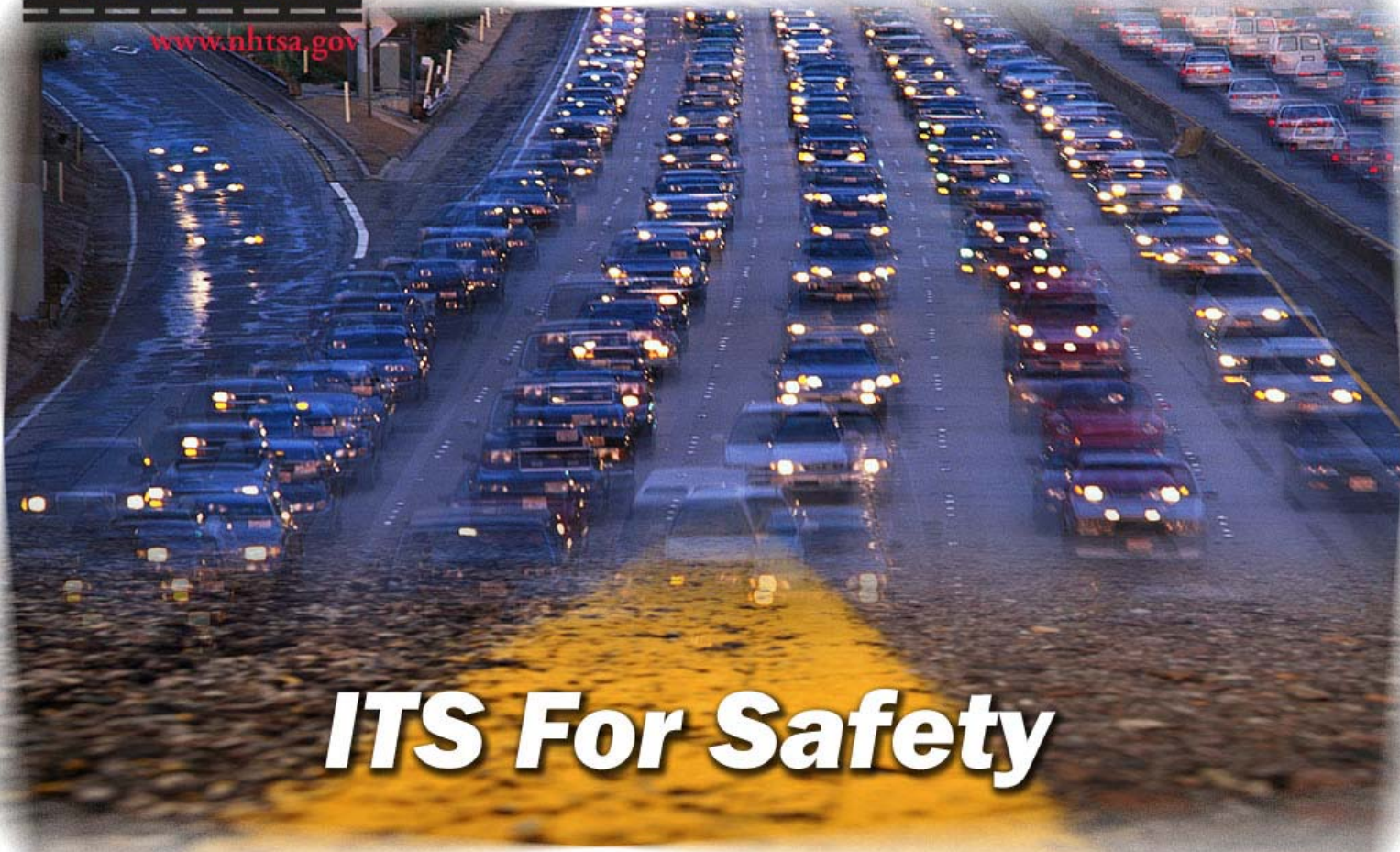




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National Highway Traffic Safety
Administration

