NHTSA

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U.S. Department of Transportation

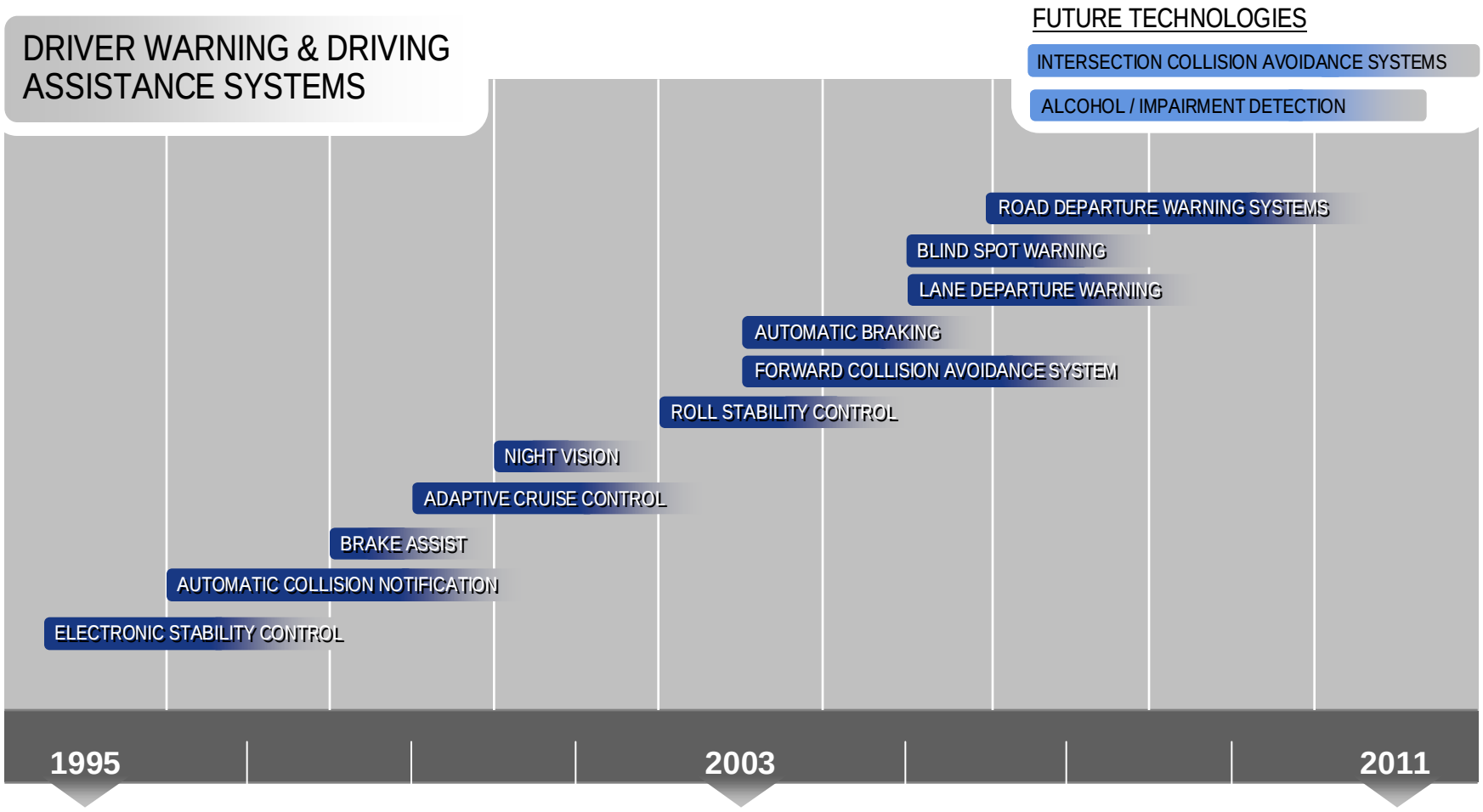
National Highway Traffic Safety Administration

