ATMS is Supported at all Levels… It Takes a Village

- Board Members
- CEO
- Division Managers
- Operator
- Security (LASD)
- Transit Operations Supervisor
- Maintenance Mechanics
- Controller
- and many others…
Metro Bus Service Statistics

- Service Area (in sq. miles): 1,433
- No. of Lines / Routes: 191
- No. of Bus Stops (approx): 16,000
- Fleet Size (+/- 1%): 2,635
- Average Weekday Boardings: 1,184,729

Revenue Divisions 11
Introducing Metro’s Newest Vehicle
NABI, 45’ Compo, 8100 Series, Full ATMS (260 vehicles)
Operator Log-On

SmartMDT

- Verifies operator badge and work assignment from TOTS, HASTUS and HRMS data
- Tracks schedule adherence by indicating how early, or late (Pull-out/In-service) from published schedule
- Transmits and Receives text messages
- Sends work assignment and fare set data to UFS
- Provides bus tracking in an emergency
- Calls for assistance in an emergency (SAS)
- Allows controllers to listen on what’s happening inside the bus in an emergency (covert

- Operator enters Badge Number
- ATMS / UFS - Single Log-On Feature
Smart MDT Upgrade

Current SmartMDT

New OrbGuide

Metro
At BOC, Bus Controllers …

- Monitor bus movement in real-time
- Communicate with Operators by voice or text
- Hear conditions in the bus in an emergency
- Monitor schedule adherence (early, late, on-time)
- Have access to passenger load information
- Knows who is driving the vehicle

Controller’s Workstation with three monitors
- Automatic Vehicle Location (AVL)
- Monitor Performance & Incident Queues
- Quick Dial Telephone System

Real-Time Map Display

Satellite Tracks Buses with GPS

Bus has GPS (Global Positioning System) Antennae

Metro
Fleet Supervision (TOS)

• Monitors bus operation in field via mobile unit.
• Responds to emergencies
• Assists operators with problems
• Communicates by voice and text to operator
• Provides on-sight information to Controller
• TOS collects accident data for direct feed to TransitSAFE
Roving Mechanics…

- Find incident locations quickly with GPS
- Help operators faster with voice/data radios
- Fix problems (road calls) on the spot
- Get assistance quickly when needed
Schedule Data Process

- Collects information for the next transit day
Automatic Voice Annunciation (AVA)

Internal Announcement: Stop Requested by Patron

STOP REQUESTED

PLEASE USE REAR

“Stop Requested. Please Use Rear Exit.”

Internal Announcement: After Stop Requested; “On Street and At Street”

SUNSET & FIGUEROA

“Approaching Sunset and Figueroa”

External Announcement: Line/Destination

“Line 740: Downtown L.A. Union Station”

Metro AVA Policy: Announce All Int/Ext Stops 24/7
Automatic Passenger Counters (APC)

- Metro’s On-Time-Performance is based on synthesized APC data;

- APC hardware is robust (IRIS);

- APC Version – IRMA-3. New fleet being installed with IRMA-4

- Configuration Management is an issue – different analyzer software for different vehicle type.
Data Latency

- **AVA Download** – About 1 week to download to entire fleet (10-20 veh/hr – available 1-2 hrs/day @ Div)

- **APC Download** – About 3 days to download a complete days worth of fleet data

- **Schedule** – Semi-annual Shake-ups
Video Surveillance Initiatives

1. Improve DVR download process;
2. Agency wide Video Policy
3. SmartDrive Implementation
4. DVR Data Warehouse;
5. Expand Video Access
Video Surveillance (CCTV’s & DVR’s)

- 3-10 CCTV’s/bus (depends on vehicle type);
- DVR-2, DVR-3, installed (labor intensive download).
- SmartDrive – Front/Rear Facing Video ( contracted video validation) – complete by Dec-2010.
- Remote Video - 1-minute remotely activated video clip from BOC with auto WLAN download; nice, but not very useful.
DVR Trend is Increasing Rapidly

DVR Requests per Year
Bus Operations
2000-2008

Year
DVR Requests
0 1000 2000 3000 4000 5000 6000 7000 8000
46 420 1228 820 1781 2685 3298 6164 7348

Metro
Metro Owned/Operated RF System (Voice and Data)

Voice: 19-channels; 900MHz

Data: 5-channels; 508 MHz (2 additional channels – In development)

Poll Rate: 5 minute polling; 3 minute (pending 2-channel integration)
Plus updates at every timepoint (3 minute avg. updates fleetwide)

Mode: Trunked Simulcast
Antenna Sites (7 Base Stations in LA County)
ATMS Reports

• Data is transmitted to the TDB for management query and reporting;
• Standard reports are available (daily) via secure accessed share drive;
• Web server report/querying (ad-hoc) – In development.

AVL - Route Traces

Management Reports in Various Formats
Bus Arrival Information System
Rail-to-Bus Connection Information

12:00PM 4/14/09
Metro Bus Stop Locations

12:00PM 4/14/09
Metro Bus Connections

- **920**
  - Metro Rapid
  - to LA Midtown: 8 min, 20 min
  - to Santa Monica: 43 min, 55 min

- **757**
  - Metro Rapid
  - to Hollywood: 16 min, 36 min
  - to Hawthorne: 42 min, 43 min

- **720**
  - Metro Rapid
  - to Commerce: 43 min, 55 min
  - to Santa Monica: 8 min, 20 min

- **207**
  - to Hollywood: 25 min, 55 min
  - to Athens: 59 min, 79 min
Orange Line VMS
Metro ATMS Continues to Develop....

- Next Bus Arrival Time / Rail-to-Bus Connection Info
- Windows-7 / Xp CAD Upgrade
- FCC Narrowband Frequency Mandate - 2013
- Headway Management for BRT
- Countywide Signal Priority Interface
- 511 Traveler Information Expansion
- Orange Line Extension
- Google Transit
- Ad-Hoc Schedule Updates (Between Shake-up Updates)
- TOAST – Hastus Daily will incorporate TOTS
- Integration of Contract Service Fleet
- Poll Rate Update (5-min to 3-min)
Contact Information

Al Martinez
Supervising Engineer
ATMS Engineering and Maintenance

Los Angeles County Metropolitan Transportation Authority (Metro)

Phone: 213.922.2956
Fax: 213.922.2958
Email: martineza@metro.net