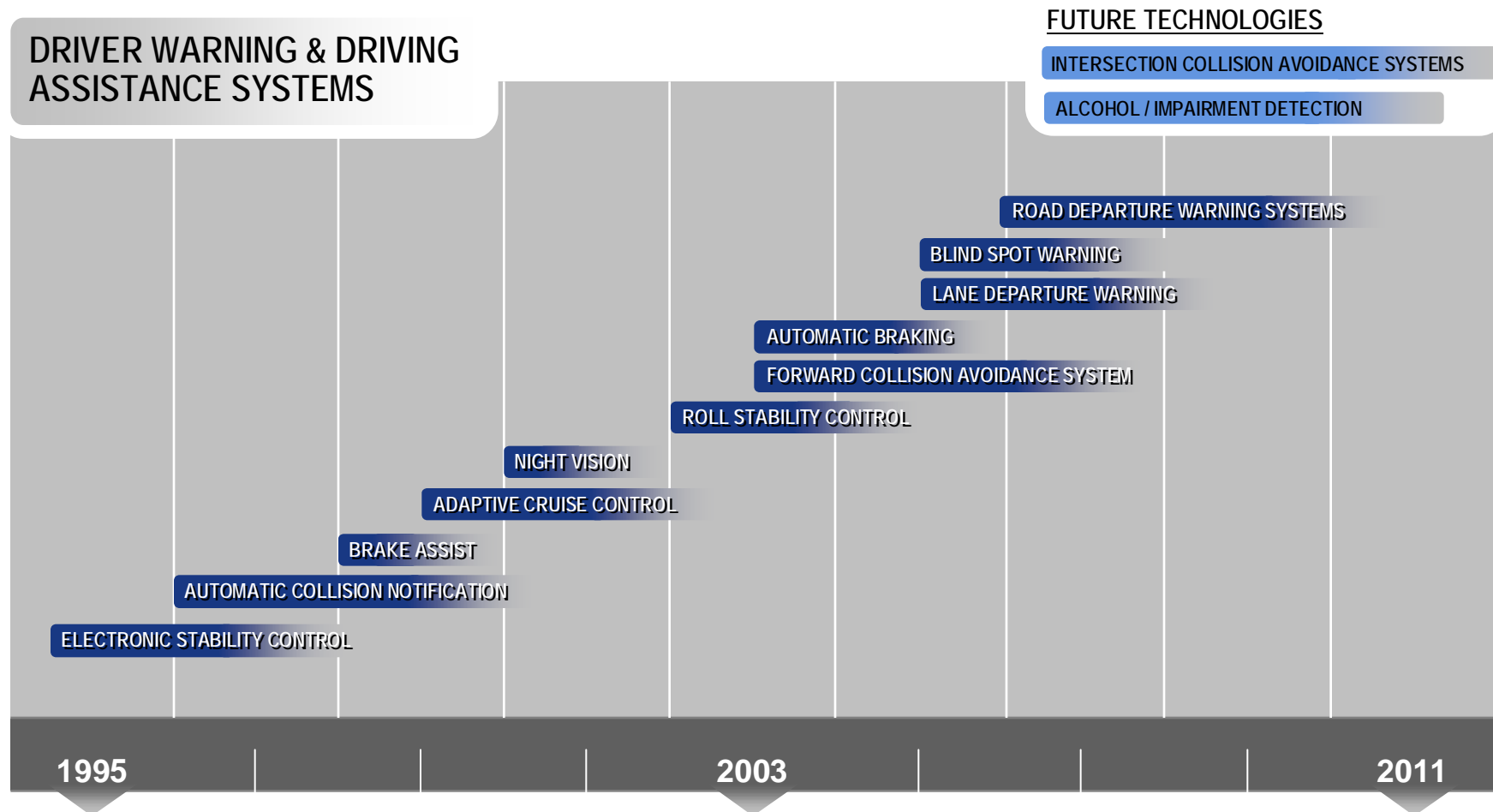


ITS For Safety

Ray Resendes

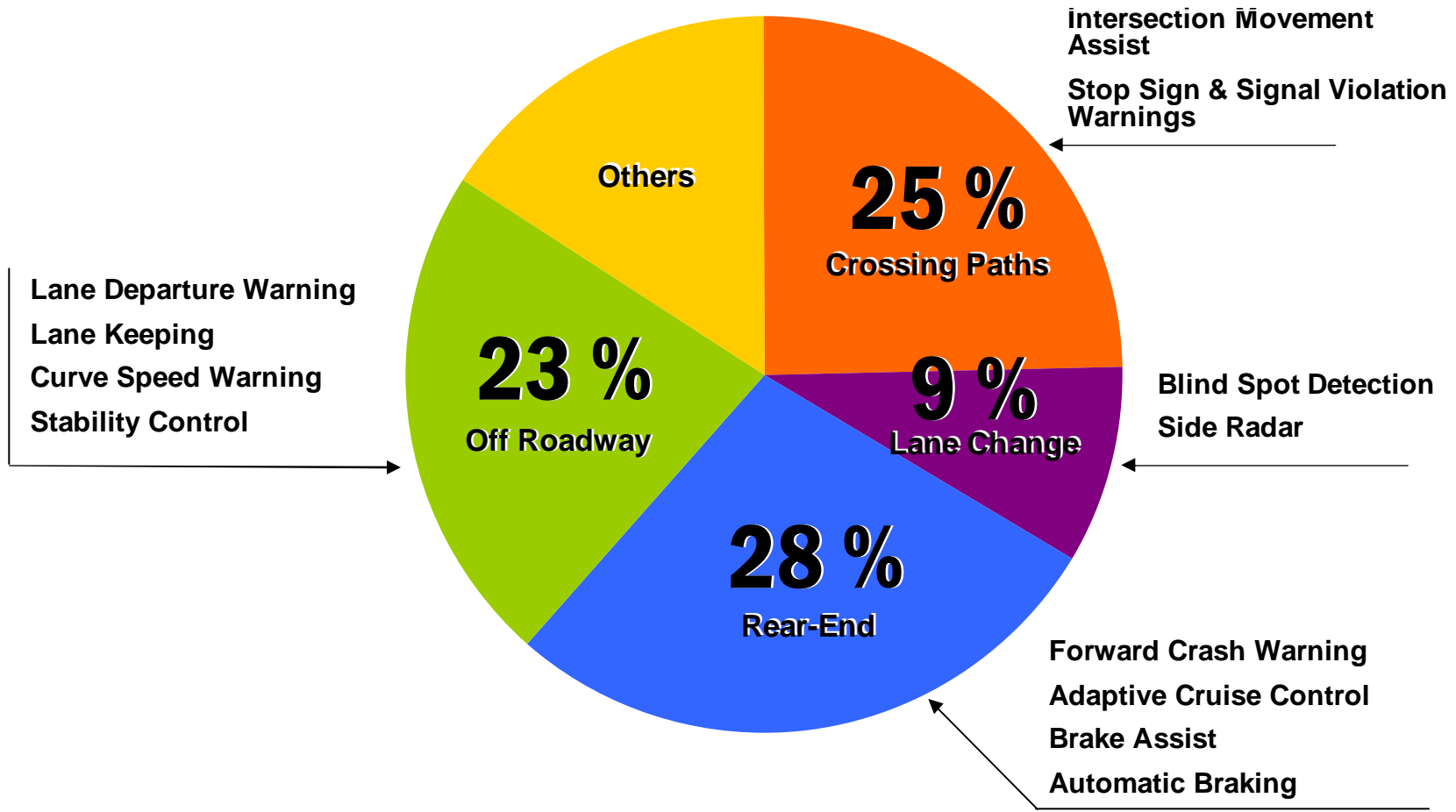
Intelligent Technologies Research Division

Automotive Technologies Timeline



Crashes of all Severities

2005 GES



NHTSA's Role

- **Continue to encourage the development and integration of advanced technologies through ITS**
- **Evaluate technology's effectiveness**
- **Help ensure minimum performance**
- **Educate consumers**
- **Encourage the market (e.g. NCAP) where appropriate**
- **Regulate (e.g. ESC) where appropriate**

Intelligent Technology Research

**Problem
Definition
&
Countermeasure
Identification**

**Performance
Specification
&
System
Development**

**Benefits
Assessment**

**Deployment
Support**

Driver Distraction and HMI Metrics

Vehicle Communications

IVBSS

ACAT

E911

NCAP

New Car Assessment Program - NCAP

- Provide consumers with a measure of the relative safety potential of passenger vehicles
- Began with a frontal program in 1979
- Announced Update in July 2008
- Advanced Technologies
 - Electronic Stability Control
 - Forward Collision Warning
 - Lane Departure Warning

★★★★★ Stars on Cars ★★★★★

The image shows a detailed information page for a car, likely from a website like NHTSA's. It features a prominent 'Stars on Cars' logo at the top, indicating a five-star rating. The page is divided into several sections:

