Accelerating the Future of Transportation

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Florida Department of TRANSPORTATION
The Future of Transportation

Why does the World Economic Forum care about self-driving vehicles?

- **Improved road safety**
  - 90% of accidents today occur due to human error
  - Reduction in accidents by 70% if self-driving vehicles represent a considerable share of the car fleet

- **Decrease in pollution**
  - Better fuel efficiency of ~20% can lower overall pollution (absent an increase in mileage)
  - Even higher decrease of emissions possible with electrification

- **Freed up space**
  - Need for parking space in the city can be reduced by up to 60%

- **Increased traffic efficiency**
  - Traffic congestion can be improved by ~70% due to smoother traffic flow and fewer cars on the road

- **Rewards**
  - Reduced public transport spending
    - Reduction in losses from often non-profitable public transport service in lower density areas
  - Less waiting time
    - Seamless, multi-modal end-to-end mobility can be offered to consumers
  - Productivity boost
    - Over 1.2B hours of pure driving time savings over 10 years possible
  - Decreased cost of mobility
    - Cost savings of up to 50% per km for ride shared self-driving taxi service vs. traditional car ownership
  - Equitable access to mobility
    - Elderly, children and people with disabilities can make use of new end-to-end mobility options

- **The Future is . . .**
  - Automated
  - Electric
  - Shared
  - Connected
Trends and Timelines

A Snapshot on November 6, 2017, 10:00 AM...

“Level 4 vehicle in 2021—no gas pedal, no steering wheel, and the passenger will never need to take control of the vehicle in a predefined area.” –Ford

“Self-driving on the highway by 2020” (before the Tokyo Olympics) –Honda & Toyota

“2020 for the autonomous car in urban conditions, probably 2025 for the driverless car” –Renault-Nissan

“Partnering to launch robot taxi service in 2018” –Waymo / Fiat-Chrysler

“Self-driving cars in 2019” –GM

“Driverless trucks in 2020” –Daimler

- At least $80B of AV investment over the last 3 years -Brookings Institution

- Driverless vehicles will drive $7 Trillion of annual economic activity by 2050 -Strategy Analytics
Trends and Timelines

Historical Adoption Rates of Communication Technologies

- Telephone
- Radio
- Color TV
- VCR
- Cellphone
- Computer
- Internet

Graph showing adoption rates from 1900 to 2005.
Trends and Timelines

Phase 1 (present)
“Passive” autonomous driving

Phase 2 (2016 to 2020)
Limited driver substitution

Phase 3 (2019 to 2023)
Complete autonomous capability

Phase 4 (two decades)
100% autonomous penetration

Technology Penetration

Edited from original source: Company data, Morgan Stanley Research
Largest Remaining Challenges

• Prove that the Technology Works Safely
• Regulatory Consistency
• Public Acceptance
• Resistance from Existing Industries
• Business Model Viability
SunTrax

Project Location

45 miles to Tampa
46 miles to Orlando

Multiple Environments
Diverse Scenarios
Reconfigurable
SunTrax Test Features

1. Main Access & Building Facilities
2. High Speed Oval
3. Dynamic Test Pad
4. Pick-Up/Drop-Off
5. Urban
6. Complex Suburban
7. Roadway Geometry Track
8. Environmental Test Chamber
9. Loop Track
10. Ring Track

SunTraxFL.com
Central Florida AV Partnership

Simulation

Controlled Environments

Open Environments
SunTrax is in the Center of...

TESTING MODES

Simulation
- Models
- Algorithms
- AR & VR

Open-Road
- Public Roads
- Campuses

Operations
- Logistics
- Freight
- Cross-Industry
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ORGANIZATION TYPES
- Research
  - Universities
  - Private Companies
- Government
  - Transp. Agencies
  - Policy Makers
  - Regulators
- Industry
  - Automakers
  - Hardware Suppliers
  - Tech Industry
SunTrax is in the Center of…

**ECONOMICS**
- Revenue Shifts
  - More Efficient Vehicles
  - Reduced Gas Taxes
  - Higher Total VMT

**Organization Types**
- Testing Modes
  - Simulation
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- Connected Vehicles
  - Commercial Fleets
  - Fewer Owners

- Next Generation of Tolling
  - Road User Charging
  - GPS-Based Systems
SunTrax Construction Progress

June 2017

October 2017