



ITS Operations & Planning For Transit

Spring Transportation Symposium

Pepsi Center Denver
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Current ITS Inventory & Associated Market Packages

ITS Market Package	ITS Equipment Package	RTD System
Transit Vehicle Tracking	AVL	Bus – Orbital SmartCAD Rail – SCADA Paratransit – DDS/RouteMatch Call-n-Ride – Cellular/Skype
Transit Fixed Route Operations	Routes, Schedules, Block, and Roster Operator Assignment	Trapeze FX TIES
Transit Fare Collection Management	Onboard fare collection equipment	GFI Cents-a-Bill & New Fareboxes Rail – Ticket Vending Machines Station Pass & 10-Ride PVM Online e-commerce activities
Transit Security	Station Security Onboard Security Traveler Secure Area Surveillance	Bus/LRT – DVR Mall Shuttle – Near real-time video download Stations/PNR – Live Video (24 Hr Security Command Center)



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Transit Traveler Information	Trip Planning On-board Information Remote Transit Information Personal Information Access	RTD Website, Google Transit 16 th Street Mall vehicles – Digital Recorders Inc. Rail – GE Platform Signs and PA Information Kiosks (75) Bus – New LCD Station Signage IVR, gortd.com, Schedule download
Transit Signal Priority	On-board Roadway/Center signal priority	Participating in DRCOG Study, test cases coming in Denver & Boulder
Transit Fleet Management	Vehicle Maintenance Advanced Maintenance Vehicle Assignment	Maximus Maintenance Management System FleetWatch Fluid Management
Transit Passenger Counting	On-board Automated Passenger Counting	IRIS on 20% of fleet Ride Share Pro for ETL and Reporting



Major ITS Initiatives at RTD



In Progress	Funded Imminent Projects
<ul style="list-style-type: none">▶ Transit Trip Planner▶ Integrated Voice Response System▶ Programmable Information Signs▶ CAD/AVL Fleet Tracking & Asset Management▶ Fuel & Fluids Management▶ TIES▶ Parking Management	<ul style="list-style-type: none">▶ Automatic Stop Announcement Systems▶ Radio & CAD Upgrade▶ Web Social Networking▶ Personal Device Information Delivery (including real-time)

ITS Transit Elements - Short Term Projects (0 – 5 years)

▶ *Transit Vehicle Tracking*

- RTD's fixed route fleet has been provided with an automated vehicle location (AVL) system for several years, which is set for replacement in 2013
- Demand responsive transit systems
- allows transit managers to track vehicles' real time schedule adherence
- Supports transit traveler information and transit security
- AVL may also facilitate transit signal priority functions

▶ *Advanced Transit Operations*

- Supports fixed route and demand-responsive operations
- Use the information collected by the AVL systems to dictate schedule adjustments or allocate fleet resources in response to real time traffic, demand, and availability conditions



ITS Transit Elements - Short Term Projects (0 – 5 years) continued

▶ *Automated Passenger Counting*

- Automatically registers passenger boardings and passenger exits
- Allows transit managers to make operational decisions and adjust route schedules
- provides opportunity to support conditional transit signal priority (i.e. priority is only granted in the case where the bus occupancy exceeds a threshold)

▶ *Transit Security*

- operator communications
- performs surveillance security at critical locations of the transit system (i.e. video cameras deployed at station platforms, parking areas, in tunnels and walkways, emergency blue light telephone stations, elevators, and covert driver mayday buttons)



ITS Transit Elements - Short Term Projects (0 – 5 years) continued

▶ *Transit Traveler Information Dissemination*

- Transit stop enunciators and 'next stop' displays on buses
- Real-time websites, kiosks, and bus arrival signs at bus stops
- Information distributed to personal digital assistants and cell phones
- Regional traveler information system.

▶ *Transit Signal Priority*

- Provides equipment on buses to enable communications with the signalized intersection. Transit signal priority gives some level of preference to transit vehicles at signalized intersections (for example an early or extended green), which helps improve transit travel time reliability and may reduce scheduled run time.



ITS Transit Elements - MediumTerm Projects (6 – 10 years)

- ▶ Medium Term (5 – 10 years)
 - **Transit Fare Management** including electronic equipment on vehicles to collect fare payments (i.e. smart fare card)
 - **Collision Avoidance Systems** including automatic braking, remote ignition control, driving simulators



Questions?

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