



ITS and IntelliDriveSM for the Environment: Transit

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IntelliDrive, Transit, and the Environment

Initial Premise Improved air quality and reduced greenhouse gases can be achieved by:

- Increasing transit mode share
- Increasing fuel efficiency and reducing emissions of transit vehicles

IntelliDrive Foundation Transit applications based on the IntelliDrive communications platform can be developed to reach these objectives

AERIS Applications Transit

Leverage IntelliDrive and Transit for Environmental Benefits

- Transit Operations
- Customer Information
- Street Operations for Transit
- Data-Driven Planning
- Fleet Management

Make transit more competitive
Make transit operations more environmentally-friendly
Increase transit's environmental benefit!



1. Transit Operations

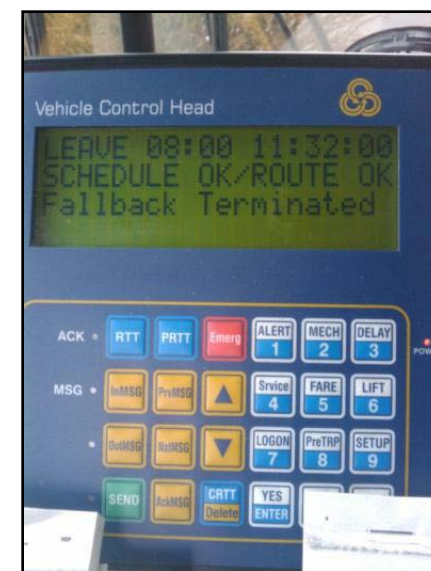
Transit Operations actively manage transit service using real-time data to improve service reliability and accessibility – contributing to more livable communities, reducing SOV trips, and reducing carbon emissions.

Examples of Transit Operations applications include:

- Real-time operations control
- Dynamic capacity assignment
- Headway and schedule management
- Incident response
- Real-time dispatching
 - Paratransit-Taxi integration
 - Flexible routes
 - Special events

Preliminary findings:

- Reliability is top concern for transit customers
- Reliability can be addressed through real-time operations control



2. Customer Information

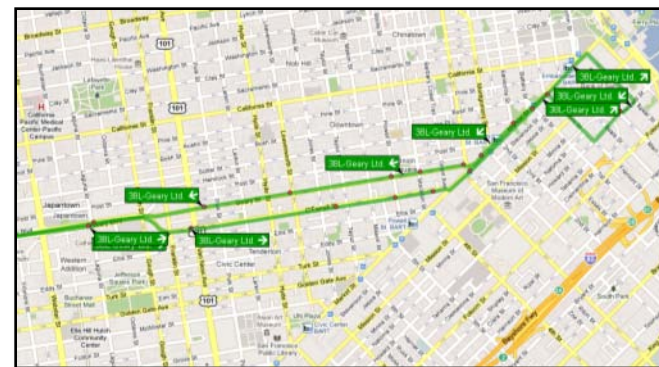
Customer Information provides standardized real-time traveler information on multiple modes so customers can make informed travel decisions.

Examples of Customer Information applications include:

- Next vehicle
- Travel time on multiple modes
- In-vehicle transfer information
- Smart Parking

Preliminary findings:

- Transit becomes more accessible:
 - Information can reduce anxiety of waiting for a vehicle
 - Transfers can be confidently made in real time
- Knowledge of travel and parking conditions can provide customers with trip options and reduce parking information void



3. Street Operations for Transit

Street Operations for Transit includes real-time prioritization for transit on select corridors to improve transit operations. Reduced transit travel times and more efficient operations can increase mode share and reduce emissions.

Examples of Street Operations for Transit applications include:

- Dynamic signal timing schemes based on real-time operations data
- Corridor or city-wide transit signal priority
 - Signal priority based on passenger load profile
- Dynamic tolling to create transit priority streets
- Transit preferential treatment during “code red” air quality days

Preliminary findings:

- Advanced signal timing can improve effectiveness of transit operations
- Exclusive transit right of way has significant positive impact on transit speed and reliability

4. Data-Driven Planning

Data-Driven Planning includes collecting and archiving data from infrastructure and vehicles to make informed transit planning decisions. More effective route structures can be developed that serve more customers and reduce travel times – increasing transit accessibility.

Examples of Data-Driven Planning applications include:

- Integration of archived transit and street network data
 - Scheduling optimization
 - Targeted infrastructure improvements
 - Signal timing plans
 - Operations scenario training

Preliminary findings:

- Data standardization could lead to more research and better planning
- Data-driven planning has been shown to improve operations and service delivery

5. Fleet Management

Fleet Management leverages vehicle-garage, vehicle-vehicle, and vehicle-infrastructure communications to monitor fleet and optimize maintenance to keep fleet running at peak performance.

Examples of Fleet Management applications include:

- Nightly status updates of vehicle to central maintenance database
- Real-time status of fuel efficiency, oil levels, other critical components
- Dispatch notification of service disruptions, weather, traffic

Preliminary findings:

- Better use of maintenance resources can improve vehicle reliability and service reliability
- Emissions reductions by addressing maintenance issues early on

Transit Next Steps

Moving forward with Transit:

- State of the practice scan of transit
- AERIS scenario building with transit as a component
- Expand list of transit applications
- Modeling transit applications
 - Individual and combination of transit applications with other AERIS applications (trucks, cars, etc.)
 - Data needs and gaps
 - Communication requirements
 - Research needs
- Examine deployment issues (e.g., costs, ease of implementation, market penetration, risks, stakeholders, policy considerations)



AERIS

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