nyc.gov/visionzero

Thomas Chan

Chief of Transportation

New York City Police Department

NYPD Vision Zero

nyc.gov/visionzero

NYC Fleet

Vision Zero Fleets Forum 2015

NYC Fleet Update and GO Awards

Keith T. Kerman

Deputy Commissioner, DCAS

City Chief Fleet Officer

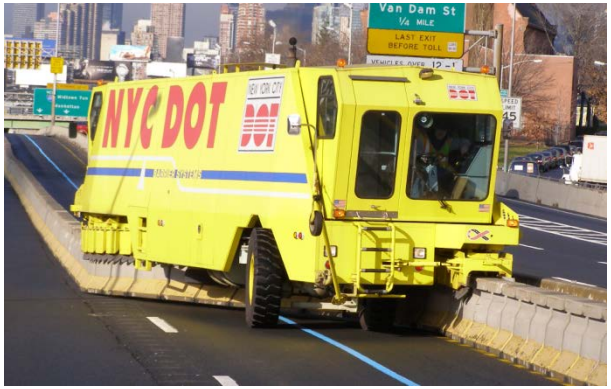
NYC Fleet


NYPD
TRAFFIC ENFORCEMENT
7485
Courtesy
Professionalism
Respect


310


CORRECTION
NYCD


3744


NYC DOT
Van Dam St
LAST EXIT
BEFORE TOLL

Safety Training

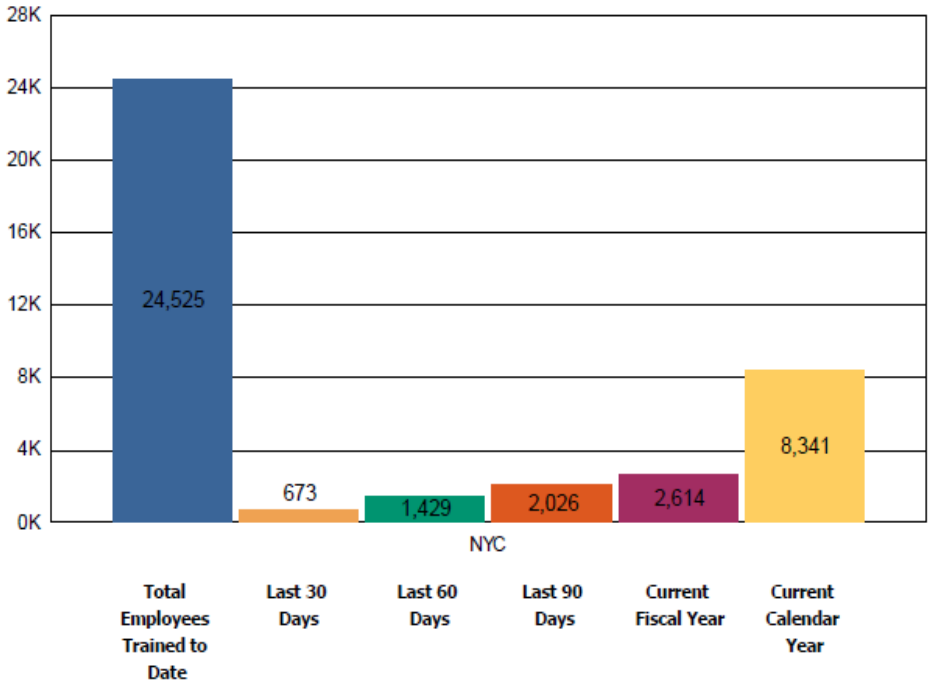
Safety Training

NYC Citywide Administrative Services | Fleet

Report Printed: 10/29/2015 17:35:56

Employees Trained to Date

Includes Civilian Employees at FDNY and NYPD



Driver Surveys

NYC Fleet Operators, please complete this important survey about the defensive driving course and fleet safety. This survey covers fleet safety and servicing. The survey is open to authorized drivers of NYC City vehicles.

* Required

VISION ZERO
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NYC Citywide Administrative Services | Fleet

Defensive Driving Class Date

Month Day 2015

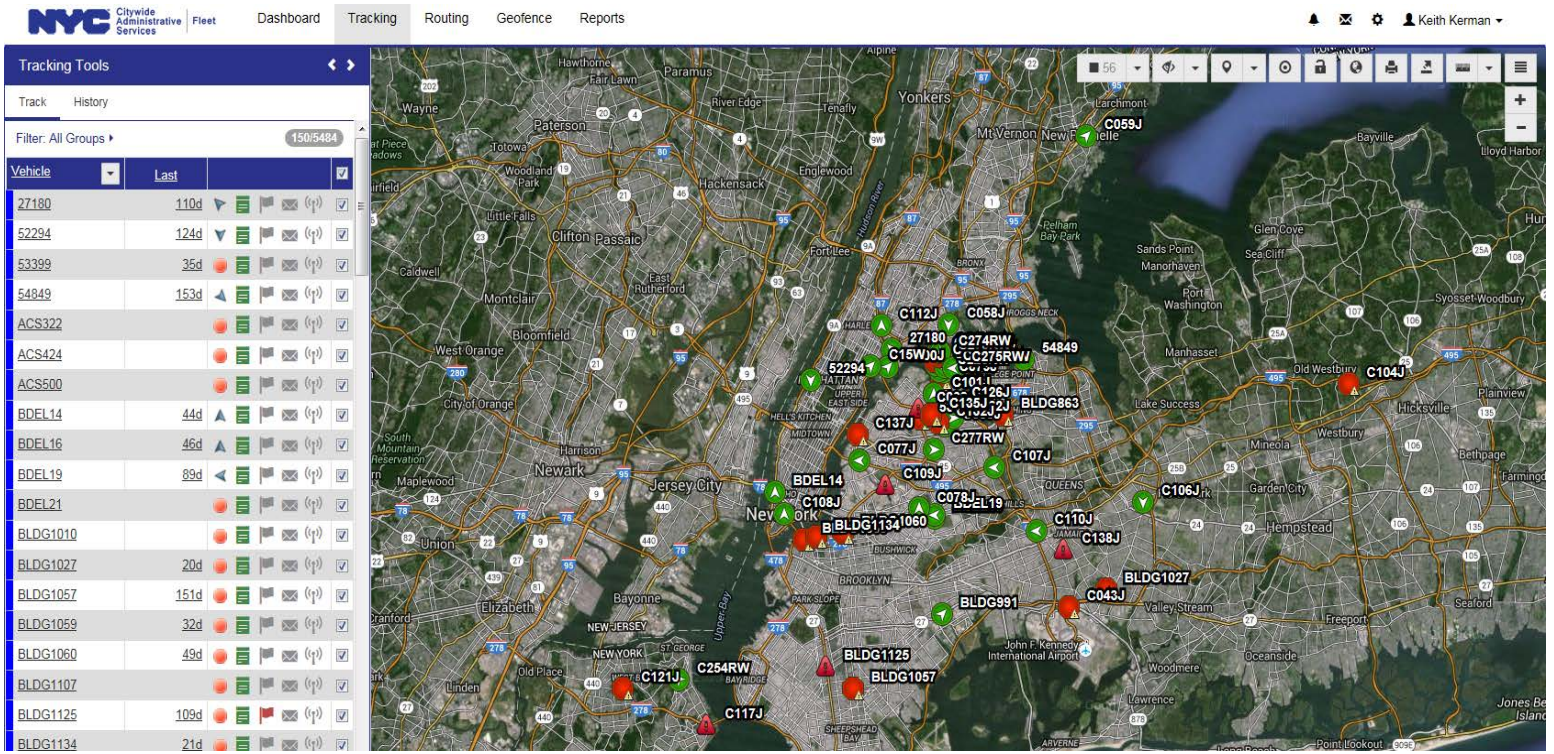
Student Name

Instructor

Agency Where You Work

Class Location

Speed Reporting



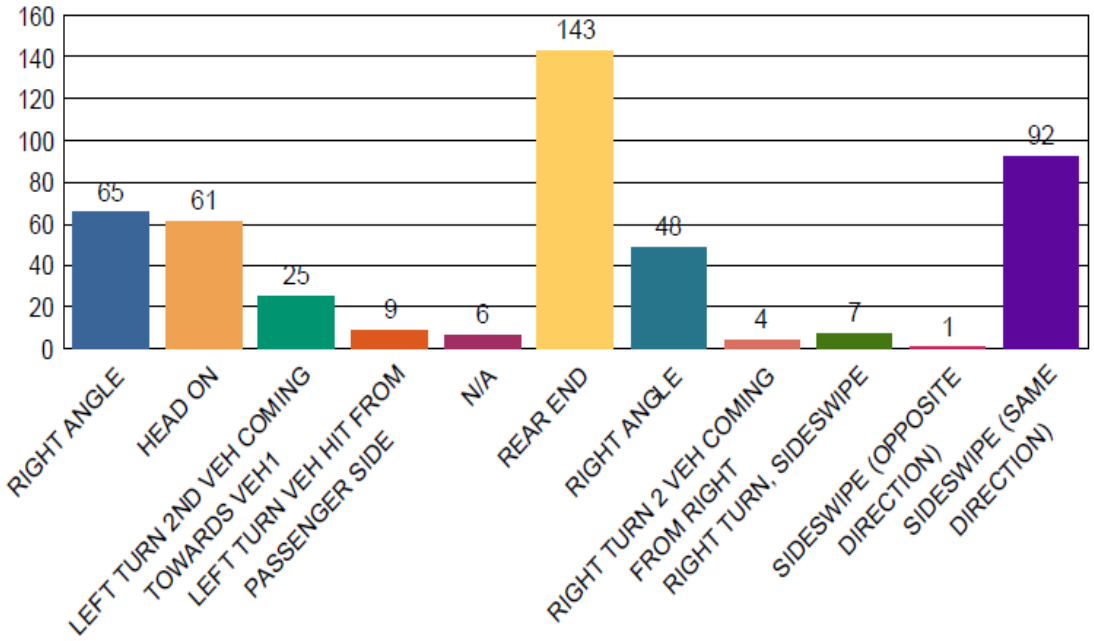
Collision Tracking

NYC Citywide Administrative Services | Fleet

Calendar Year 2014

Injuries: Collisions Direction of Impact

All Collisions



Side Guards and Specifications

Reducing Fatalities and Injuries

From October 1, 2013 to September 30, 2014, there were 8 traffic fatalities involving non-emergency NYC Fleet vehicles.

From October 1, 2014 through today, there have been zero.

	10/1/13 - 9/30/14	**10/1/14 - 9/30/15**	**Change**
NYC Fleet traffic fatalities	**8**	**0**	**- 8**

Focusing on Distraction

Good Operator (GO) Awards

For our first Good Operator (GO) fleet safety awards, fleet agencies selected their nominees based on the following criteria:

- At least ten years of full time employment
- Daily fleet operators
- At least five (and preferably more) years of driving without a preventable collision or traffic violation
- Great general performance, driving, and conduct record
- Outstanding model of safety and commitment to the public

Contact

Keith Kerman
Chief Fleet Officer
New York City
Deputy Commissioner,
Department of Citywide Administrative Services

kkerman@dcas.nyc.gov

nyc.gov/visionzero

VISION ZERO

FORUM

NOVEMBER 5, 2015

Background

Ambu-Trans is among the leading providers of medical transportation in NYC.

- **We transport NYC residents that are mobility challenged to and from medical appointments and treatments.**

- **Provide door to door assistance, frequently carrying those who are wheelchair bound up and down stairwells in non elevator buildings.**

-When NYC buses, subways and taxi's are paralyzed during the most severe of conditions, during blizzards and hurricane's; we make every effort to provide access to those in need of life sustaining treatments like dialysis.

VISION ZERO

We believe and have documented that <u>“at fault” accidents can be minimized</u>, with:

use of readily available, leading edge technology,

combined with

rigorous driver selection and training

VISION ZERO

"Your choices behind the wheel matter"

The decisions we make as fleet operators matter even more!

- Simply as fleet operators in NYC, fairly or not, we are held accountable for every maneuver and every decision our drivers make behind the wheel, good, bad or otherwise.

Ambu-Trans has invested in leading edge technology, new vehicles, and Driver Training and Safety initiatives to ensure passenger safety.

- **DriveCam** by LYTX
- **Mobileye - Collision Avoidance / Early Warning System**
- **GPS Monitoring** - Vehicle Tracking Solutions
- **Driver Training**, including 19A Program, In-house training, New Hire credentialing
- **Rigorous fleet maintenance** - New York State DOT Profile – DOT Preferred Provider list.

Ambu Trans
ambulette

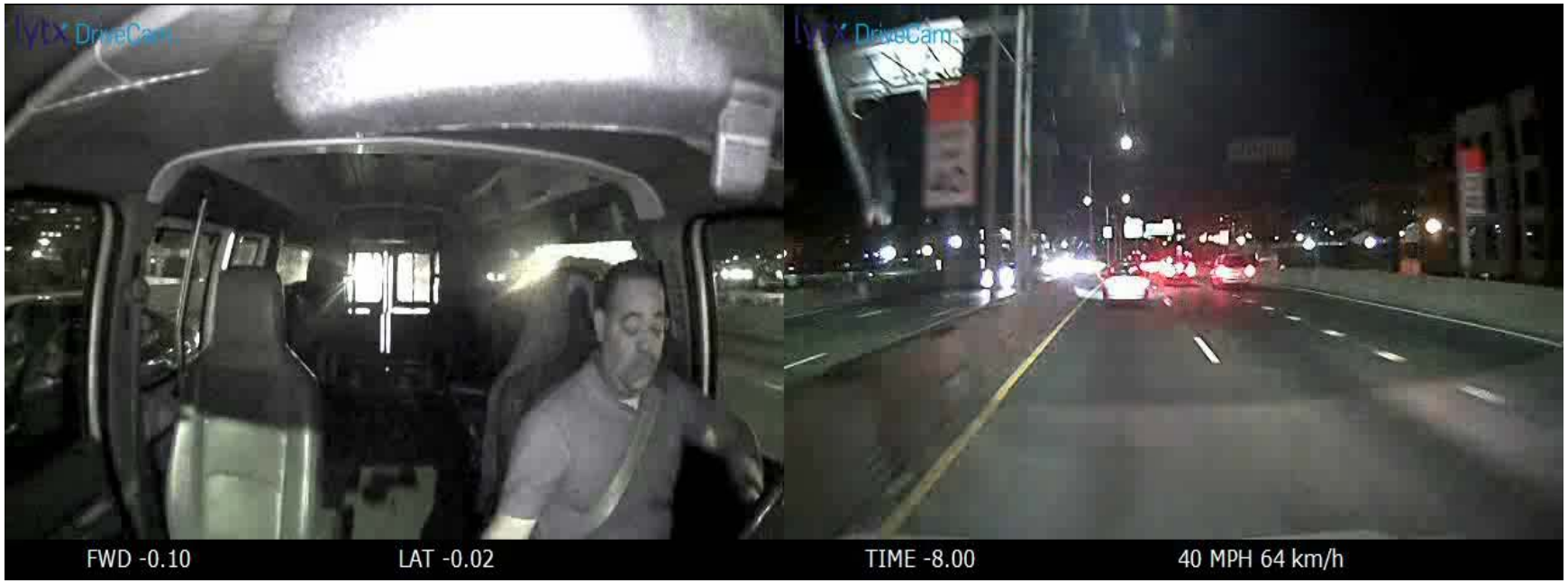
DriveCam
POWERED BY Lytx

- **DriveCam** by LYTX - **July 2014** - installed in every vehicle. Website Link: www.drivecam.com
- Unit is permanently affixed to the windshield with one lens filming the interior of the vehicle, and one forward facing.
- DriveCam **captures 12 seconds of film, based on GForce triggers**; a hard brake stop, swerve, or collision.
- The unit is lit up green and turns red based on a GForce trigger; places the driver immediately on notice!
- DriveCam has been high impact at curbing and modifying risky driving behavior.
- DriveCam scores and ranks every driver in your fleet, based on comparative metrics.

Green = Safety Zone
Yellow=Caution
Red= lower tier; requiring retraining.

DriveCam & Mobileye

DriveCam & Mobileye



MOBILEYE is a Collision Avoidance System

Provides **lane departure** warning, **pedestrian** and **cyclist alerts**, **tailgating** alerts and **speeding**

- The driver receives an audio alert, a beeping sound and a visual warning, as an alert.
- So, as a driver is following a vehicle in close manner the driver is alerted by an intense beeping sound to increase stopping distance or to hit the brakes.
- This technology integrates with DriveCam by Lytx to provide us with reporting on risky driver patterns enabling us to undertake remedial training.

Ambu Trans
ambulette

GPS - Silent Passenger - by Vehicle Tracking Solutions – **September 2014**

- Upgraded our GPS program to “Silent Passenger” with very positive results utilizing this outstanding Quality Control program.

