

Personal Signal Assistant...

...Connected Vehicle Technology from Concept to Reality



Traffic Technology Services

- International technology firm specializing in dynamic infrastructure data content for Connected Vehicle applications and services
- Expert team of traffic engineers, data scientists, and programmers
- Existing working relationships with USDOT, State DOT's, and local agencies
- Headquartered in Portland, Oregon with European office in Munich, Germany

What is Our Product

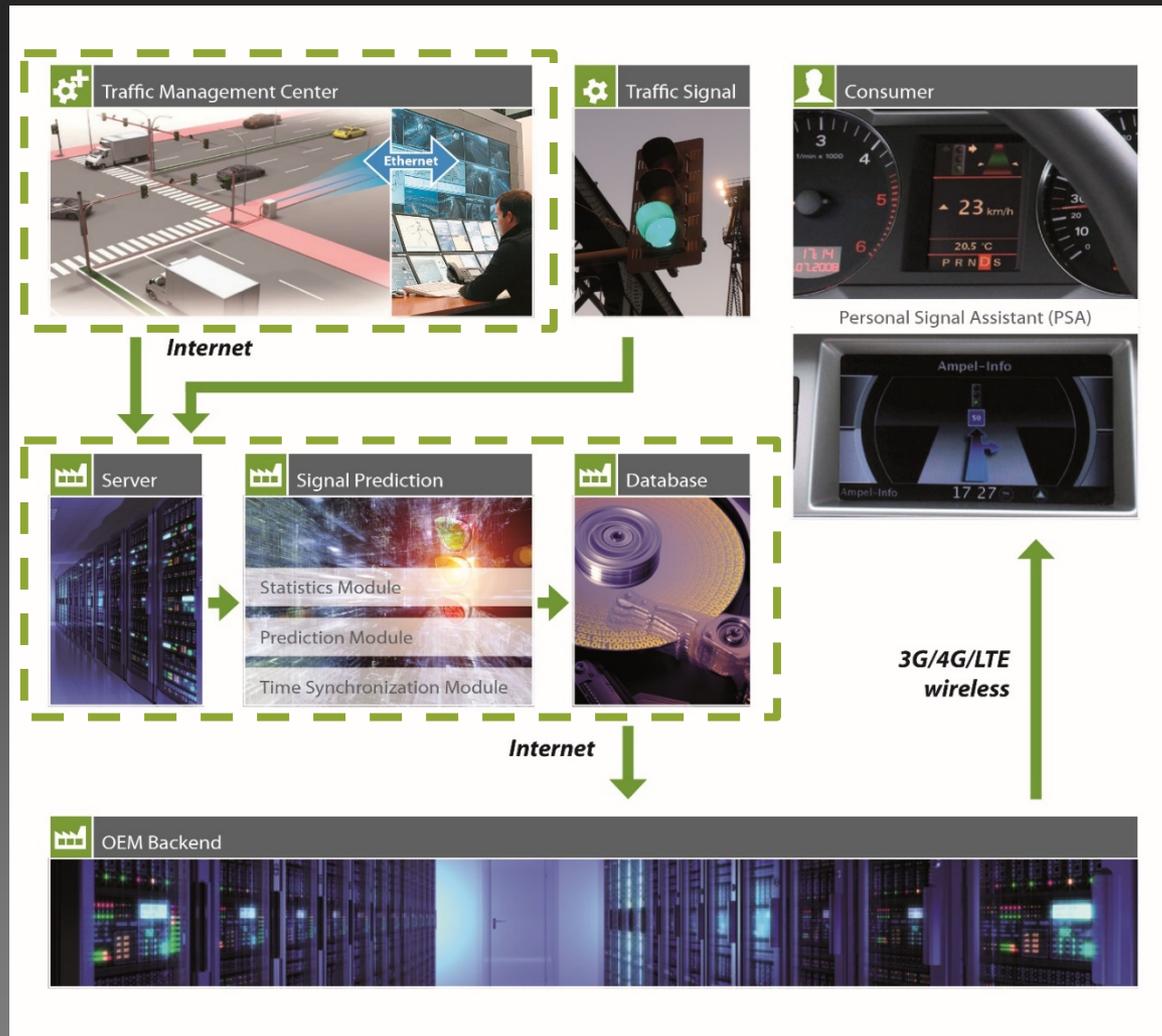
- Personal Signal Assistant
 - SPaT (Signal Phasing and Timing) message
 - Current signal status
 - Predicted signal switch times
 - MAP message
 - Detailed turn lane geometry
 - Phase assignments
 - Speed limits

USDOT Connected Veh Framework

- 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



How Does PSA Work?



