

# **Advancements in Technology to Protect Against Threats and Prevent Accidents/Incidents**

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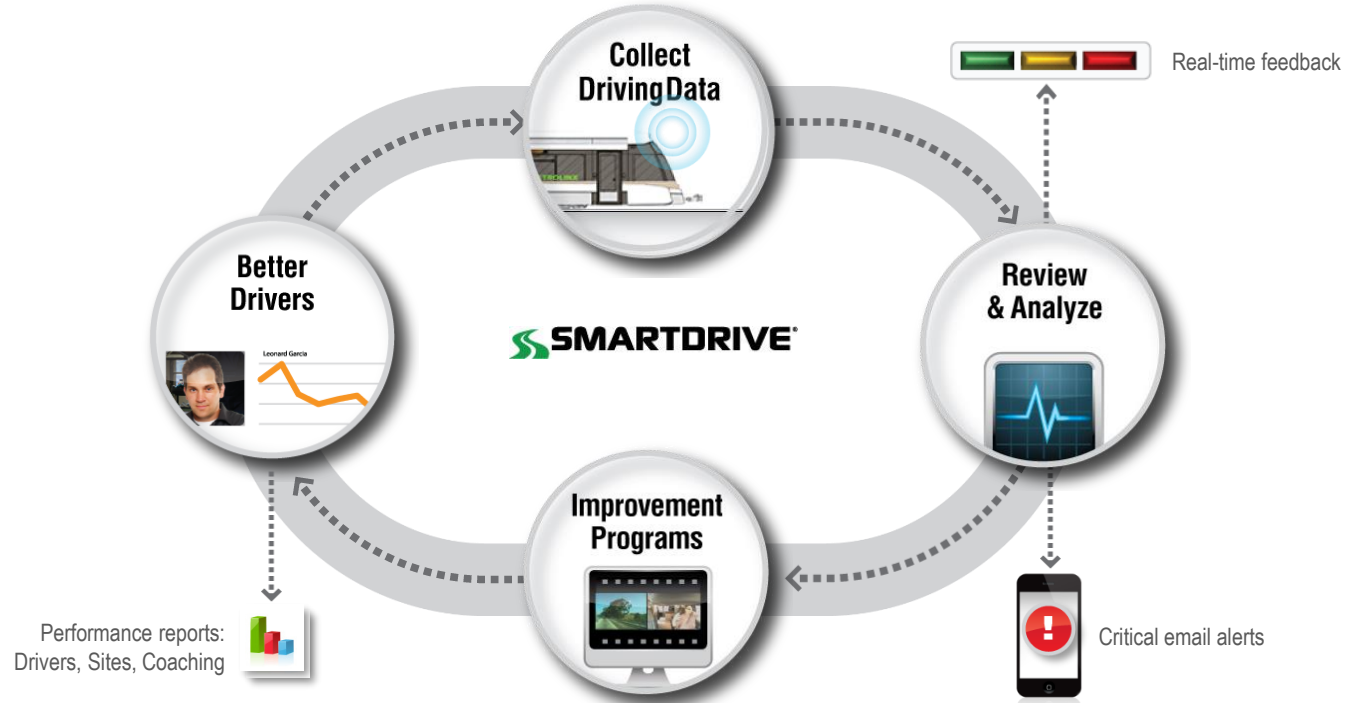
*SmartDrive Systems, Director Transit*

*San Diego, California*



2018 Rail Conference

# Performance Improvement Program



# Interconnects & Sensor Inputs



Video & Audio

Maneuvers (Acceleration, Braking, Turns)

Speed

Location

Options

ATP, ATC Alarm

Intercom call

(Included in Premium service)



Embedded



SmartDrive  
Interchange™



# Rail Camera Views

Night



Daytime



# What we capture . . .

- Collisions
- Near Collisions
- Speeding, Hard Braking, Hard Coupling
- Signal Violations, Compliance Violations
- Distracted Operators – Mobile Device, Food, Etc
- Operator Recognition – Outstanding Performance
- Optional
  - Intercom violations
  - PTC, ATP, ATC alarms

# Recognizing Operators for Outstanding Performance

- Operator is signaling a head of the curve. He is operating at speed of 20 mph.
- Seeing the risk, Operator begins signal again.
- When the rail worker still jumps on the track, operator pushes the emergency stop.

The screenshot displays the SMARTDRIVE interface for an event review. The top bar shows the event ID '0WY9-149Z' dated 'Mar 20, 2014', the driver 'Unknown Driver', and a 'Queued for Coaching' status. The left sidebar provides event properties, including a 'REVIEW' button, a severity score of 226, and a list of event types: 'Braking', 'Unsafe Braking', and 'Near Collision with Pedestrian'. The main video area is split into two views: a front-facing road view on the left and an interior driver view on the right. Below the video is a dashboard with a speedometer showing 5 mph, a navigation map, and directional data (FORWARD/BACKWARD: 0.12, SIDE TO SIDE: 0.00). A timeline at the bottom indicates the current time is 3:42:19.00 PM. The bottom-most section shows a map view with 'MAP' and 'CHART' tabs, and a location of 34.039692, -118.267058.