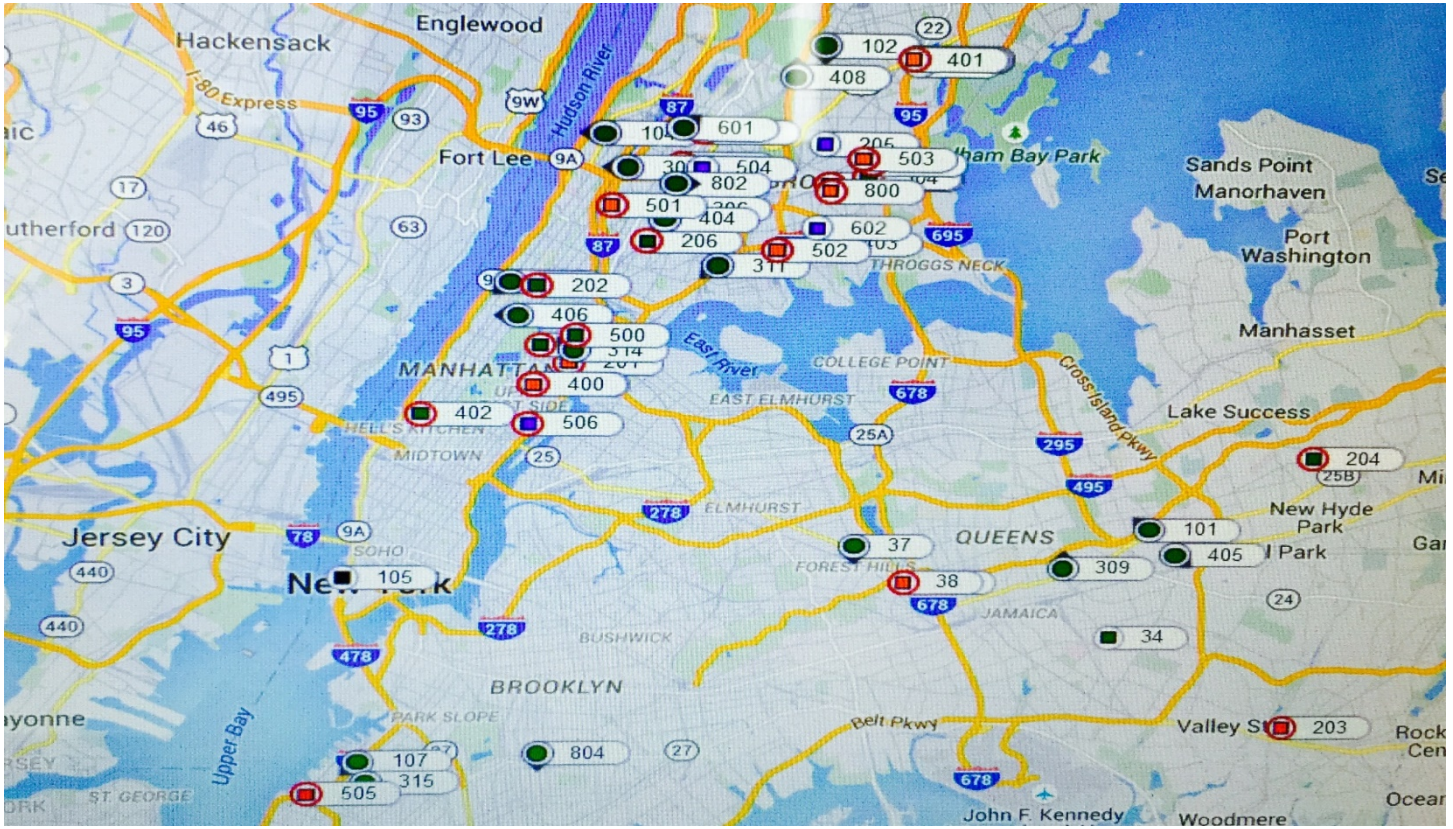
- Speeding Alerts with real time communication… texts received along with visual alerts.

- After hours movement is monitored with text alerts

- Out of area is monitored with text alerts

- Location, direction, time idling, speed are all tracked with reporting capabilities.

GPS real time tracking by VTS “Silent Passenger”



Driver Hiring & Training

Ambu-Trans drivers have an exceptional safety record; **none have an "At Fault" accident past 36 month!**

Drivers are hired with a clean MVR; 2 pts of < and no at fault accidents past 36 months.

- Pass a Pre-employment physical

- Substance abuse test & DCJ fingerprint/background screen

- Behind the wheel training

- Wheelchair training

- 6 hour defensive driving class

- Written exam

- MVR driving record reviews semi-annually

All Drivers Attend In House Safety and Sign Attestation Statement, as follows:

AMBU-TRANS AMBULETTE – DRIVER ATTESTATION – JULY 2015

1.The safe handling of my vehicle and my passengers is my primary responsibility, that I must avoid accidents by driving in a safe, defensive manner; I will obey traffic signals, and speed limits (NYC 25MPH)

2. If I am at fault and cause a serious accident it will lead to loss of employment at Ambu-Trans .

3. I agree to ASSIST/Escort Patients, whether in a wheelchair, or walking, in and out of the vehicle, their residence and medical facility; ALWAYS!

4. It is my job to ensure the wheelchair is secured properly with a 4 point tie down in the vehicle. Wheelchair patients must wear a lapbelt that I put on the patient with the buckle fastened in back.

5. I agree to not use my cell phone to text, nor to use my cell phone to talk while driving. I am aware that cell phone violations are now 5 point violations.

6. I agree to never transport anyone other than patients and their health aid, or family member to and from medical appointments (I will not transport friends, family, etc. in my assigned vehicle).

7. I agree that if I am assigned a vehicle and am allowed to bring it home, that it will remain parked until my next work shift. I will not use the vehicle for any personal reason.

8. I am aware that accumulating 9 points in 18 months will result in a 1 year suspension by DMV. I acknowledge I am responsible for red light & speed zone violations.

9. I agree to work drug free and alcohol free, and acknowledge that my failure to pass a substance abuse test will lead to my immediate firing.

10. I understand that my start time, and end time and patient pick up times are to be accurately recorded, and that exaggerating or not accurately capturing times can lead to firing.

Driver Signature_____ Date:_____

NYS DOT – "Preferred Provider"

(link: www.dot.ny.gov/divisions/osss/bus/inspections)

Ambu-Trans adheres to the very stringent requirements of the New York State Department of Transportation Bus Inspection Program

- Vehicles are rigorously inspected by DOT at 6 month intervals in a multi hundred point 1.5 hour inspection.

- Ambu-Trans passed 93% of its inspections during the last 12 months achieving Preferred Provider stature with NYS DOT.

- Vehicles are inspected daily by driver for mechanical defects, every 3,000 miles by mechanic, and every 6 months by NYS DOT.

10 New Transit Connect Ambulettes Added 2015

“SAFETY IS MY GOAL” DECAL ON ALL VEHICLES

Neal Kalish

Ambu-Trans Ambulette

Chief Executive Officer

NXKNYC@GMAIL.COM

nyc.gov/visionzero

National Highway Traffic Safety Administration

NHTSA
www.nhtsa.gov

Distracted Driving Program Initiatives

Distracted Driving

- NHTSA broadly defines driver distraction as anything that can take visual, manual or cognitive resources away from the driving task.
- Distraction occurs when drivers divert their attention from the driving task.

Three Types of Distraction:

- **Visual** - Eyes off the road
- **Manual** - Hands off the wheel
- **Cognitive** - Mind off the driving task

Distracted Driving Problem

In 2013,

- There were 3,154 people killed in motor vehicle crashes involving distracted drivers.
- An estimated 424,000 people were injured in motor vehicle crashes involving a distracted driver.
- 153.3 billion text messages were sent in the US (includes PR, the Territories, and Guam) every month. (CTIA)

State Hand-Held Phone Bans for all Drivers

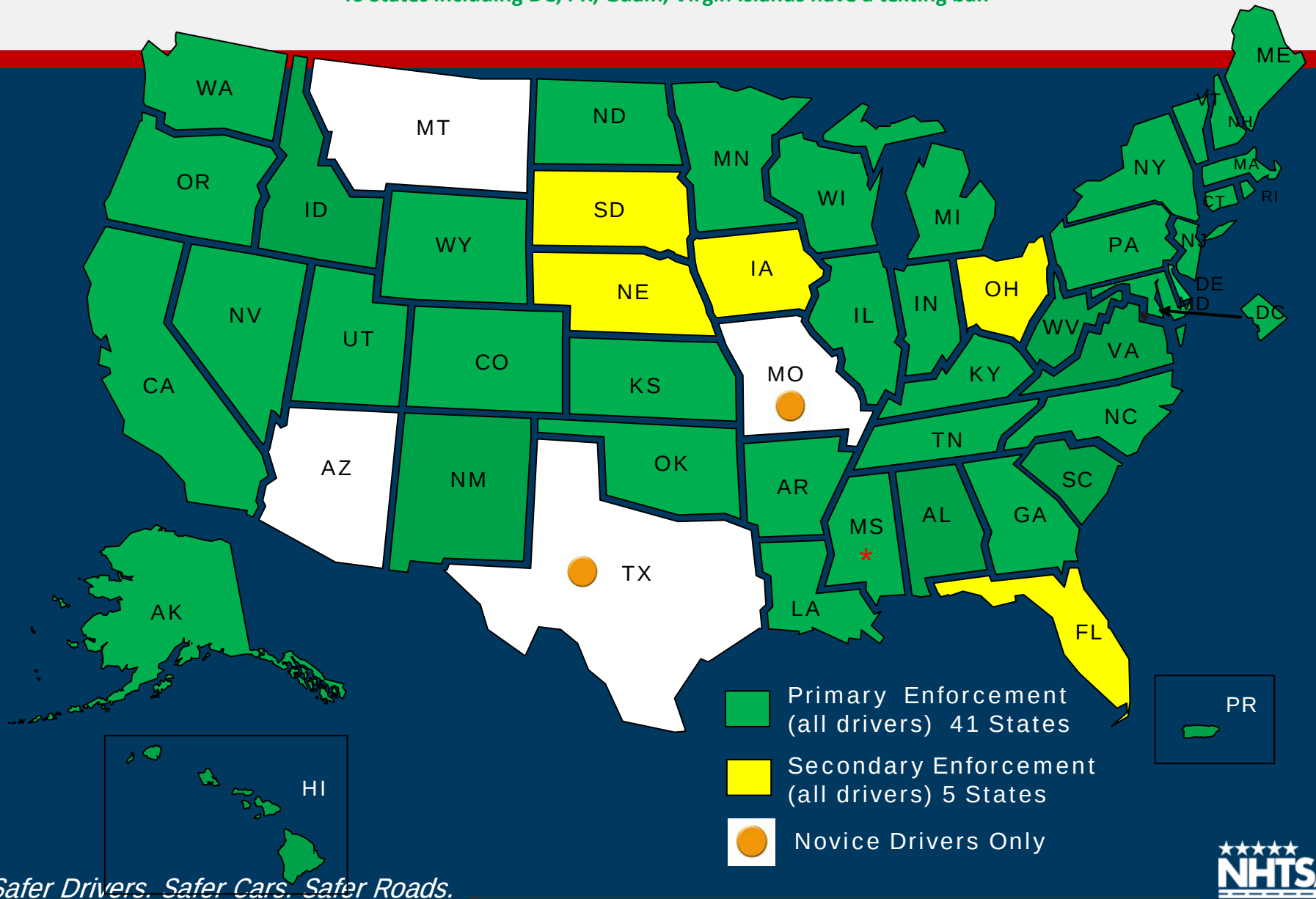
14 States including DC, PR, Guam, Virgin Islands have a hand-held phone ban; all are primary enforcement

- *38 States and D.C. ban all cell phone use by novice drivers.*

Revised October 2015

State Text Messaging Bans for all Drivers

46 States including DC, PR, Guam, Virgin Islands have a texting ban

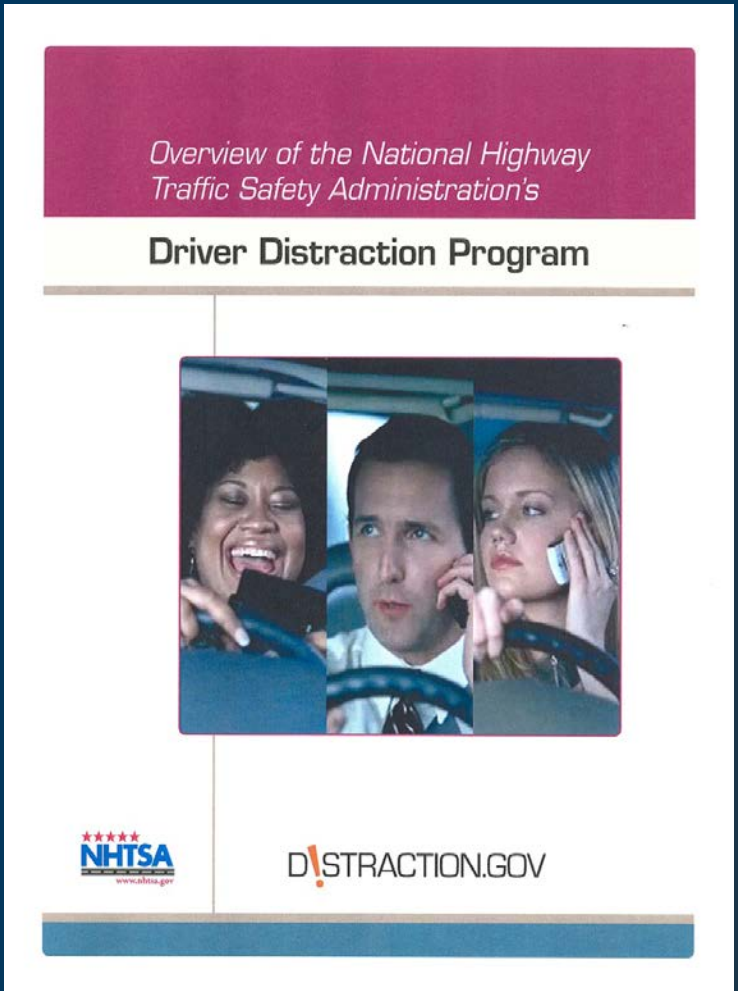


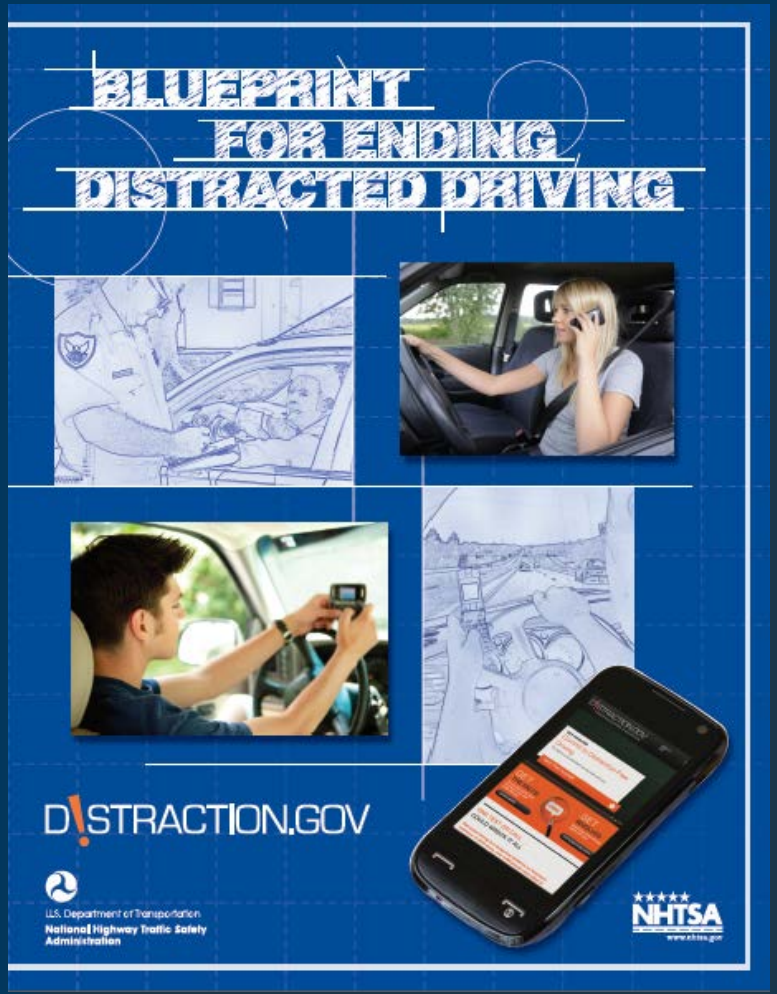
Safer Drivers. Safer Cars. Safer Roads.