Only Standard Data Is Required

- Offline data
 - Signal timing and phasing
- Real-time data
 - Actuated signals
 - Phase active status (red, yellow, green)
 - Phase call status
 - Active timing plan
 - Cycle second
 - Preemption or transit signal priority
 - Fixed time signals
 - Active timing plan
 - Cycle second

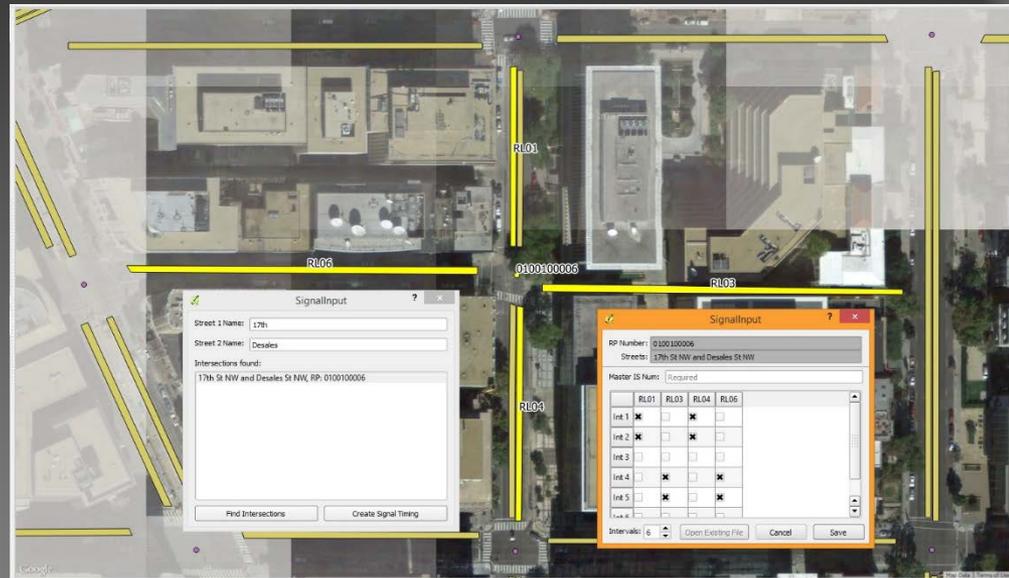
Audi Application Example¹

- 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



Agency Benefits (1)

- Georeferenced lane, phase topology inventory for all connected signals
 - Data for other tools
 - Interface to GIS



Agency Benefits (2)

- Signal Operations Reports
 - Communication downtime
 - Time in offset seeking
 - Detector faults
 - Max times
- Signal Performance Reports
 - Delay
 - Number of stops
 - Arrivals on green/red

Public Benefits



- Save Fuel & Energy

- Automatically turn off engine during red
- Adjust speed to arrive on green
- Reduce consumption and emissions; examples 10-15% savings from field and simulation



- Save time

- Optimize routing based on anticipated signal delay



- Improve safety

- Provide more information to the driver
- Integration into DSRC V2V

What's Required for Deployment

- Central system or ATMS supporting real-time connection to signals, or signals connected to local or private network on fiber or high speed serial
- Ability to work with IT departments to secure connections, firewalls
- Provide signal timing data initially during setup stage

Next Steps

- Reach out to individual agencies
- Data licensing agreement
 - Permission to access and use signal timing data
 - Signal timing plan documents or data
- Work with ATMS vendor or consultant
 - Accommodation of minimal hardware at TMC per recommendation by ITS / ATMS vendor
 - Internet Service Provider if necessary

THANK YOU!

THOMAS.BAUER@TRAFFICTECHSERVICES.COM

