Personal Signal Assistant...

...changing the driver’s experience at the traffic signal...
Traffic Technology Services

- International technology firm specializing in data content for Connected Vehicle applications and services
- Expert team of traffic engineers, data scientists, and programmers
- Headquarters in Beaverton, Oregon, office in Munich, Germany

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What is a Connected Vehicle?
USDOT Connected Vehicle

- Applications for the Environment: Real-Time Information Synthesis (AERIS) Program
  - Eco-Approach and Departure at Signalized Intersection
  - Connected Eco-Driving
  - Eco-Integrated Corridor Management
  - Dynamic Eco-Routing
- Vehicle-to-Infrastructure (V2I) Communications for Safety
USDOT Connected Vehicle
The Opportunity

- 61%-84% of total congestion is spent on streets vs. freeways
- Increased pressure for automotive OEMs to reach reduced NOx and greenhouse gas emissions
- Technologies have matured
  - Communications
  - GPS
  - Traffic controller
What We Do

- Interface existing traffic control systems from government agencies
- Produce data product based on industry standards
- Deliver data product to automotive manufactures and other service providers
- Cloud-based services
What is Our Product?

- Personal Signal Assistant
  - mSPaT (Signal Phasing and Timing) message
    - current signal status
    - predicted signal switch times
    - SAE J2735 compliant
  - mMAP message
    - lanes, widths, crosswalks, stop line
    - phase assignments
    - speed limits
    - SAE J2735 compliant
- Custom Delivery or API
How Does It Work?

Traffic Management Center

Traffic Signal

Consumer

Personal Signal Assistant (PSA)

Internet

Server

Signal Prediction

Statistics Module

Prediction Module

Time Synchronization Module

Database

3G/4G/LTE wireless

OEM Backend
OEM Partners

Audi

Volkswagen

BMW
Audi Application Example

- **Approach on red**
  - Remaining time *exceeds* approach time with min speed advisory
  - Engine automatically shuts off and turns back on when remaining timer reaches 5 seconds

- **Approach on red**
  - Remaining time *less* than approach time at speed limit
  - Speed advisory set to avoid stopping

- **Approach on green**
  - Speed advisory set to local speed limit

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1 As implemented by Audi for CES 2014.
The Benefits

- Preservation of momentum
  - Reduced stops
  - Reduced maintenance
  - Ride Comfort

- Fuel reductions 10-15% based on simulation and field measurements

- Traffic platooning can be managed
Consumer Possibilities

- Engine management
- EV/Hybrid drive cycle optimization
- Last mile re-routing (eco-routing)
  - Left turn avoided at current intersection, left turn anticipated on green at next intersection
- Pedestrian/Bicycle feedback and apps
- Adaptive cruise control
- Driver assist functions
Public Agency Possibilities

- Performance metrics from connected vehicle fleets
- Signal optimization based on connected vehicle fleets
- Vehicle detection feedback into system
  - Dilemma zone corrections
  - Priority detections
  - Detection zone adjustments
- Transit agencies can benefit from same technology
THANK YOU!

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