NHTSA
www.nhtsa.gov

Revised October 2015

NHTSA Driver Distraction Program

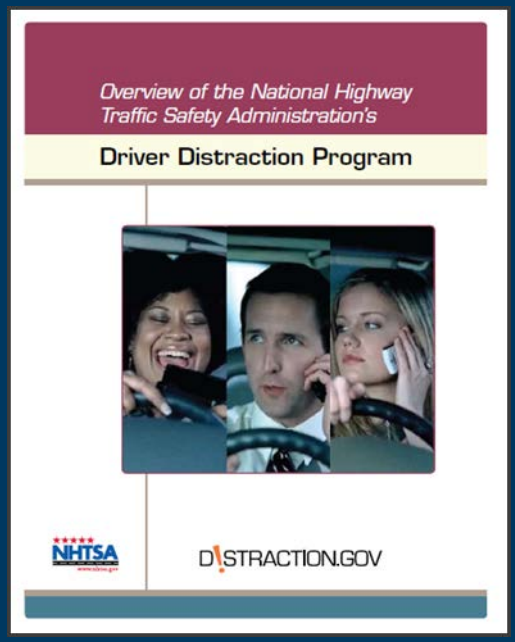




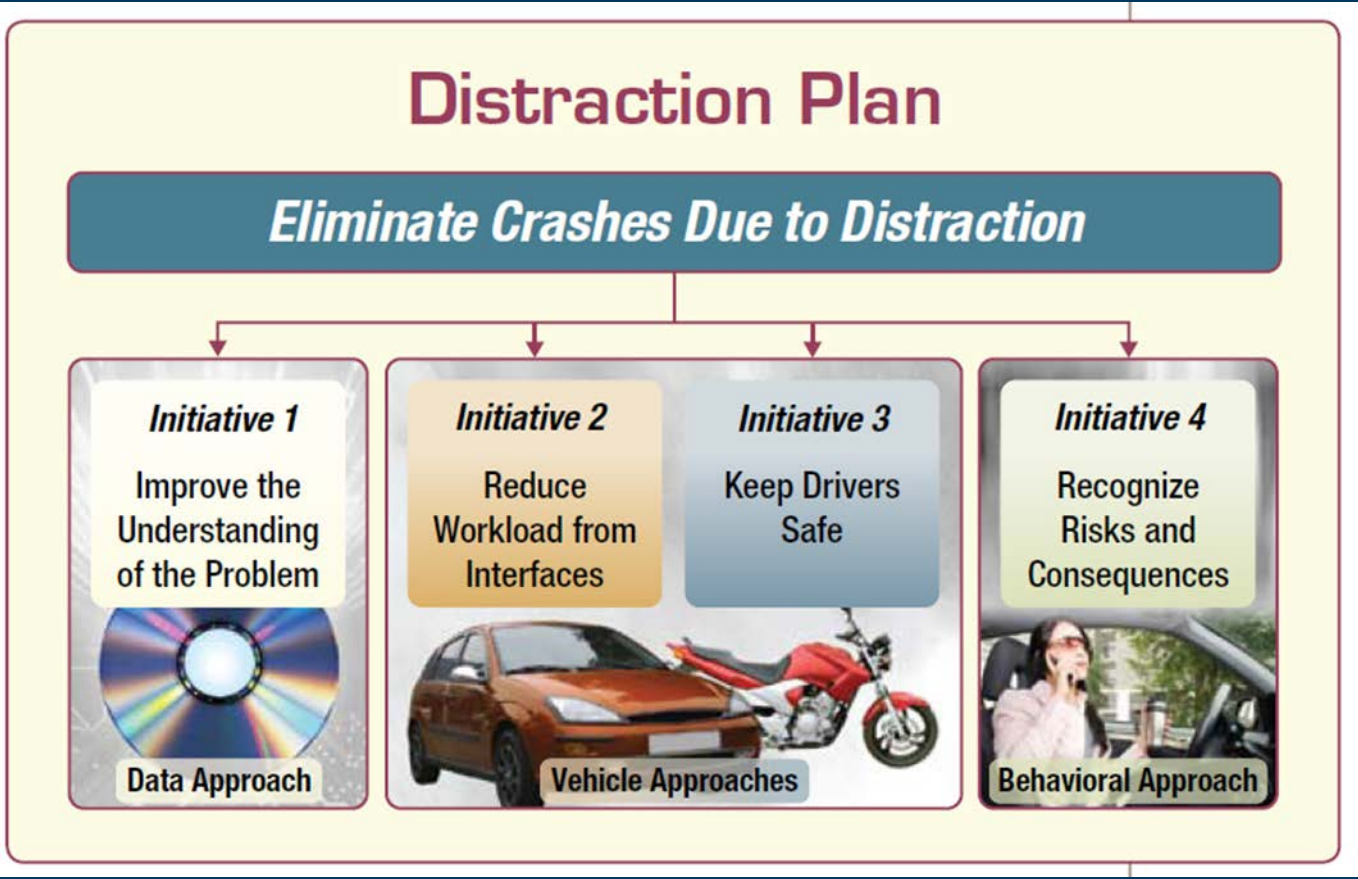
www.distraction.gov

NHTSA Driver Distraction Program Plan

NHTSA has implemented a multi-year Distraction Plan and Research Agenda that will further examine driver communications and entertainment devices, including cell phones, and will also continue to monitor the research of others on this subject.

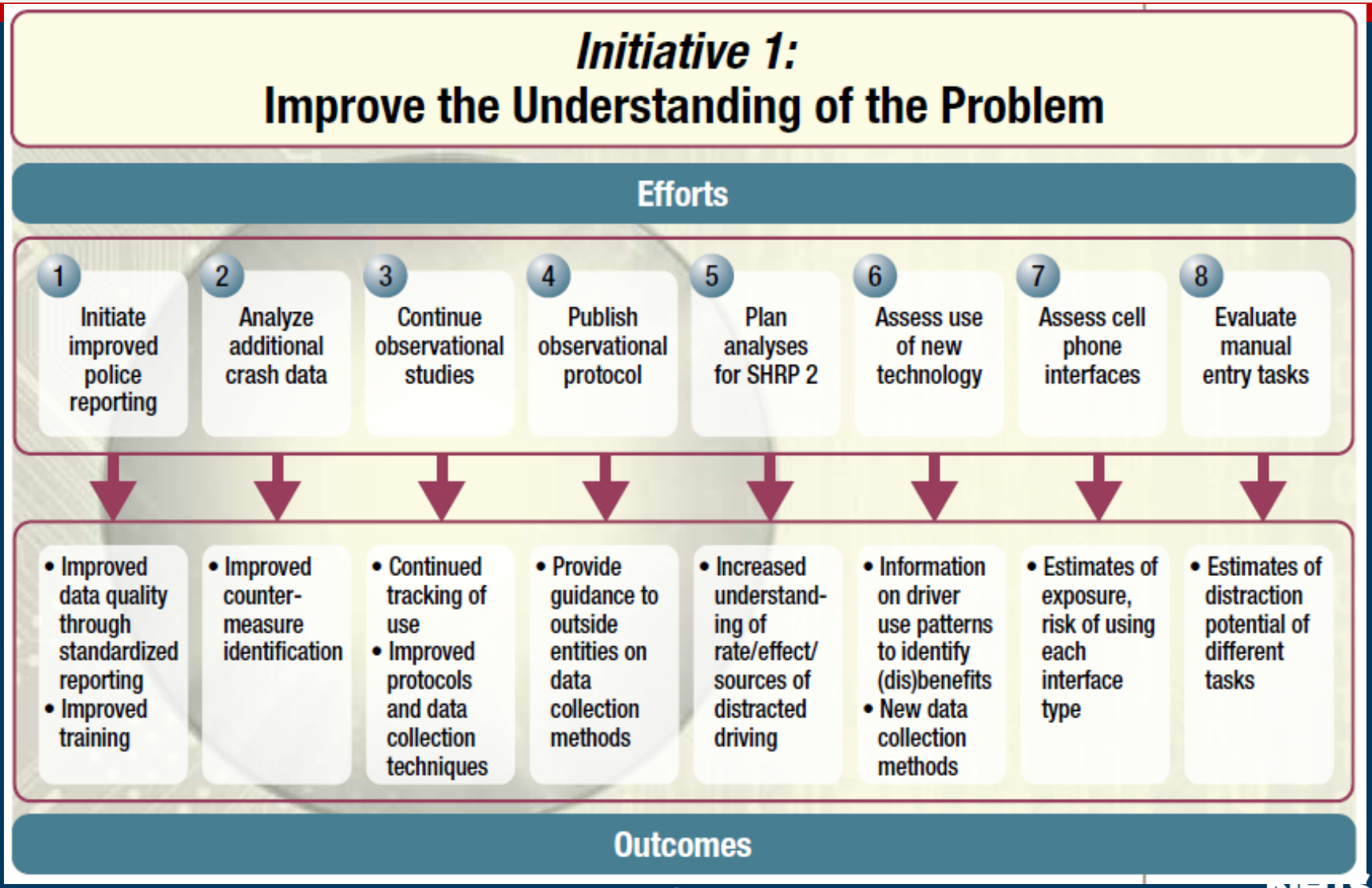


NHTSA's Driver Distraction Program Plan



NHTSA Goal: Eliminate Crashes Due to Distraction

NHTSA's Distraction Plan



Initiative 2: Distraction Guidelines

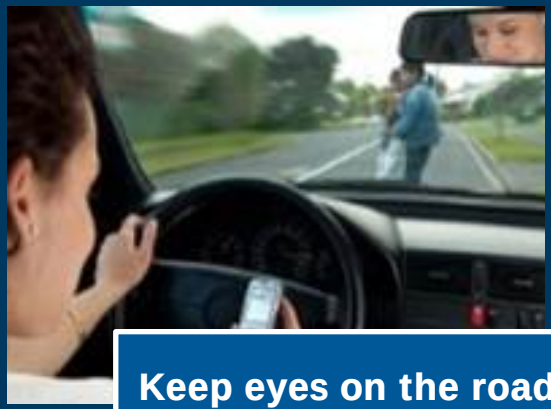
NHTSA's Voluntary Driver Distraction Guidelines

Phase 1: Visual-Manual for Built-in Devices

Phase 2: Visual-Manual for Portable Devices

Phase 3: Voice-based Interfaces for Built-in and Portable Devices

Driver Distraction Fundamental Principles



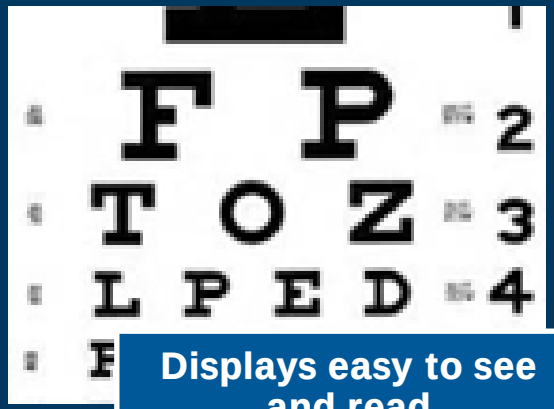
Keep eyes on the road

Keep at least one hand on the steering wheel

No worse than manual radio tuning

Interruptible

Pace set by driver



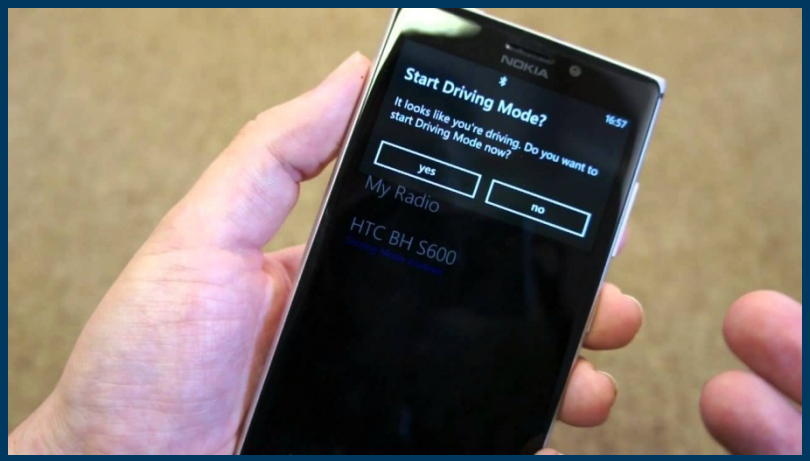
Displays easy to see and read

Phase 1 Guidelines - Published

- Visual-Manual NHTSA Driver Distraction Guidelines for In-Vehicle Electronic Devices
  - Released for public comment in Feb 2012
  - Final published in April 2013, clarification notice on Sept. 16, 2014

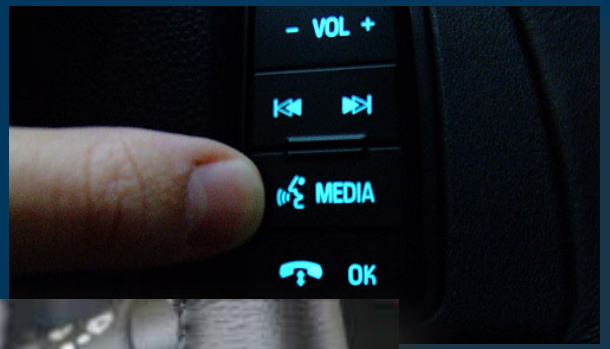
Phase 2 Guidelines

- Visual-Manual Interfaces for Portable and Aftermarket Devices
  - NHTSA is leading the way; no published industry guidelines
  - Based on same fundamental principles as Phase 1 Distraction Guidelines, but applied to PAD



Phase 3 Guidelines

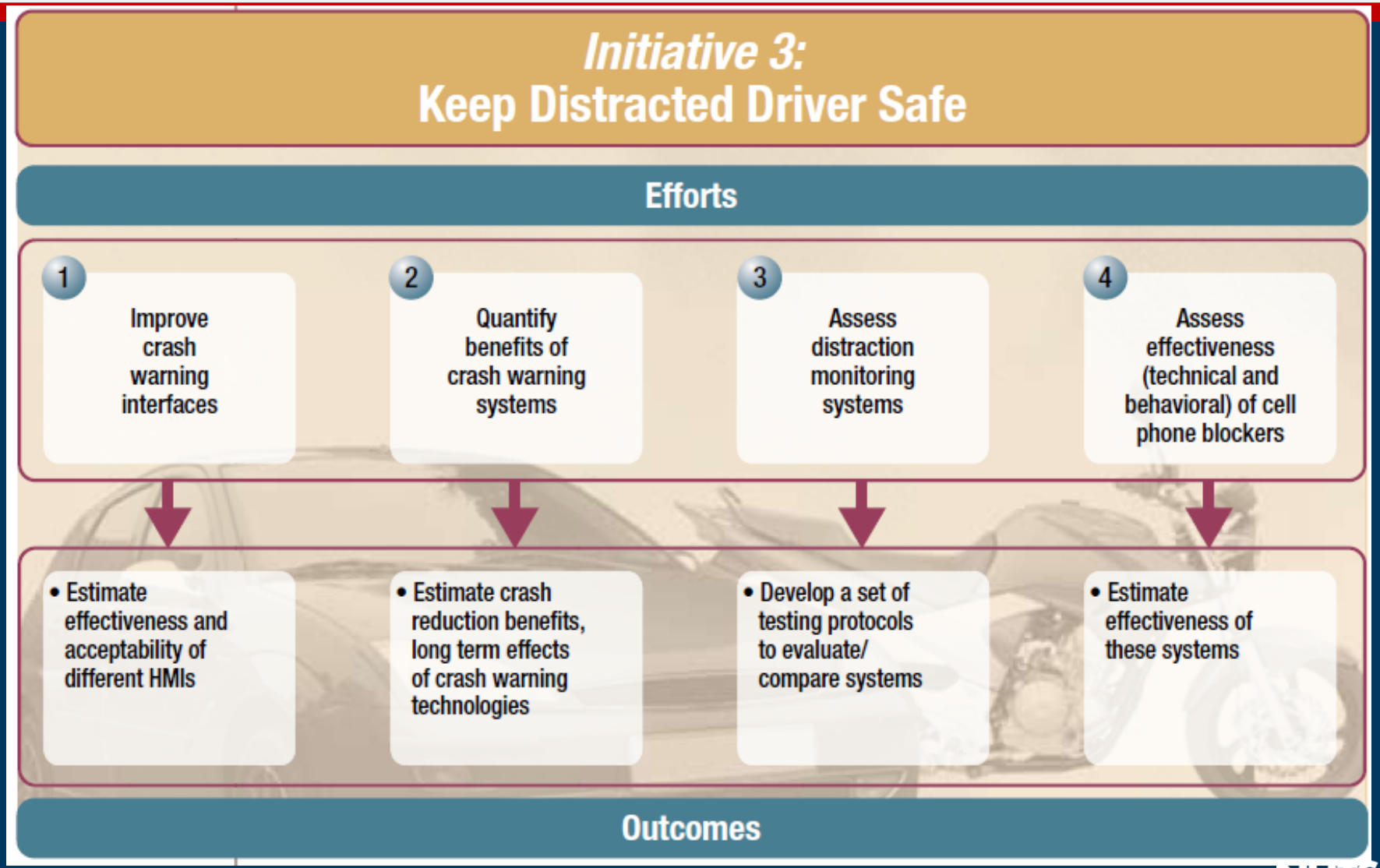
- Auditory-vocal Interfaces for In-Vehicle Electronic Devices, Portable, and Aftermarket Devices
  - No published industry guidelines
  - Research currently underway



