTATION MANAGEMENT
CUSTOMS & COMPLIANCE
WAREHOUSE MANAGEMENT
SERVICE LIBRARY
LOGISTICS AS A SERVICE (MTS)

- Shippers
- Carriers
- Forwarders
- Suppliers
- 3PLs
## TMS Network and Technology

### Connectivity
- 50% of new customers already use Transportation Management
- 100+ successful Enterprise Resource
- Planning (ERP) implementations across dozens of vendors
- Thousands of active carrier supplier integration points
- Dozens of integrated software partners

### Services
- Freight spend and accessorail charge schedule benchmarking
- Carrier performance alignment
- Capability/functionality usage comparison across like customers
- Transport rates for use in supply chain design simulation and modeling

### People
- End user productivity benchmarking
- Engaged and active user base participates in the beta testing process
- Substantial user of own technology drives faster iteration and quickly removes workflow inefficiencies

### Procurement
- Access to additional carrier capacity
- Visibility to historical carrier bid participation
- Executed tender acceptance and on time performance metrics
- Benchmark rates and rate trend prediction for bid comparisons and event timing, respectively

### Technology
- User behavior (from over 20 web interface interactions per second) drives improved usability
- Application scale facilitates investment into leading, robust, and redundant infrastructure
- Cross-industry usage encourages best practice workflow creation

### Key Metrics
- **88K** unique users
- **$17B+** transportation spend
- **$2B+** logistics as a service spend
- **20K+** distinct carriers
- **$1.8B** managed procurement events
## Sample Clients by Industry

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<thead>
<tr>
<th>Vertical</th>
<th>Clients</th>
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<tbody>
<tr>
<td><strong>Food/Beverage</strong></td>
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<td><strong>Wholesale Distribution</strong></td>
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Let’s get started
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Commercial Transportation: Step changes in the last 100 years
Autonomous Vehicles will turn commercial transportation UPSIDE DOWN
Change is Accelerating
Creating a NEW ERA OF BUSINESS

- Time is the new currency
- Amazon effect: instant delivery
- Lean or no inventory
- Fluctuating demand
- Fragmented ecosystems
- Constrained capacity
- Political/trade uncertainty
- Disruptive technologies
- Autonomous vehicles
- Carbon footprint
- Big Data analytics
News from the Marketplace

‣ January 4, 2016 – General Motors invested $500 million in Lyft & soon start testing a fleet of driverless Chevy Bolt taxis

‣ April 2016 – lobbying group formed, headed up by David Strickland, former head of the National Highway Traffic Safety Administration

‣ May 3, 2016 – Google, Fiat Chrysler Team Up to Develop Autonomous Vehicles

‣ May 13, 2016 – General Motors acquires 40 person startup, Cruise Automation for $581 million
More News from the Marketplace

- May 17, 2016 – Otto startup announced to bring autonomous trucks to the marketplace.
- July 21, 2016 – Elon Musk plans to steer Tesla towards fully autonomous driving, car sharing, electric semi trucks, and cargo transport.
- August 16, 2016 – Ford announced fully driverless car without steering wheel or pedals in the next 5 years.
- October 20, 2016 – Otto & Budweiser complete world’s first shipment by self-driving truck a 120 mile trip on I-25 from Fort Collins, CO to Colorado Springs, CO.
- December 13, 2016 – Google announces spin out of their self driving initiative into new company called Waymo.
More News from the Marketplace

- January 17, 2017 – Amazon patented a highway network that controls self-driving cars & trucks – how autonomous vehicles navigate reversible lanes
- January 31, 2017 – Uber Joins Daimler To Move Forward On Self-Driving Cars
- February 11, 2017 – Ford acquires startup, Argo AI, founded by Waymo & Uber vets for $1 billion
- February 23, 2017 – Waymo files lawsuit against Uber for patent infringement & trade secret misappropriation

This mock-up shows how the management system will work. | Amazon patent
More News from the Marketplace

› March 10, 2017: California released proposed regulations no longer requiring a driver in the self-driving vehicle.