- MAKE and MODEL:** Identifies the vehicle's make and model.
- SAFETY AND EQUIPMENT:** Lists various safety features and equipment, such as air bags, ABS, and stability control.
- PERFORMANCE AND ANNOTATIONS:** Provides information on engine type, transmission, and other performance-related details.
- GOVERNMENT SAFETY RATINGS:** Displays the star ratings for different crash tests: Frontal (5 stars), Driver (5 stars), Passenger (5 stars), Side (3 stars), Front seat (3 stars), Rear seat (Not Rated), and Rollover (5 stars).
- STANDARD VEHICLE PRICE:** Lists the price for different vehicle configurations, including base price and optional packages.
- MPG (Miles Per Gallon):** Shows city, highway, and combined fuel economy ratings.
- FOR VEHICLES IN THE CARP (U.S.):** Provides information on major sources of foreign parts content for the vehicle.
- SMOG EMISSIONS INFORMATION:** Details the vehicle's emissions and fuel economy.

Advanced Technology for NCAP – Phase 2 Concept

Task 1

Identify next generation technologies

- OEMs/suppliers
- NHTSA programs

Task 2

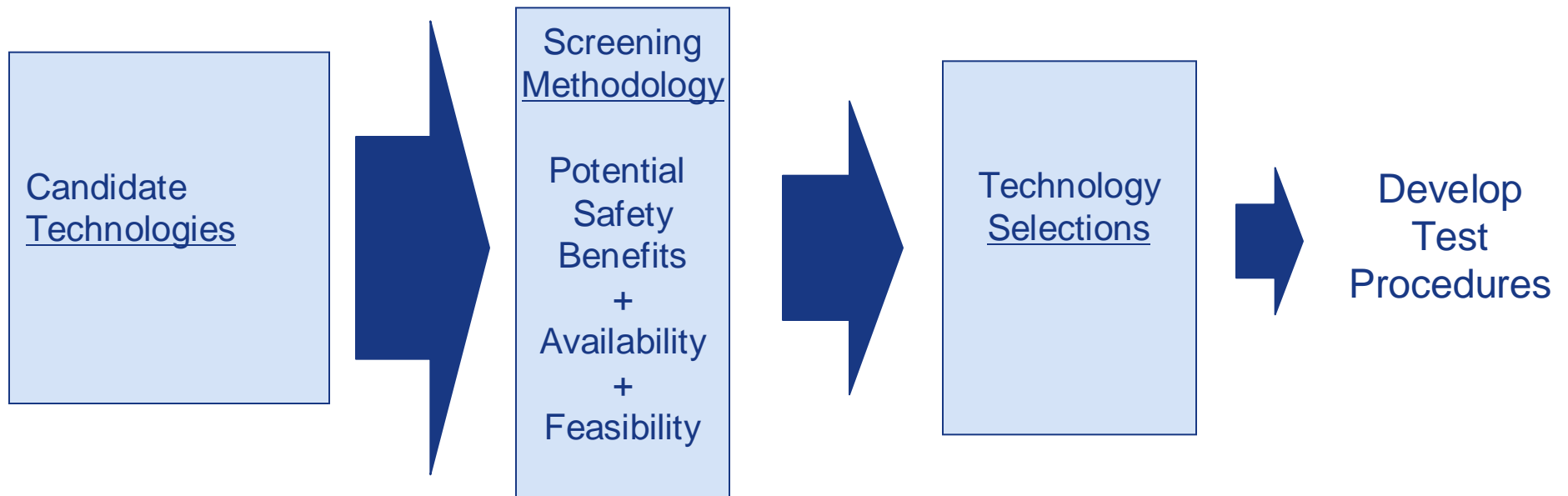
Identify technologies with highest benefit potential