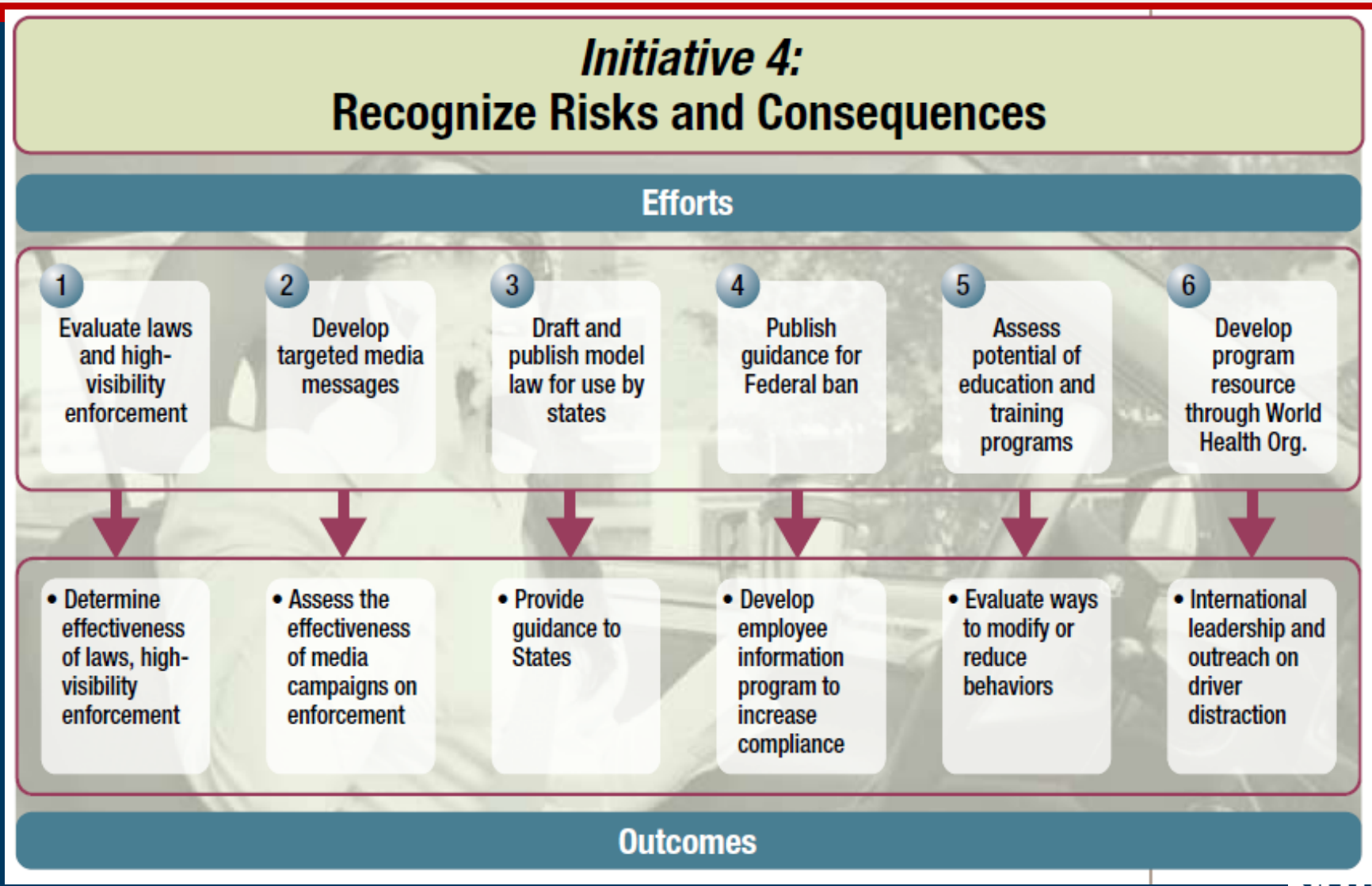
Existing Products to Combat Distraction

- Several companies have developed products to help reduce driver distraction
- These products take a range of approaches to restricting cell phone use while driving

NHTSA's Distraction Plan



NHTSA's Distraction Plan



Behavioral Promising Practices and Demonstration Projects

- Three demonstration projects
  - Syracuse, NY & Hartford, CT
  - California & Delaware
  - Connecticut & Massachusetts (Texting)

- High visibility enforcement model
  - Defined period of earned media
  - Defined period of paid media with an enforcement message
  - Defined period of enforcement
  - Evaluation before, during and after periods of publicity and enforcement

Results: California & Delaware Demos

- California
  - 10,700 distracted driving citations.
  - Recognition of the message *Phone in One Hand. Ticket in the Other* quadrupled from 16% (baseline) to 57% (post).
  - Handheld cell phone use rate decreased significantly from baseline (4.1%) to final post (2.7%). Control also decreased significantly.

- Delaware
  - 6,200 distracted driving citations.
  - Message recognition more than doubled (from 7% to 19%).
  - Handheld cell phone use decreased significantly from baseline (4.5%) to the end of Wave 3 (3.0%). Combined control areas also showed a significant decrease, but not as great as intervention site.

Massachusetts & Connecticut Texting Ban Demonstration

- NHTSA has just completed a partnership project with Connecticut and Massachusetts testing the enforceability of texting bans.
- A total of four waves were conducted
- While different techniques work best in different areas, both Massachusetts and Connecticut are finding techniques that can be effective for enforcing texting bans.

Detecting a Violation – Visual Cues

- Nodding and looking down
- Improper lane travel
- Inconsistent speed
- Delayed/slow starts
- Typical signs of a DUI

Diverse Enforcement Approaches

- Routine and Saturation Patrols
- Spotter Enforcement
- Stationary Enforcement

- Motorcycles
- Marked vehicles
- Unmarked vehicles
- Elevated vehicles

Awareness

- Since 2009, the U.S. DOT has launched a variety of campaigns to raise awareness about the dangers of distracted driving:

For more information

- http://www.trafficsafetymarketing.gov/

“Manifesto” Texting Enforcement Ad

“Manifesto” Texting Enforcement Ad

Contact Information

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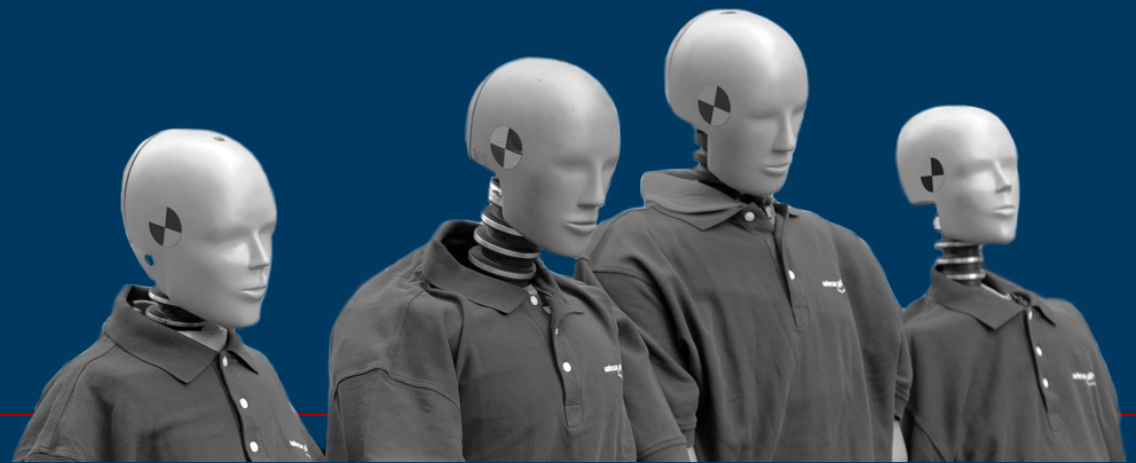
michael.geraci@dot.gov



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CRASH
~~ACCIDENT~~

Before the labor movement, factory owners would say "it was an accident" when American workers were injured in unsafe conditions.

Before the movement to combat drunk driving, intoxicated drivers would say "it was an accident" when they crashed their cars.

Planes don't have accidents. They crash. Cranes don't have accidents. They collapse. And as a society, we expect answers and solutions.

Traffic crashes are fixable problems, caused by dangerous streets and unsafe drivers. They are not accidents. Let's stop using the word "accident" today.

I will not call traffic crashes "accidents." I will educate others about why "crash" is a better word.

First Name

Last Name

Email Address

TAKE THE PLEDGE »

Goal: 20,000 pledges

Status: 2250 pledges

FAMILIES FOR SAFE STREETS

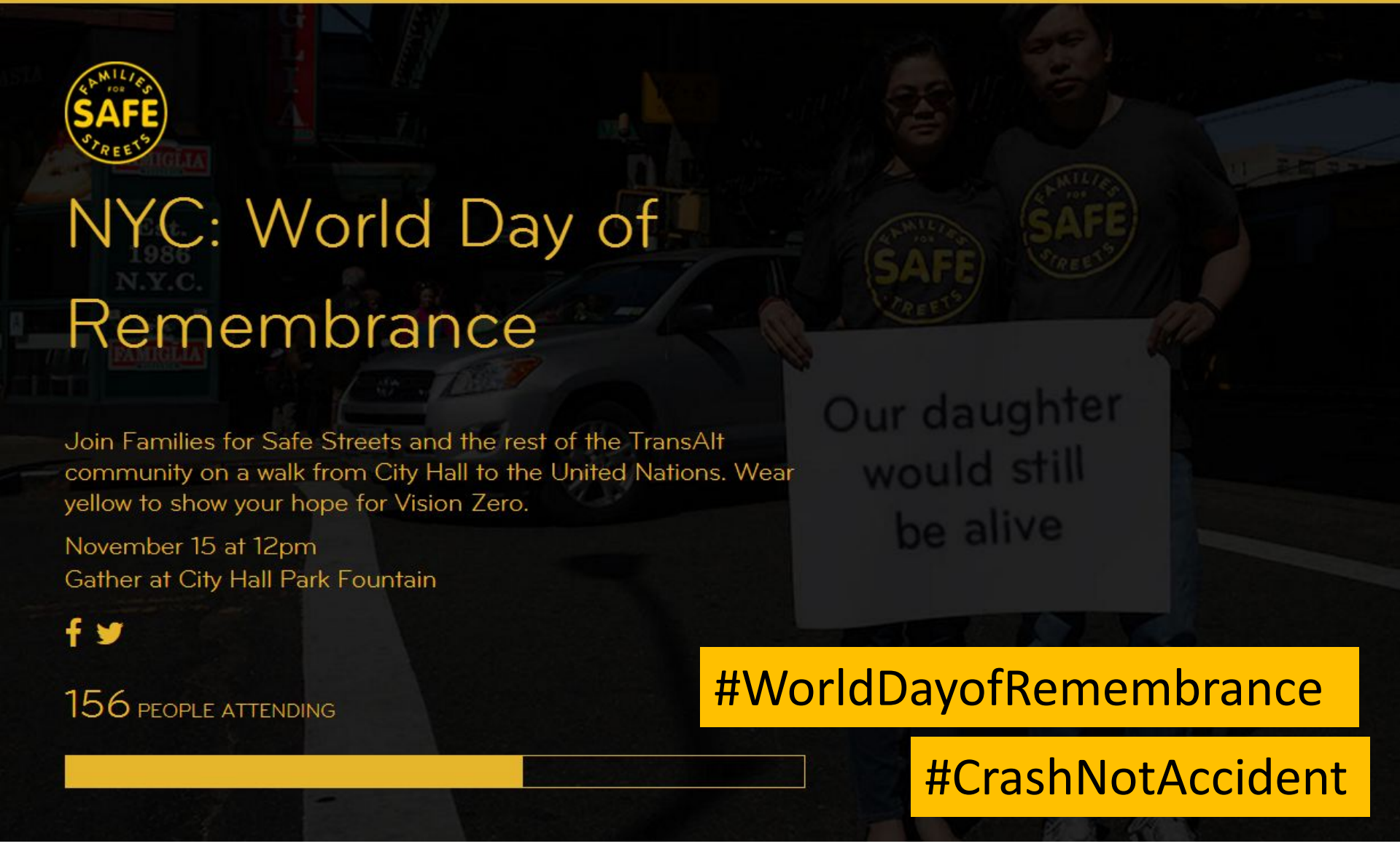
TRANSPORTATION ALTERNATIVES

VISION ZERO NETWORK


CRASH
ACCIDENT


WE ARE UNION SQUARE
23,463
INJURIES
IS NOT AN
ACCIDENT

On November 15, with people around the world, we will remember the victims of traffic violence.



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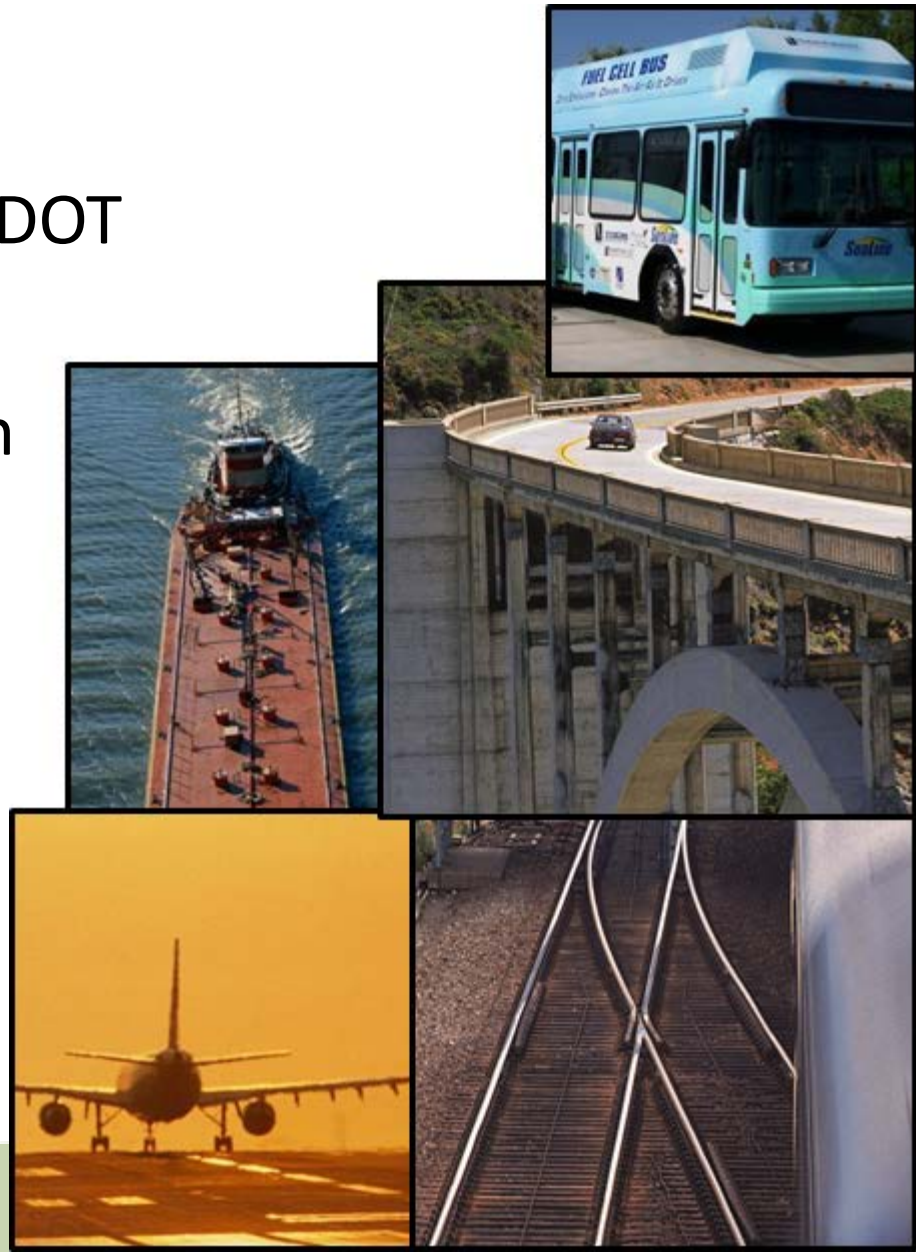
Volpe, The National Transportation Systems Center

- Unique agency within U.S. DOT
- 100% fee-for-service
- All modes of transportation
- Cross-disciplinary
- 570 federal staff,
  400 onsite contractors
- Based in Cambridge, MA



Volpe
The National Transportation Systems Center

Volpe's Purpose

"Advancing transportation innovation for the public good"

Contact

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Sean Peirce
Economic Analysis