# Signal Violations

- Braking Trigger
- Passing Bar Signal, Unsafe Rail Crossing

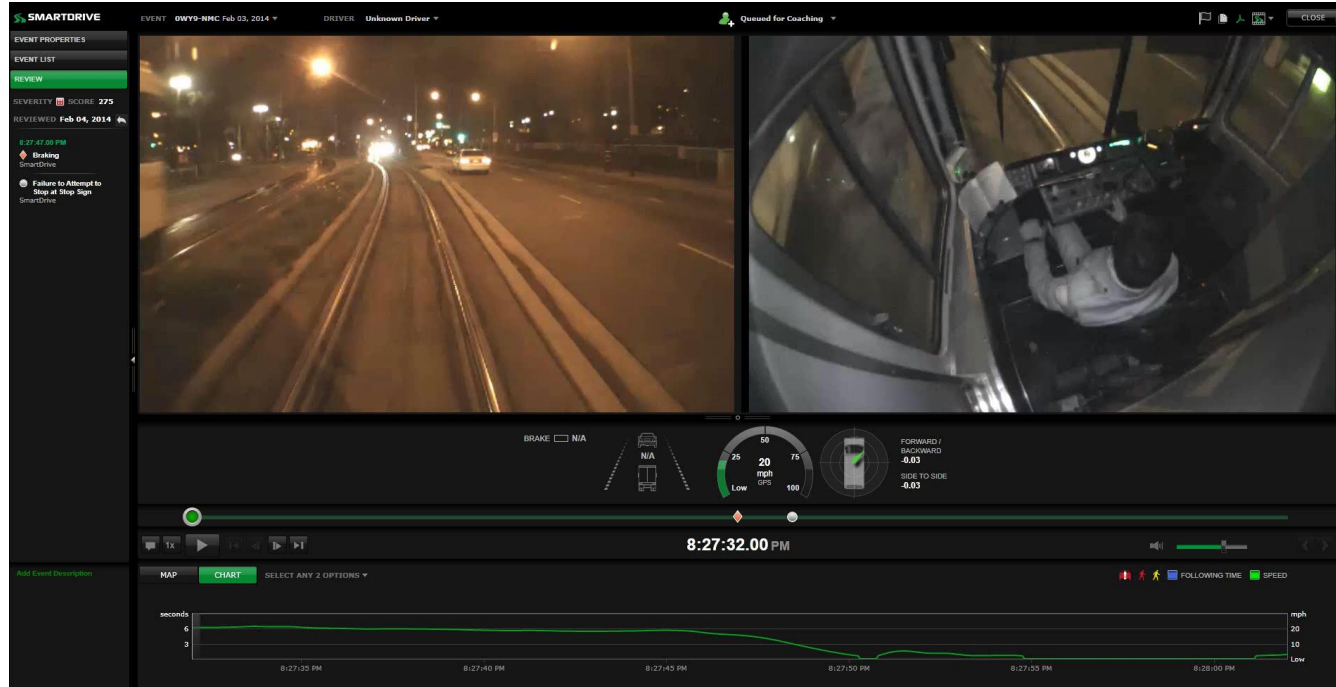
The screenshot displays the SMARTDRIVE software interface. At the top, the SMARTDRIVE logo is visible. The main area is split into two video feeds: the left feed shows a street-level view of a road with buildings and a bridge, while the right feed shows an interior view of a vehicle's dashboard and steering wheel. Below the video feeds, there is a speedometer showing 4 mph GPS, a navigation map, and a data panel with the following information:

FORWARD / BACKWARD	0.10
SIDE TO SIDE	-0.01

A green progress bar is positioned below the data panel. At the bottom, there are playback controls including a play button, a 1x zoom button, and a timestamp of 4:51:06.92 PM. A legend at the bottom right identifies the data series: SPEED (green), FORWARD / BACKWARD (red), and SIDE TO SIDE (blue).

# Passing Red over Red & Passing Signal Bar

- Operator is approaching station at speed 15 mph.
- Operator missed the red over red signal.
- He tries to brake, but it is too late.





# Incident Reported in Los Angeles Times

**SMARTDRIVE** EVENT **0WY9-105E** Mar 04, 2014 DRIVER **Unknown Driver** Queued for Coaching

SPEED **35** mph  
sourced from GPS

FORWARD / BACKWARD **-0.05**  
SIDE TO SIDE **-0.01**

**9:50:52.15 AM**

MAP CHART LOCATION **34.029528, -118.261308**

Map view showing streets: S Broadway, S Main St, S Los Angeles St, E Washington Blvd, Wall St, E 16th St, W 21st St, E 21st St, W 22nd St, and 14A/14B.

# Incident Reported in *Los Angeles Times*

9:51 AM	<ul style="list-style-type: none"><li>Recorded collision</li></ul>
10:17 AM	<ul style="list-style-type: none"><li>Event available to LA Metro</li><li>26 minutes after collision</li></ul>
11:15 AM	<ul style="list-style-type: none"><li>LA Times published article on web</li></ul>
11:45 AM	<ul style="list-style-type: none"><li>LA Metro provided official quote to LA Times indicating that the operator of the minivan ran a red light</li></ul>

- This real world example demonstrates...
  - Immediate availability of the video to LA Metro
  - Quick resolution of the incident
  - Exoneration of the operator from fault
  - Protecting the agency from inaccurate representations
  - Reducing costs from claims and fraud

Thank you!

[www.smartdrive.net](http://www.smartdrive.net)