Task 3

Recommend Priority Technologies

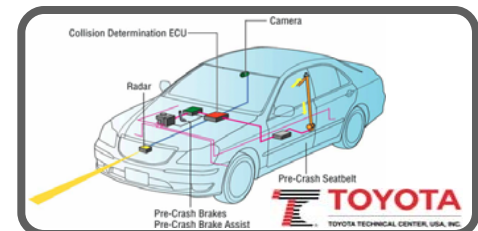
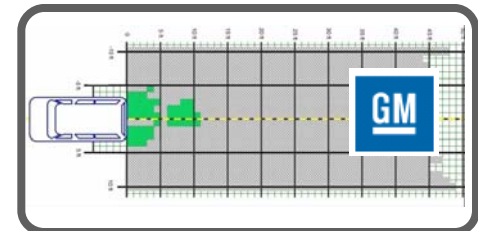
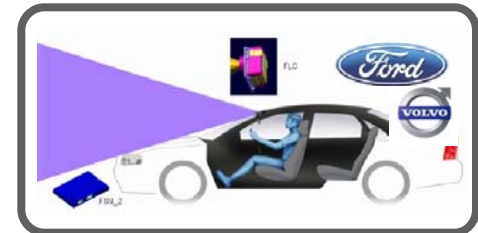
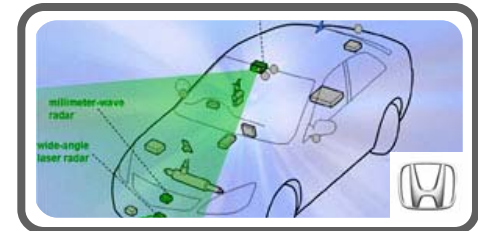
Tasks 4/5

Agency decision point – if go, develop objective test procedures for each selection



Advanced Collision Avoidance Technologies (ACAT)

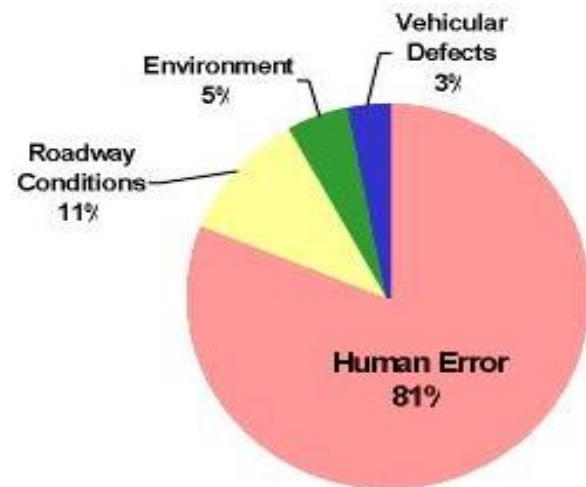
- **Purpose: Estimate the benefits of new and emerging safety technologies**
- **This information may be used by NHTSA to help consumers understand:**
 - What safety technologies are available?
 - In what situations do they work?
 - How effective are they?
- **Status**
 - Objective Tests Developed
 - Preliminary Safety Benefits Tools Completed
 - Completing Testing and Benefits Estimates
 - Initiated Second Phase
 - Add New Technologies
 - Integrate Benefits Methodologies



Human Factors Research



- **Human Machine Interface (HMI) is critical to ensure:**
 - Effective crash prevention and mitigation
 - No unintended consequences
 - Increased driver workload
 - Risk compensation
 - Consumer acceptance



Integrated Vehicle-Based Safety Systems

- **Phase 1 Completed**

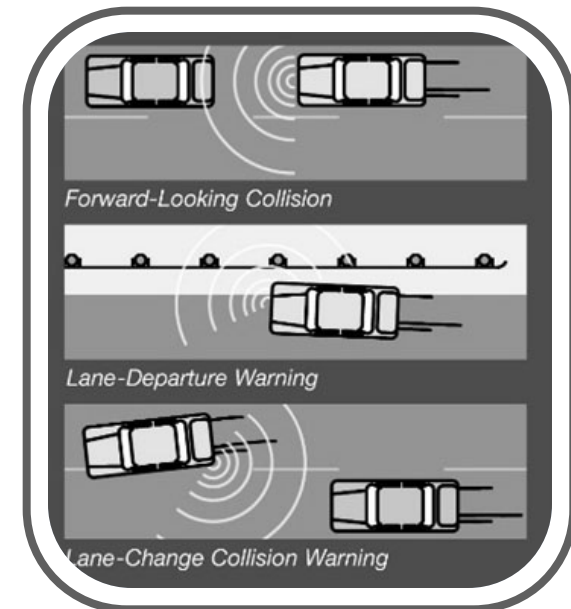
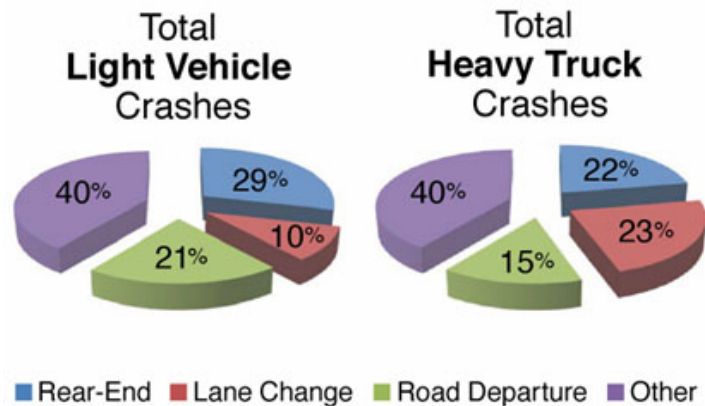
- Developed and validated prototype Light and Heavy Vehicles with Integrated Safety Systems