Andrew Breck
Organizational Performance

Coralie Cooper
Energy Analysis and Sustainability

David Arthur, P.E.
Chief, Energy Analysis & Sustainability

Gregg Fleming
Director, Policy, Planning, and Environment

Advancing transportation innovation for the public good

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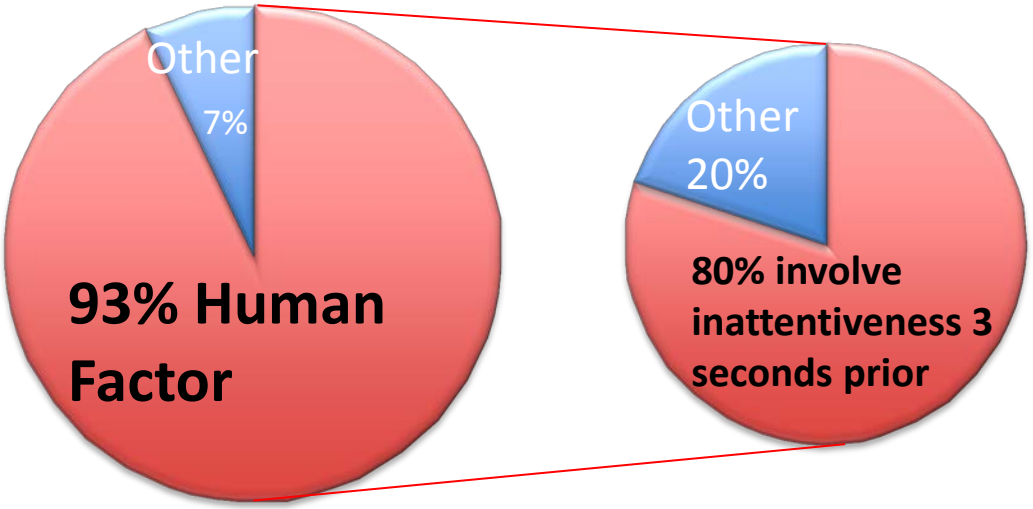
Mobileye

Collision Avoidance Systems

MOBILEYE®

CAUSES OF ACCIDENTS



* NHTSA , DOT and VTTI studies

- 93% of all accidents are due to human error, with driver inattention being the primary cause
- **74% of all accidents include driver inattention in the 3 seconds preceding the accident**
- 40% of rear end collisions have no brake application whatsoever
- 60% of road accident fatalities are due to unintentional lane departures

MOBILEYE®

COLLISION AVOIDANCE SYSTEMS

Our Vision. Your Safety.™

MOBILEYE®

In The Vehicle

MOBILEYE®


egoSpeed: 8.86 yawRate: 0.00 expDTime: 0.03 egoAccel: -0.34 Day gfi: 1
DNmode=Day
raw
distance
10.91*

nyc.gov/visionzero


VISION ZERO
FLEET SAFETY FORUM
NYC
Citywide Administrative Services
Ben Englander
VP Engineering
Rosco Vision Systems
ROSCO
VISION SYSTEMS

FLEET SAFETY FORUM

ROSCO VISION SYSTEMS… A NEW YORK COMPANY SINCE 1907

ROSCO & VISION ZERO

Industries

School Bus

Commercial & Transit

Public Safety

Truck, Military, Specialized

Rosco Vision Systems has been a leader in automotive vision safety for over 100 years and a New York company since 1907. We are proud of our involvement in New York City's Vision Zero initiatives.

ROSCO VISION SYSTEMS

NYC Citywide Administrative Services

VISION ZERO

FLEET SAFETY FORUM

WHAT CAN WE ACCOMPLISH?

In large vehicles, driver awareness is critical for safe operations.

What technologies are available for fleet safety and what can technology do to raise driver

AWARENESS?

a · ware · ness
/ə'wernəs/
noun
knowledge or perception of a situation or fact

ROSCO VISION SYSTEMS

NYC Citywide Administrative Services

VISION ZERO

FLEET SAFETY FORUM

AWARENESS THROUGH TECHNOLOGY

How can we help our **DRIVERS**?

With technology tools to increase driver **AWARENESS**!

ROSCO VISION SYSTEMS

NYC Citywide Administrative Services

VISION ZERO

FLEET SAFETY FORUM

"ENEMIES" OF AWARENESS

PRACTICAL DRIFT : THE SLOW UNCOUPLING OF PRACTICE FROM PROCEDURE

In certain situations and over a period of time "…….pragmatic individuals adjust their behavior accordingly; they act in ways that better align with their perceptions of current demands…."

- Scott A. Snook

Friendly Fire: The Accidental Shootdown of U.S. Black Hawks Over Northern Iraq

"The Vision Zero starts with a statement: we are human and we make mistakes."

http://www.visionzeroinitiative.com/en/Concept/The-human-factor/

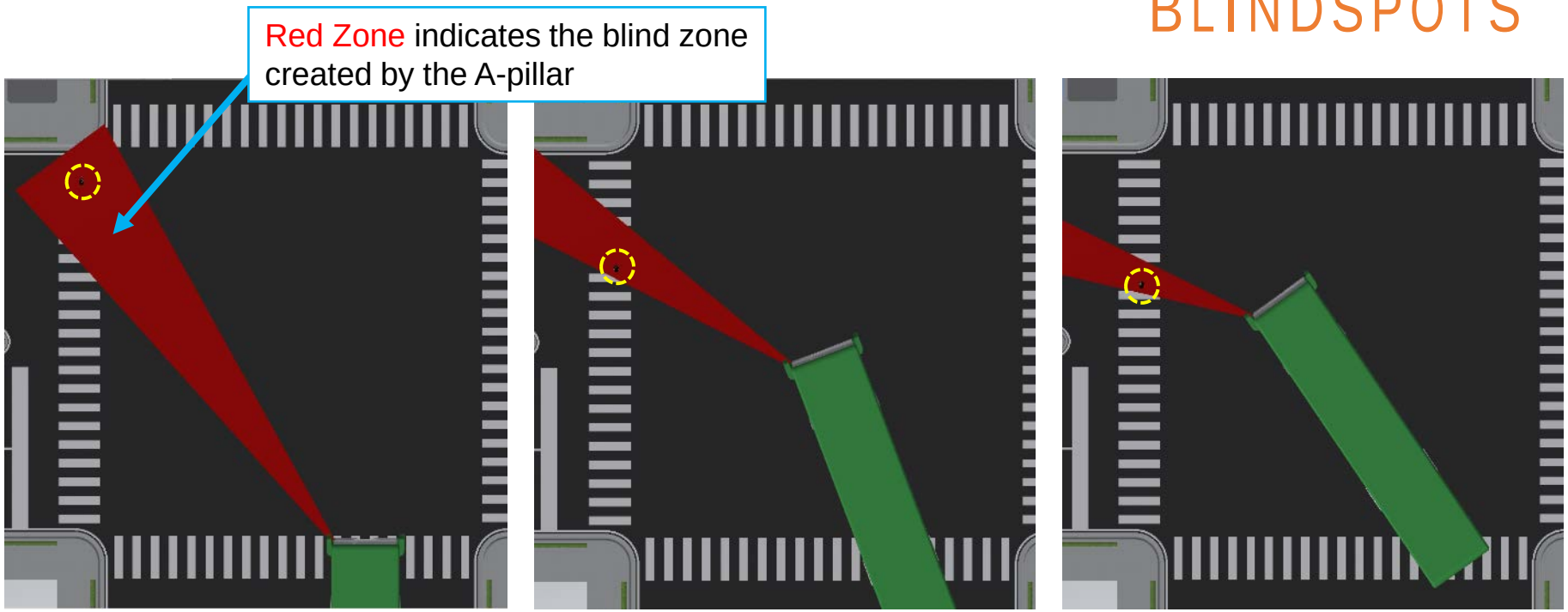
ROSCO VISION SYSTEMS

NYC Citywide Administrative Services

VISION ZERO

FLEET SAFETY FORUM

"ENEMIES" OF AWARENESS – OBSTRUCTIONS & BLINDSPOTS



Left Turn Sequence 1 | Left Turn Sequence 2 | Left Turn Sequence 3

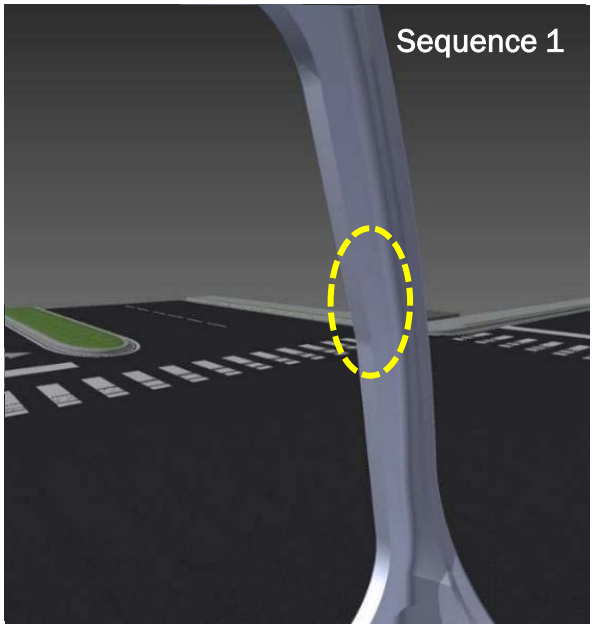
This sequence of aerial views indicates the blind zone created by the bus A-pillar during a left hand turn. As the pedestrian crosses the street and the bus is making a left turn, the pedestrian is left in the blind zone of the driver during the whole turning sequence.

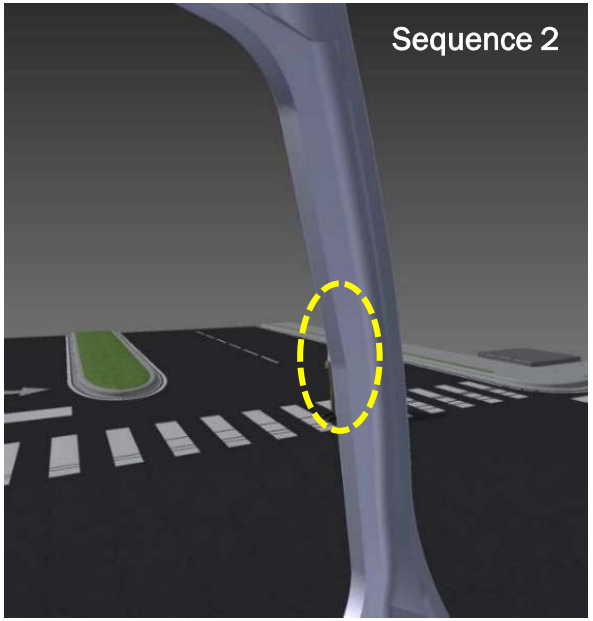
ROSCO VISION SYSTEMS® NYC Citywide Administrative Services MOBILEYE® Our Vision. Your Safety.™ VISION ZERO

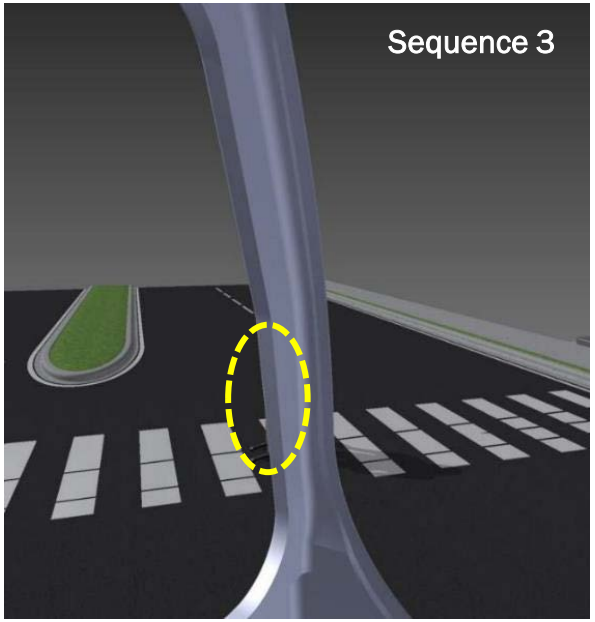
FLEET SAFETY FORUM

"ENEMIES" OF AWARENESS – OBSTRUCTIONS & BLINDSPOTS

INTERSECTION COLLISIONS – LEFT HAND TURNS







A left hand turn from driver's point of view.
In sequence 1 as the bus is turning, the pedestrian is covered by the A-pillar and hidden from the driver's view. In sequence 2 and 3 the pedestrian is still in the driver's blind zone.

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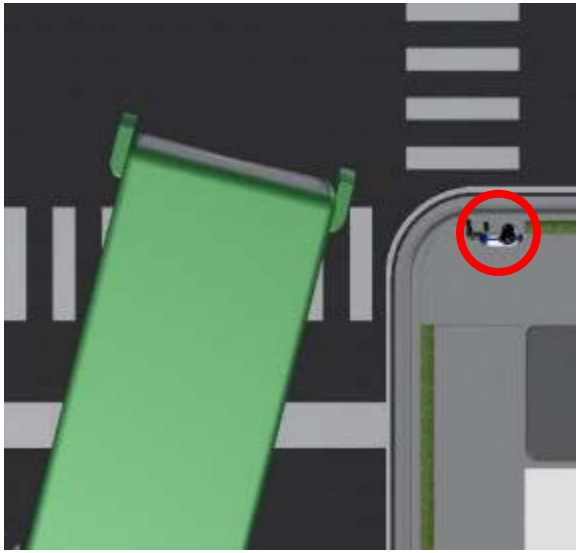
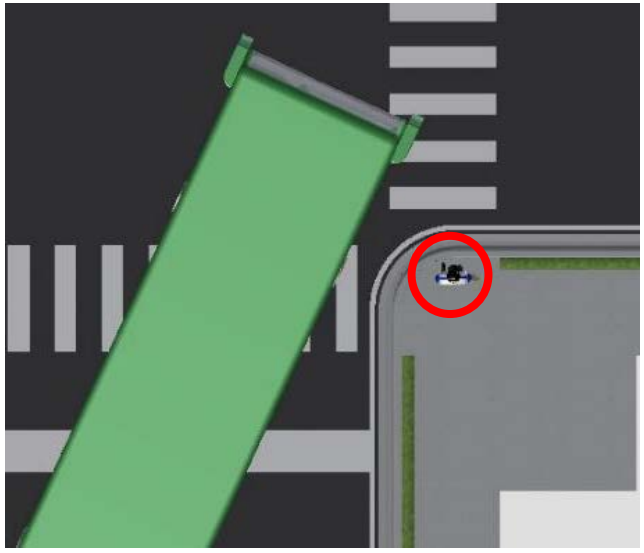
FLEET SAFETY FORUM

"ENEMIES" OF AWARENESS – OBSTRUCTIONS & BLINDSPOTS

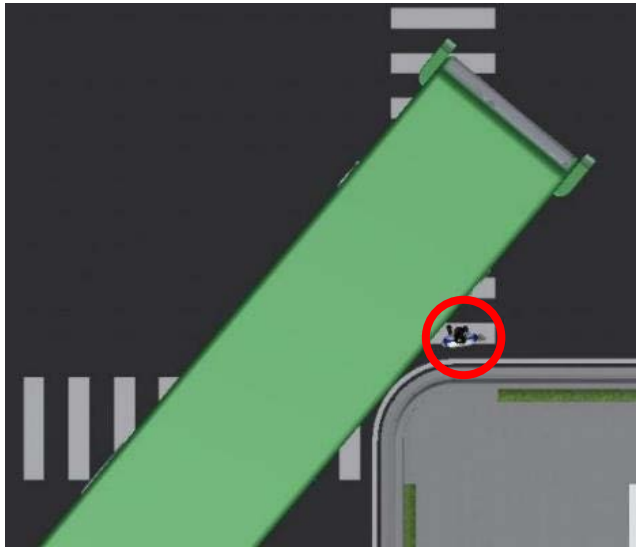
INTERSECTION COLLISIONS – RIGHT HAND TURNS



Right Turn Sequence 1



Right Turn Sequence 2



Right Turn Sequence 3

Right turns with large vehicles require the driver to lead the turning arc according to the amount of off-track.