› March 13, 2017: Intel purchases Self-Driving Tech firm Mobileye for $15.3 billion – “merges the intelligent eyes of the autonomous car with the intelligent brain that actually drives the car”

Transport Topics

3/10/2017 4:45:00 PM

California Says Autonomous Vehicles Don't Need Human Drivers
March 13, 2017
Transport Topics: “a seismic shift for ... 2.5 million (truck drivers) across the nation” — “This is not the far future, ..... This is the near future.”

So What is Fueling the Driverless Truck Craze? Compelling Economics & Statistics

- Safety – 33,000 highway fatalities in U.S. in 2015
- Opportunity for 24 x 7 vehicle utilization:
  - OTR trucks utilized 35% - 40% (best case) today based on Hours of Service rules
  - 30% - 40% reduction in trucks – same amount of freight moved as today
- Lower transportation rates for shippers / better ROI for carriers
- Driver Shortage / Turnover / Aging Workforce*:
  - 48,000 driver shortage in 2015
  - 90%+ average turnover in OTR drivers annually
  - Median age of an OTR driver is 49 compared to 42 all U.S. workers
- Driving jobs become more lucrative with autonomous vehicles:
  - First mile / final mile – driver assist – creates local driver jobs
  - Highway miles – driverless

* ATA - Truck Driver Shortage Analysis 2015
Truck Platooning – How it Works*

- Network Operating Center identifies & provides eligibility & approval for platooning
- Over the Horizon Alerts to drivers on safety conditions such as accidents, traffic, construction & weather
- Geofencing determines when platooning can occur
- Intelligent ordering of trucks based on load & braking factors
- Driver’s still determine if & when to platoon

* Source: Peloton Technology [http://peloton-tech.com](http://peloton-tech.com)
Truck Platooning – How it Works*

**Benefits:**
- Fuel Efficiency – 7% savings (4.5% lead truck / 10% following trucks)
- Safety – collision mitigation:
  - Rear truck has instantaneous reaction to front truck data
  - Separation zone between cars & trucks

**Step change vs. Disruptive change**
- Technology could be coupled with autonomous vehicle technology
- Potential creation of truck only lanes & “truck trains”

*Source: Peloton Technology [http://peloton-tech.com](http://peloton-tech.com)*
Uberization of Trucking – How it Works

› Uber Freight Business Model – Today:
  ▪ Uber captures real time carrier capacity & rate for shippers
  ▪ Carriers contract with Uber, Uber contracts with shippers
  ▪ Uber provides shippers with real time visibility into capacity at the truck level as well as real time rates associated with the truck
  ▪ Shipper determines when to leverage Uber rate & capacity vs. contracted rate

› Uber Freight Business Model – Future:
  ▪ Autonomous vehicles transform carrier capacity into a ubiquitous commodity

› Amazon Flex Business Model:
  ▪ Crowd sourcing of capacity
  ▪ Anyone with a means (van, car, bike) to make deliveries provides delivery services to Amazon

› Benefits:
  ▪ Increase speed of transaction – minimize downtime for trucks
  ▪ Matches demand (loads) with capacity (trucks) more efficiently
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Role of Drivers in the Future

- **Potential Changing Roles:**
  - First Mile / Final Mile Role:
    - “Launch” trucks on to the interstate systems
    - “Catch” trucks off the interstate for final mile delivery
  - Monitoring systems & performing more complex driving activity as opposed to driving the truck mile after mile – similar to airline pilots & ship captains
  - Single or team drivers leading a truck platoon – similar to railroad engineers

- **Drivers will continue to play a critical role for the foreseeable future!**
Transportation Infrastructure

- 30% - 40% fewer trucks on the road, same amount of freight moved
- Speed & size of delivery – smaller more frequent deliveries
- Designated autonomous lanes
- Reversible lanes of traffic
- Shifting transportation traffic patterns based on changes to distribution networks
Distribution Networks – 5 D.C. Model Based on Current Hours of Service Rules
Distribution Networks – 2 D.C. Model Based on 24x7 Autonomous Vehicles
Questions?