- **Phase 2 – Underway**

- Building Test Fleet
 - 16 Passenger Cars & 10 Tractors
- On road testing – Completed March 2010
 - Driver Acceptance & Safety Benefits

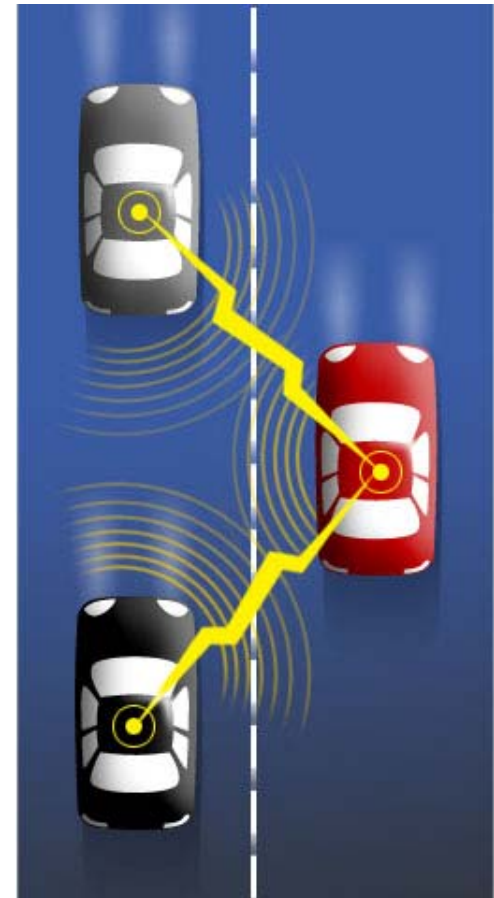


Rear-end, run-off-road, and lane change crash countermeasure systems could prevent over 48% or 1,836,000 target crashes.



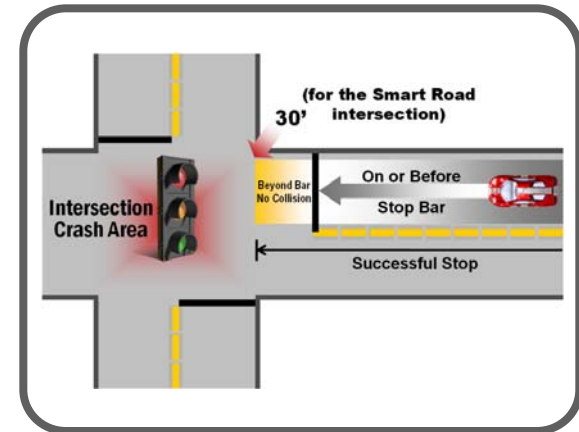
Vehicle to Vehicle Communications

- **Initial Safety Applications**
 - Emergency Electronic Brake Lights
 - Forward Collision Warning
 - Blind Spot Warning
 - Lane Change Warning
 - Do Not Pass/On-Coming Crash Warning
 - Intersection Movement Assist
 - Control Loss Warning
- **Interoperability Issues**
 - Security
 - Standards
 - Governance
- **Benefits Assessment**



Cooperative Intersection Collision Avoidance System (CICAS-V)

- **Stop Sign and Signal Violation Warning System**
- **Phase 1 Completed**
 - Developed and validated prototype
 - System properly identifies impending violation
 - Delivers timely warning
- **Phase 2 Delayed**
 - VII reorganization



Conclusions

- **Advanced technologies has enormous safety potential**
- **Challenge is to quantify & assess safety benefits**
- **NHTSA is encouraging deployment of effective safety technologies**
- **Need to guard against unintended consequences, such as driver distraction and risk compensation**
- **Consumers acceptance is critical to widespread deployment**