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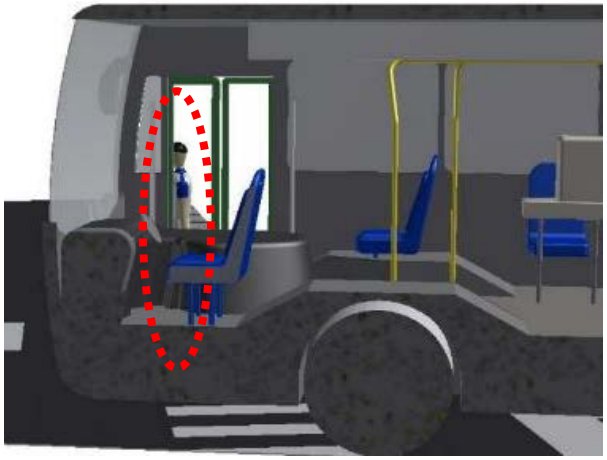
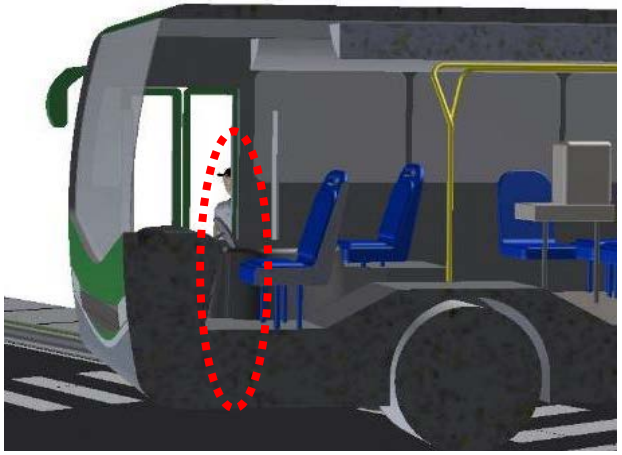
FLEET SAFETY FORUM

"ENEMIES" OF AWARENESS – OBSTRUCTIONS & BLINDSPOTS

INTERSECTION COLLISIONS – RIGHT HAND TURNS

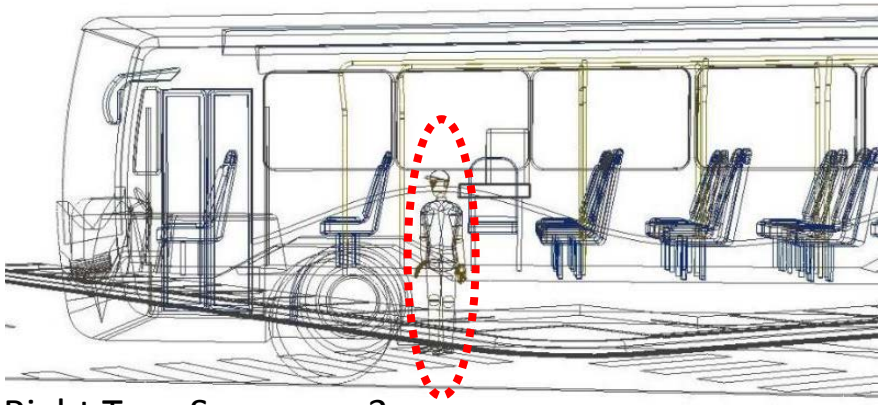


Right Turn Sequence 1



Right Turn Sequence 2

As the bus turns, it tracks close to the curb and can have a collision with a pedestrian that cannot be seen by the driver.



Right Turn Sequence 3

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ROSCO VISION SYSTEMS… A NEW YORK COMPANY SINCE 1907

SHIELD+ TECHNOLOGY

Rosco and Mobileye collaborate to create a system capable of addressing the complexities of large vehicle related vision through Shield+ technology.

External Smart Vision Camera and Housing

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FLEET SAFETY FORUM

COLLISION AVOIDANCE TECHNOLOGY

Today's collision avoidance technology can distinguish between objects and pedestrians and cyclists. Driver alert displays can warn drivers of a possible collision to avoid potential crashes.

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COLLISION AVOIDANCE TECHNOLOGY

INTERSECTION COLLISIONS – PEDESTRIAN ONCOMING LEFT VIDEO

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COLLISION AVOIDANCE TECHNOLOGY

INTERSECTION COLLISIONS – PEDESTRIAN ALONGSIDE RIGHT VIDEO

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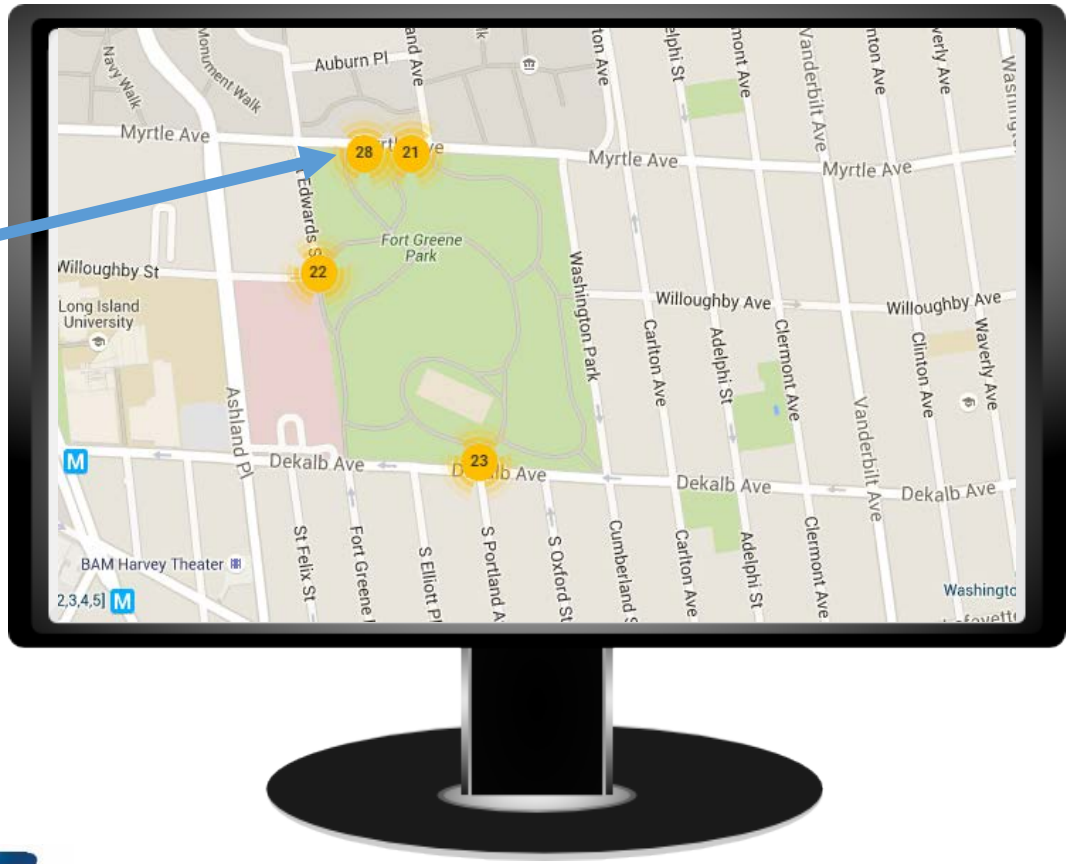
FLEET SAFETY FORUM

IDENTIFYING DANGER ZONES AND HOT SPOTS

The Shield+ GPS tracking and collision avoidance technologies can locate and pinpoint “hot spots” on driving routes

Numbers indicate how many alerts and/or detections the collision avoidance system detected in the marked location.



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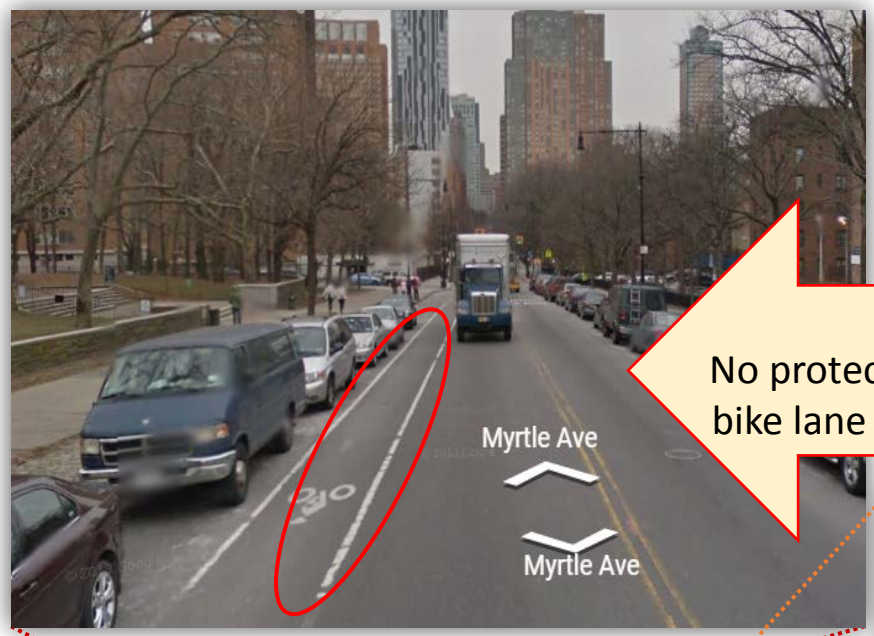
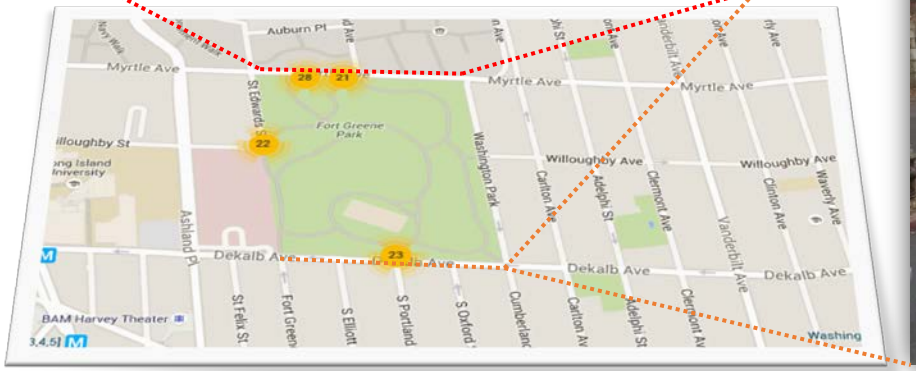
FLEET SAFETY FORUM

IDENTIFYING DANGER ZONES AND HOT SPOTS



Pinpointing “hot spots” allows us to focus on the location and what could be causing the high incident rate.

MYRTLE AVE
No protection for cyclists in bike lane from street traffic



DEKALB AVE
No protection in bike lane, bike lane paint is worn off, a lot of potholes

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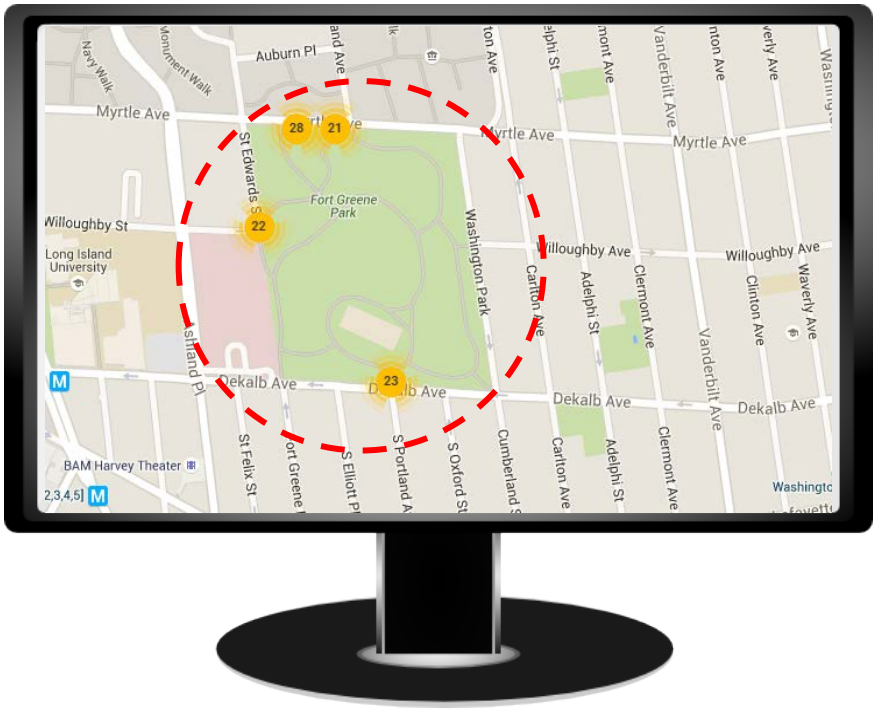
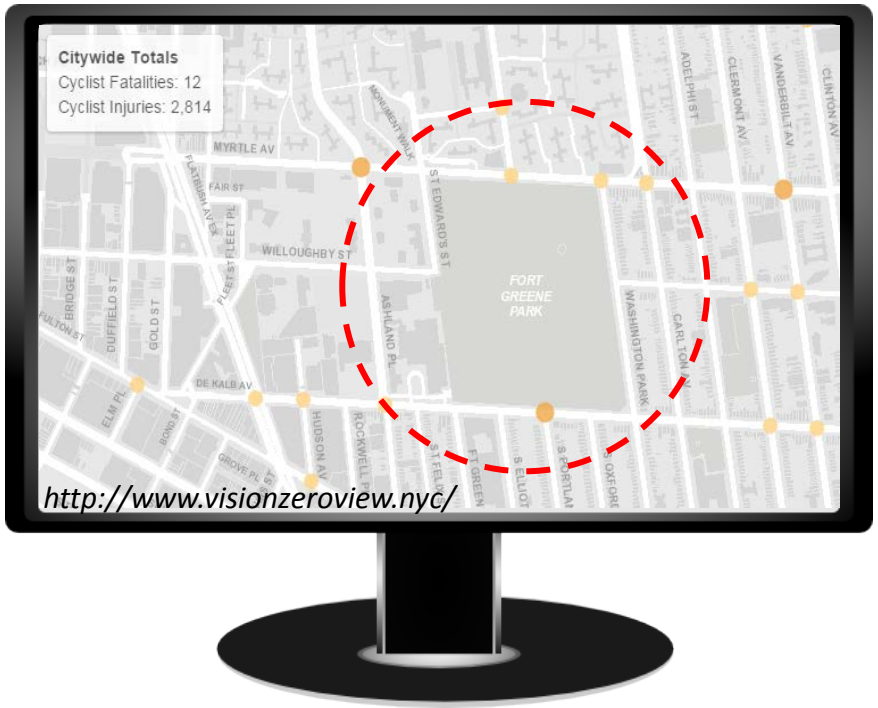
FLEET SAFETY FORUM

IDENTIFYING DANGER ZONES AND HOT SPOTS

GPS & CAT MAP



VISION ZERO VIEW



The hot spots identified by the GPS and collision avoidance technologies correspond to the data of cyclist injuries found on the Vision Zero View map.

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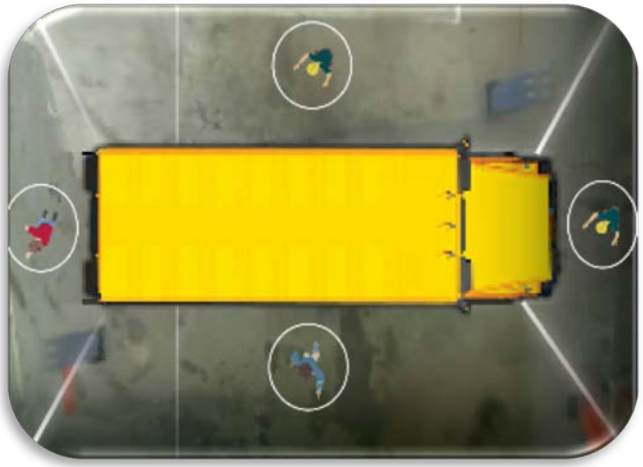
FLEET SAFETY FORUM

AWARENESS THROUGH TECHNOLOGY

360° VIEW EXTERNAL CAMERA SYSTEMS

External Camera Placement

Camera Coverage Around the Vehicle



Aerial Vehicle View

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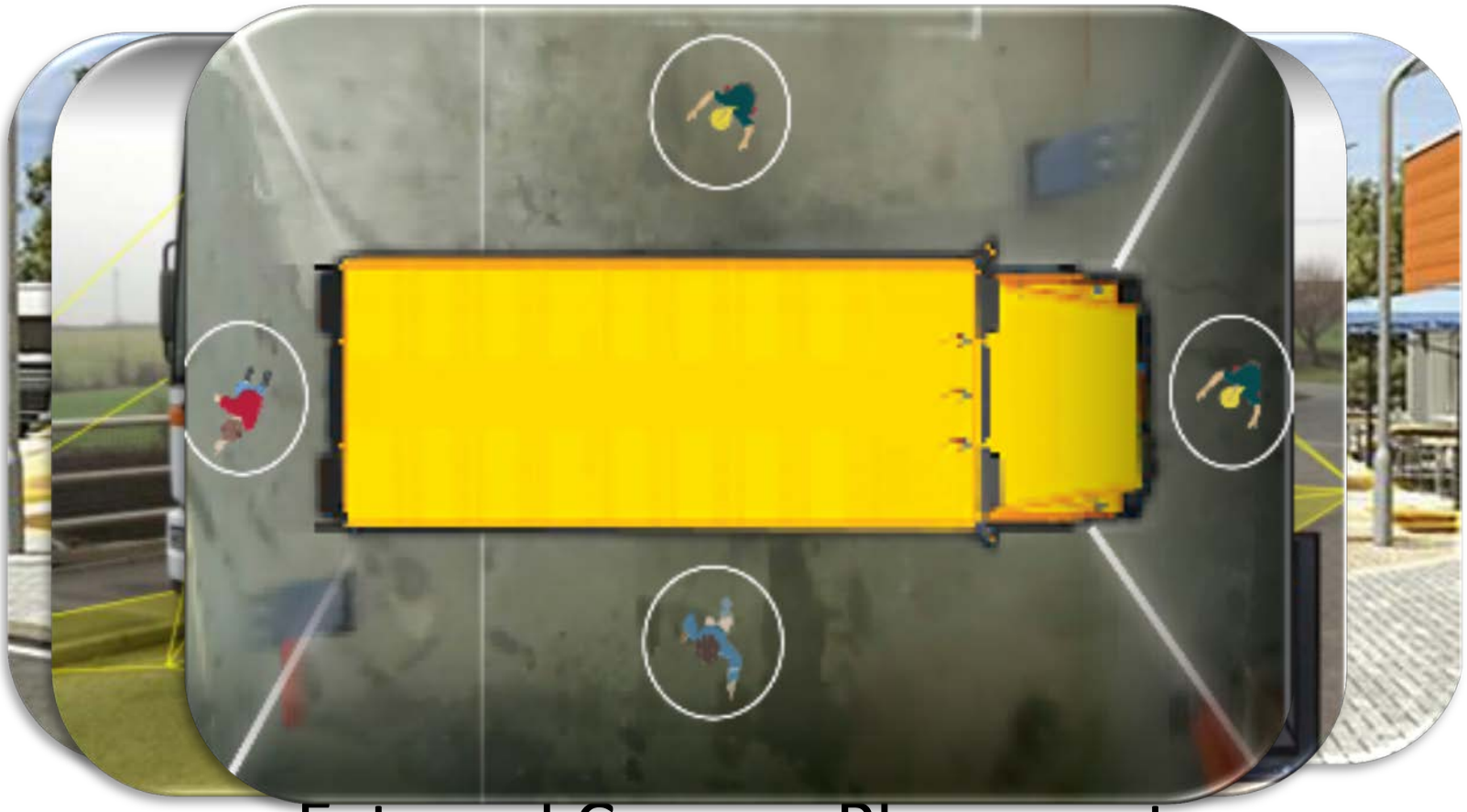
FLEET SAFETY FORUM

AWARENESS THROUGH TECHNOLOGY

360° VIEW EXTERNAL CAMERA SYSTEMS



External Camera Placement

Camera Coverage Around the Vehicle

Average Field of View

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FLEET SAFETY FORUM

AWARENESS THROUGH TECHNOLOGY

Technology can give awareness to the interior and exterior of vehicles in forms of vision tools such as internal and external cameras.

Backup Camera Systems

Interior Cameras

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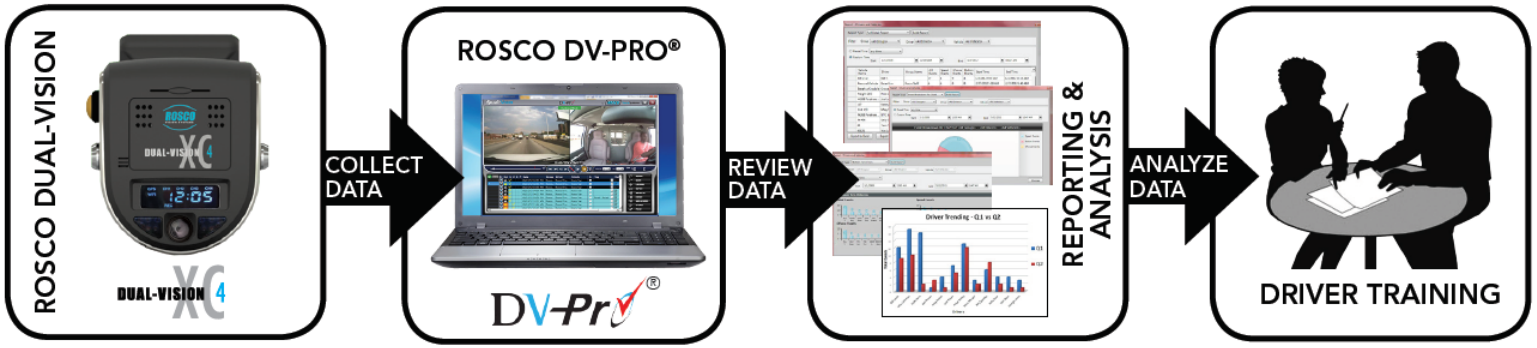
FLEET SAFETY FORUM

AWARENESS THROUGH TECHNOLOGY

Interior Recording Cameras

Recording cameras can be used as accident event recorders as well as driver training tools. With collected data and analysis, proper training and safety programs can be implemented.



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AWARENESS THROUGH TECHNOLOGY

Ben Englander
VP Engineering
Rosco Vision Systems

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Vision Zero
November 5 2015

Jon Coleman

Sustainability & Advanced Technologies

More People.....

More Vehicles…..

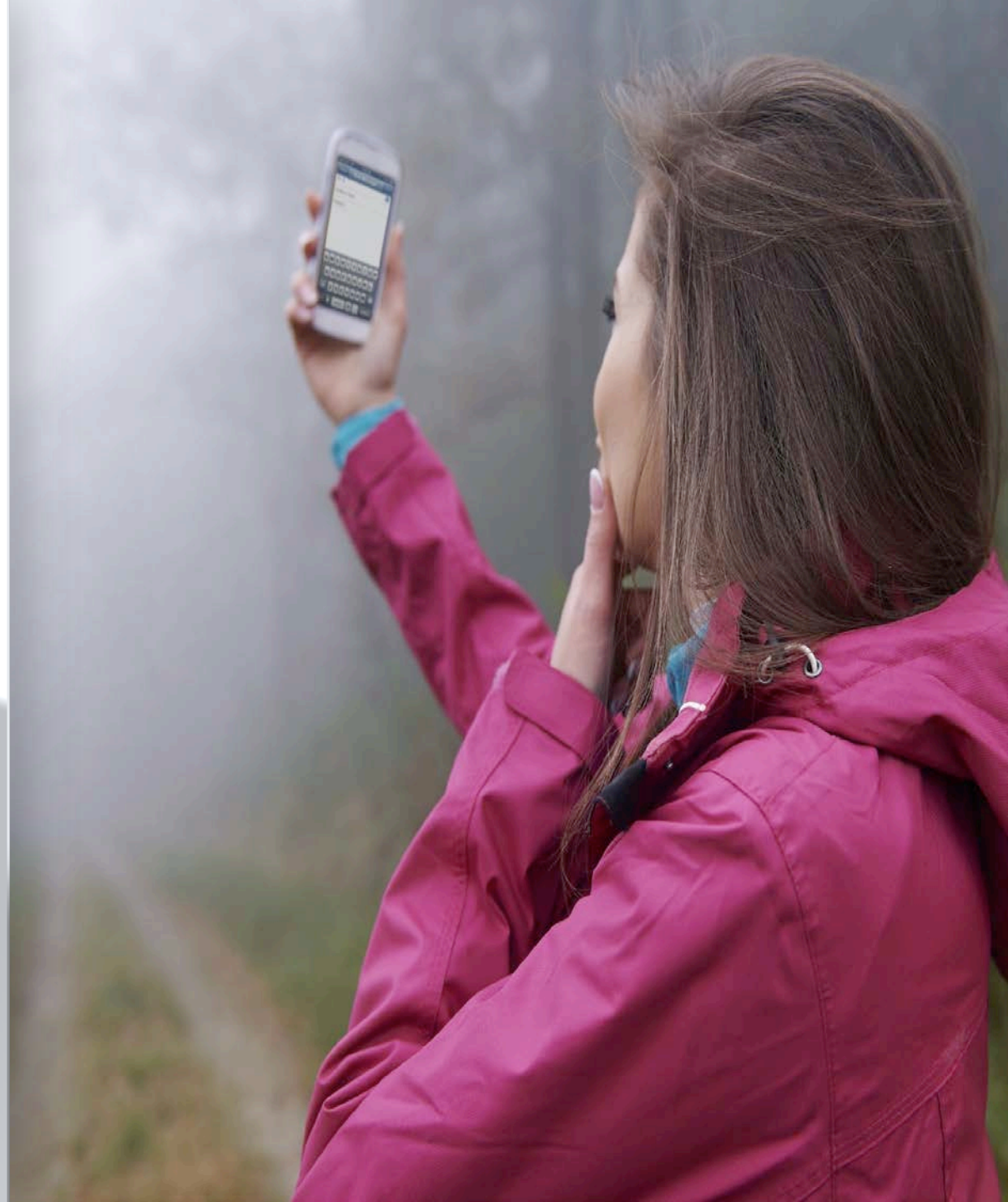
Do we design for the asset owner?

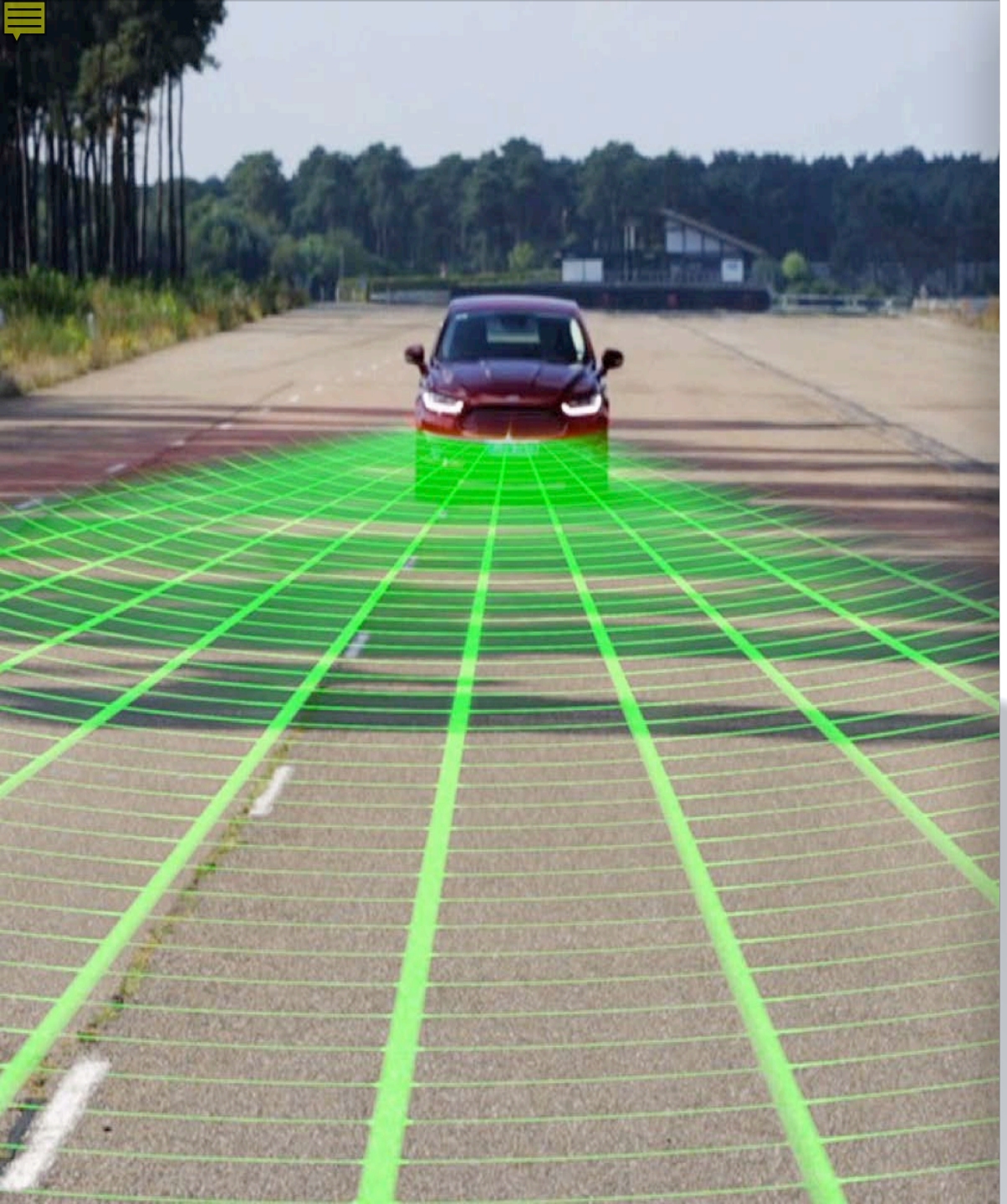
or the operator(s)?

or the occupants?


START ZONES 5 - 9
bikesafe-london.co.uk
St John
Ambulance

Connectivity





Software and Sensor Technology

No One Company, Industry, Or Government Will Be Able To Solve The Future of Transportation Alone

New **Opportunities**

Go Further

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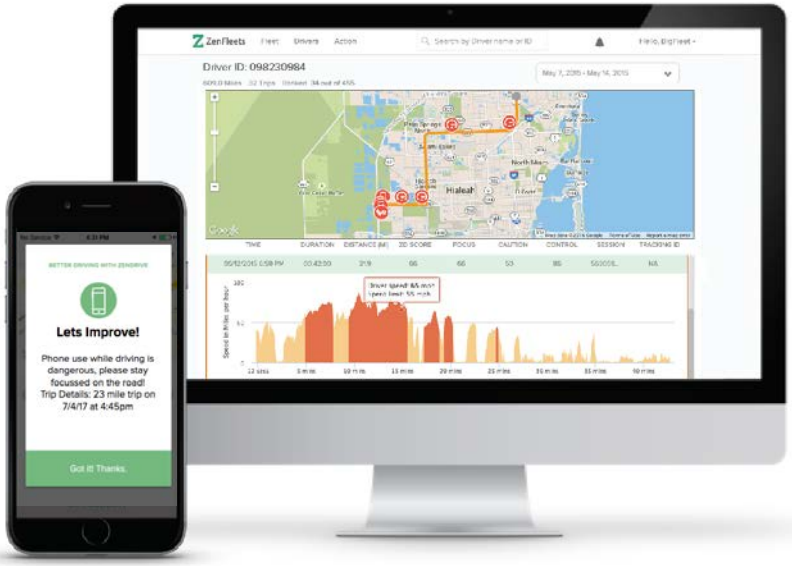
Zendrive

IMPROVING ROADWAY SAFETY THROUGH DRIVER DATA & ANALYTICS

Jonathan Matus CEO & Founder, Zendrive

HOW ZENDRIVE'S TECHNOLOGY WORKS



RAPID ACCELERATION

TURN SPEEDS

HARD BRAKING

SPEEDING

PHONE USE

TIME OF DAY

TRAFFIC PATTERNS

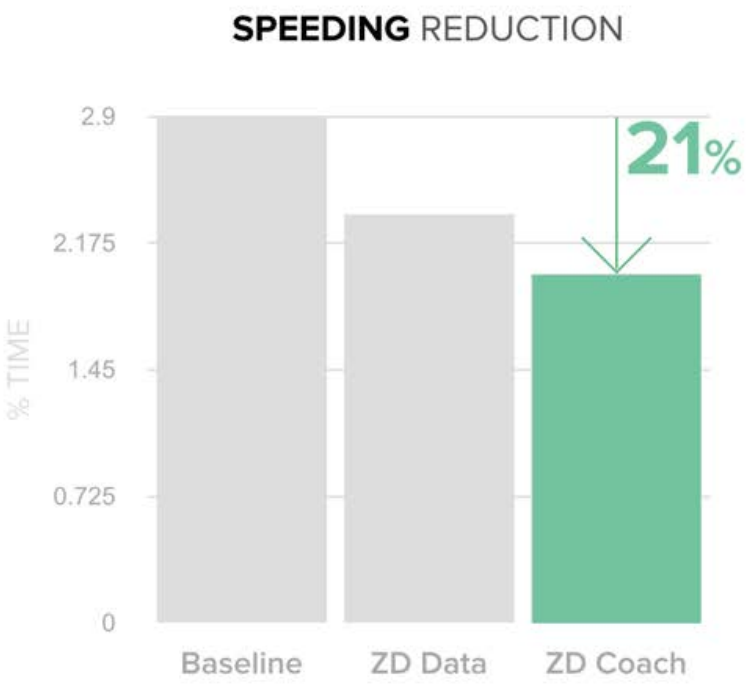
STOP SIGN COMPLIANCE

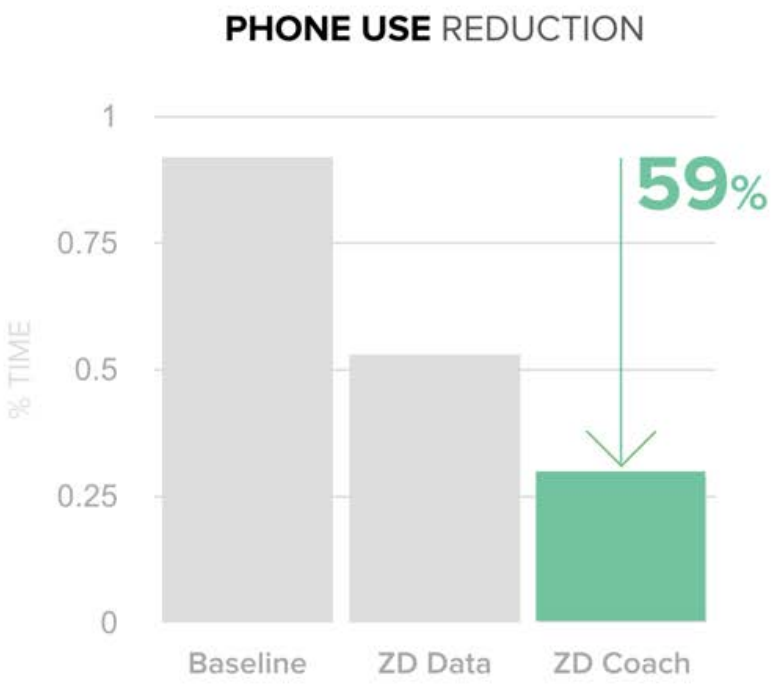
Zendrive uses the sensors on a smartphone – GPS, gyroscope, accelerometer, etc. – to collect data relevant to driving risk

DATA DRIVEN IMPROVEMENT
CLIENT CASE STUDY WITH 120 DRIVERS OVER 4 MONTHS

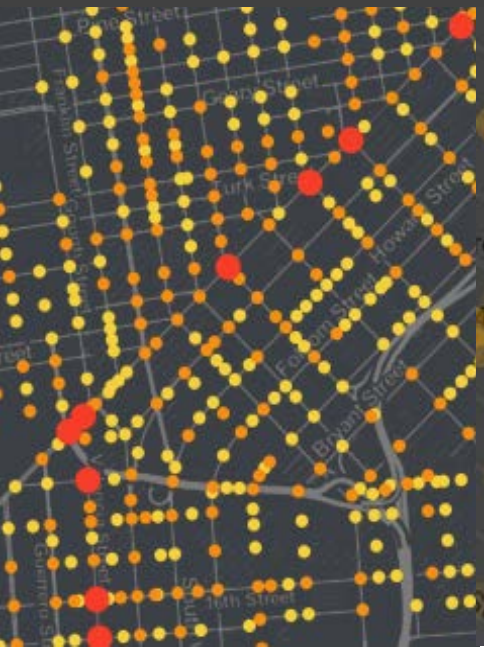
"People who are aware of being observed tend to modify their behavior"

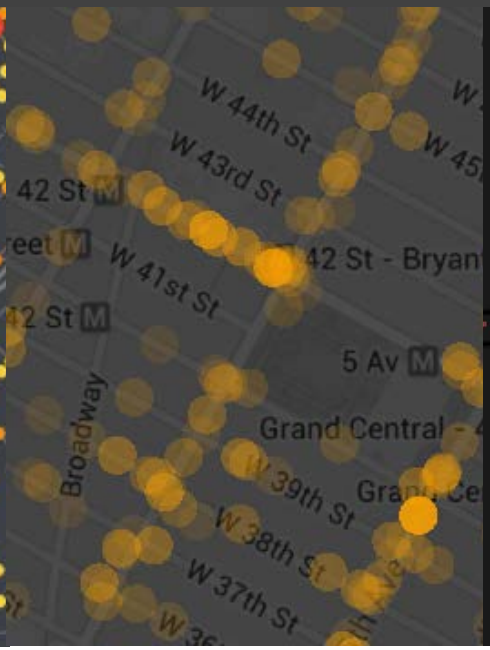
- Study by Dutch Institute for Road Safety Research

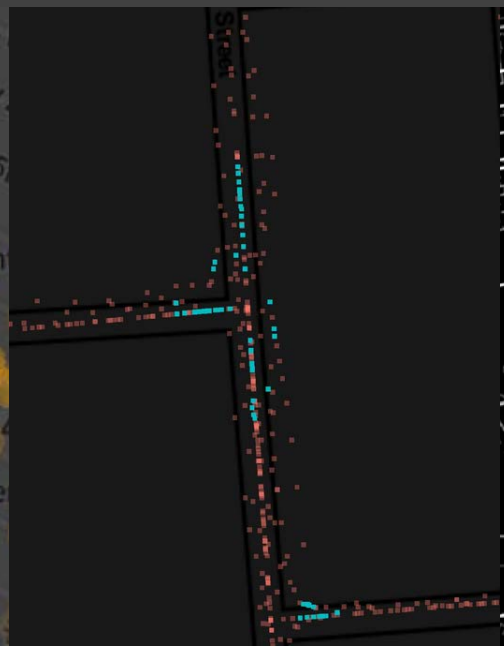




ZENDRIVE DATA LAYERS FOR VISION ZERO







Proactive risk assessment

Custom hotspot watch lists

Intersection and Corridor level Summaries for Project planning

Integration into standard GIS systems

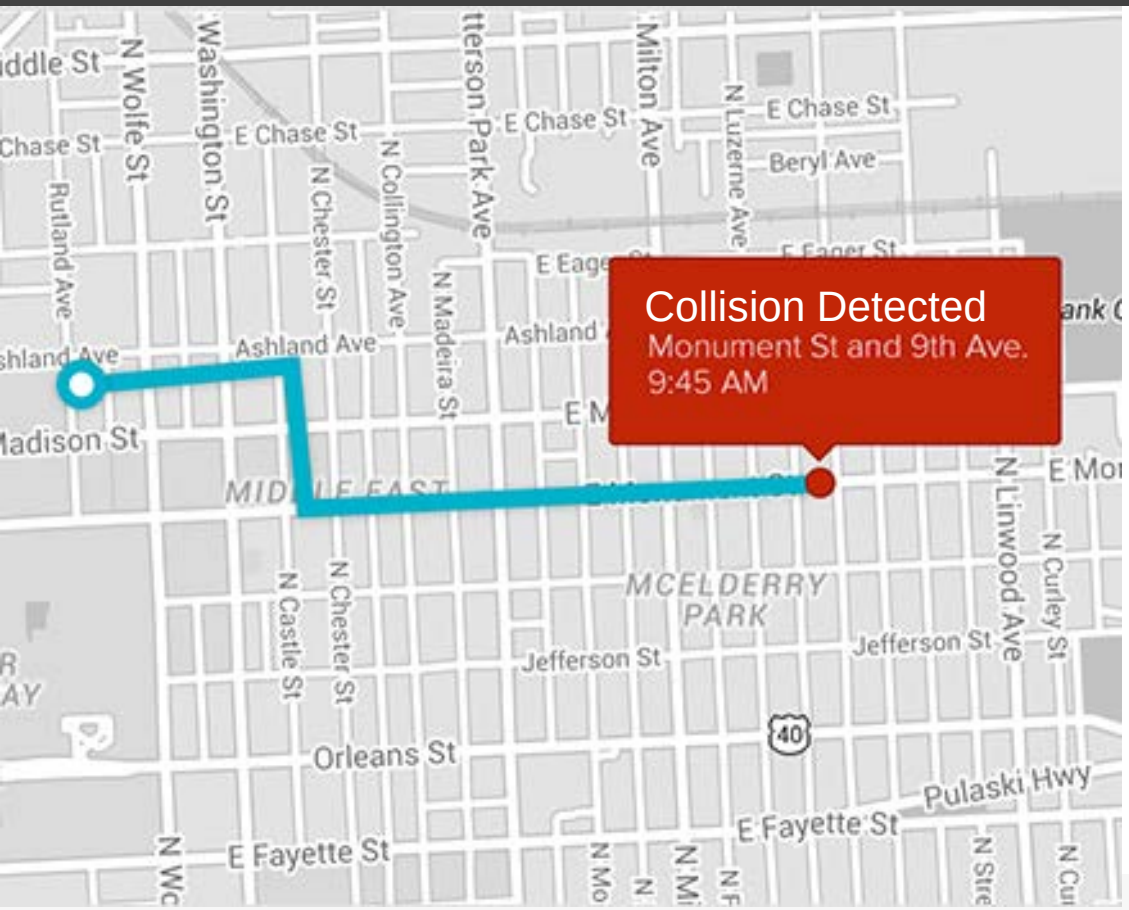
PROACTIVE RISK ASSESSMENT

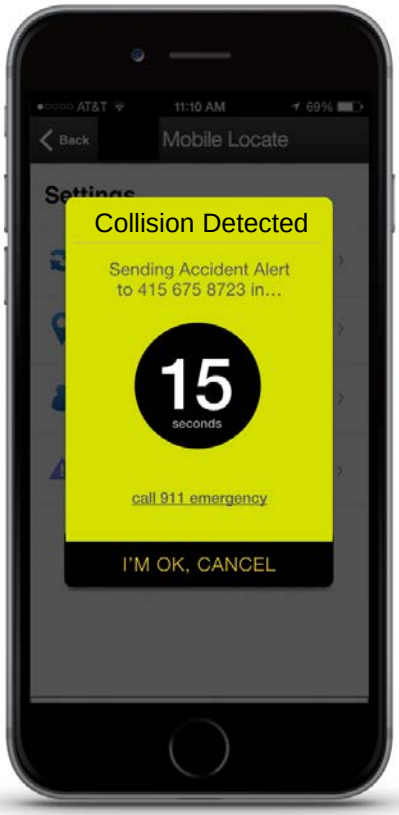
RESEARCH STUDY:

Top 10 Riskiest Cycling Hotspots in San Francisco

Zendrive used its data and analytics platform to identify the intersections that pose the greatest risk for cyclists in San Francisco.

COLLISION DETECTION





Zendrive's Collision Detection Technology – tested with BMW crash test labs – accurately detects collisions over 30 mph. The technology also can be used to notify emergency services, alert family members, dispatch roadside assistance, and collect information to reduce insurance liability.

CONTACT INFO

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Alix Rosenthal	alix@zendrive.com	415 377 6722

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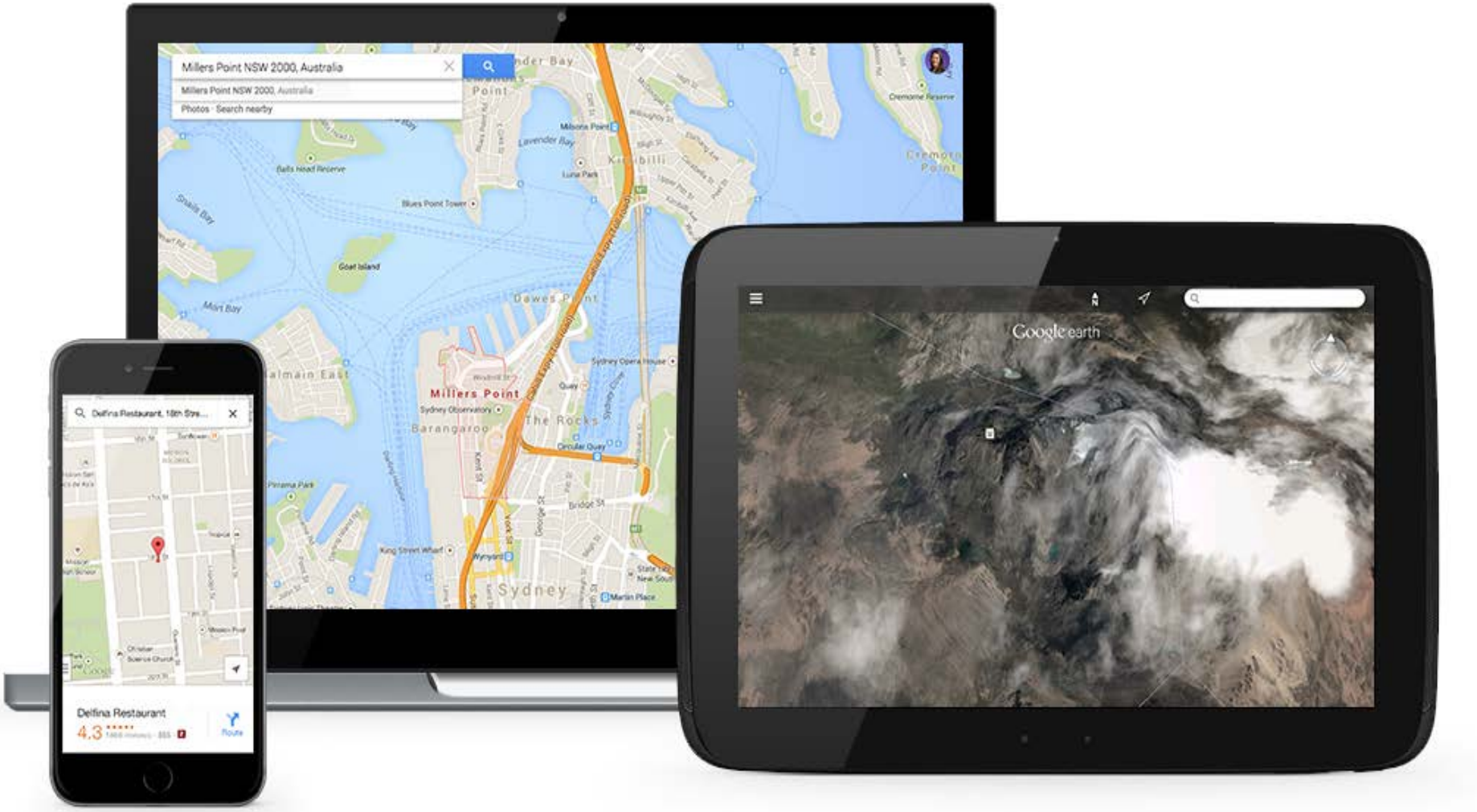
Google Maps

THERMOPYLAE
SCIENCES+TECHNOLOGY

November 2015

Maps are an essential part of our lives



What is Geo-Spatial Analysis?

Use of Maps to represent spatial phenomena or relationships such as flow or proximity.

Geo Spatial Analysis

1. Planning – determining where to locate a store or service facility;

2. Understanding spatial relationships – patterns and locality in crime or incidents;

3. Display jurisdiction, ownership, or assessment – school district's, property and tax or zoning maps;

4. Navigation and route planning – route guidance or planning and scheduling school bus, or postal delivery, routes; and

5. Forecasting or warning – identifying high risk areas that have a tendency for incident


Deliverables

Case Study: Tennessee Emergency Management Agency

Problem:

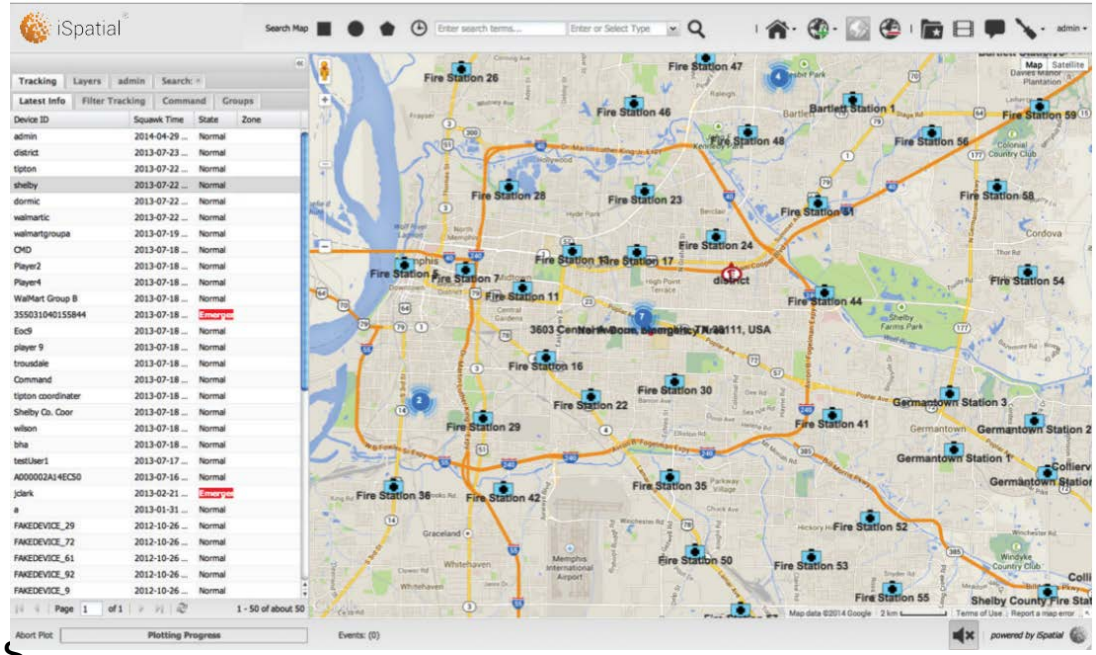
Emergency Response Time and Decision Making needed improvement

GOAL:

Reduce overall decision making time as well as increase effectiveness of emergency response

SOLUTION:

Adding centralized Common Operating Picture increased the effectiveness of dispatch as well as statistical decrease in response time per emergency as well as more effective utilization rates of in field assets.



Case Study: Federal Railway Administration

Problem:

Increases in fatal traffic accidents across the country. From analysis, accidents from railroad crossings made a 9% increase over last year.

GOAL:

Reduce overall risk of drivers.

SOLUTION:

Increase alerting, both audio and visual to turn by turn navigation to notify drivers of upcoming high risk areas.

Summary

- **Reactive - Past -**
  - Respond to incidents that already happened

- **Proactive - Present -**
  - Actively seeks identification of hazardous conditions through understanding of organizations processes

- **Predictive - Future -**
  - Analyzes system’s process and environment to identify potential/future Problems

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