ITS For Safety

Ray Resendes

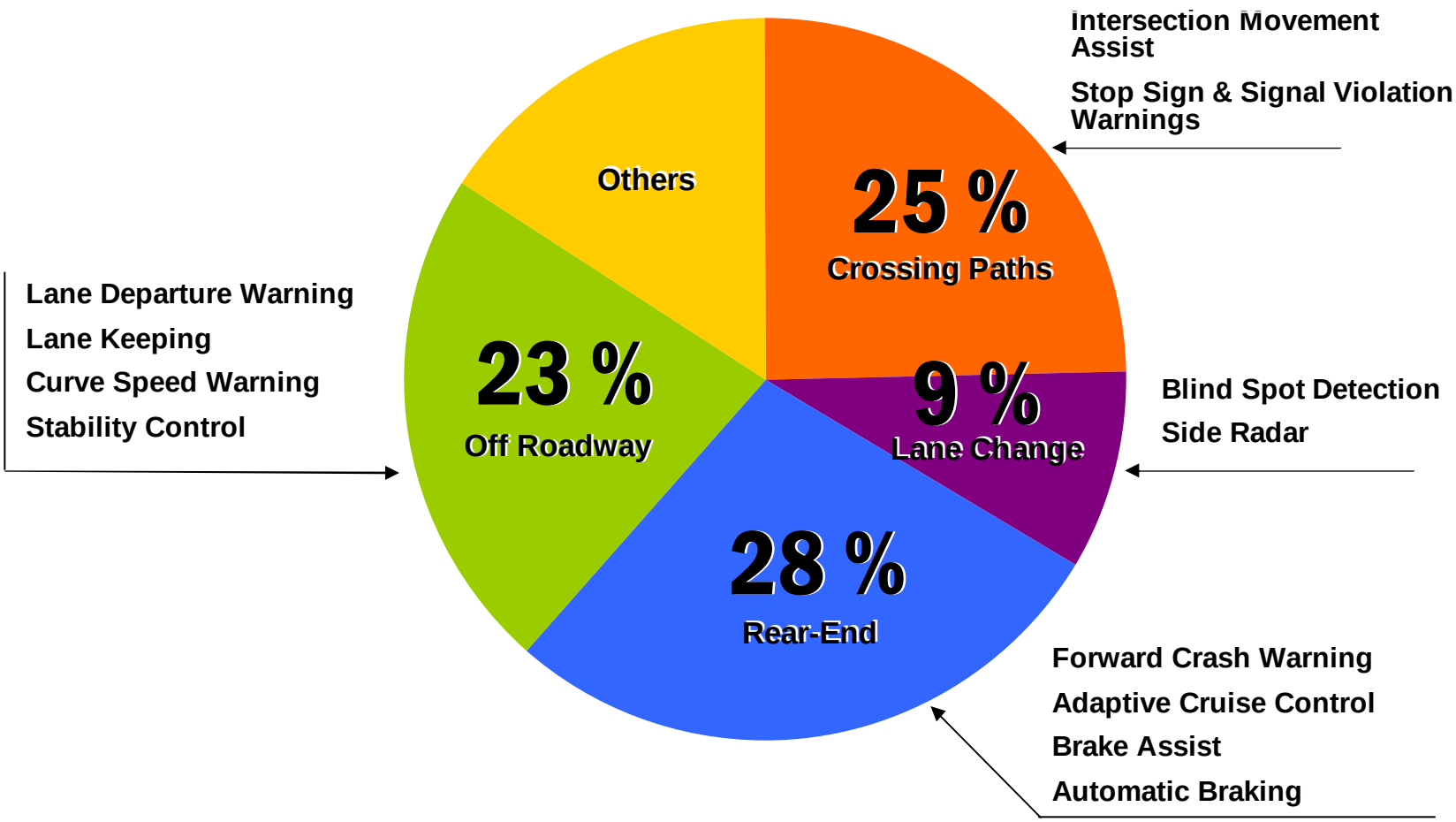
Intelligent Technologies Research Division

Automotive Technologies Timeline



Crashes of all Severities

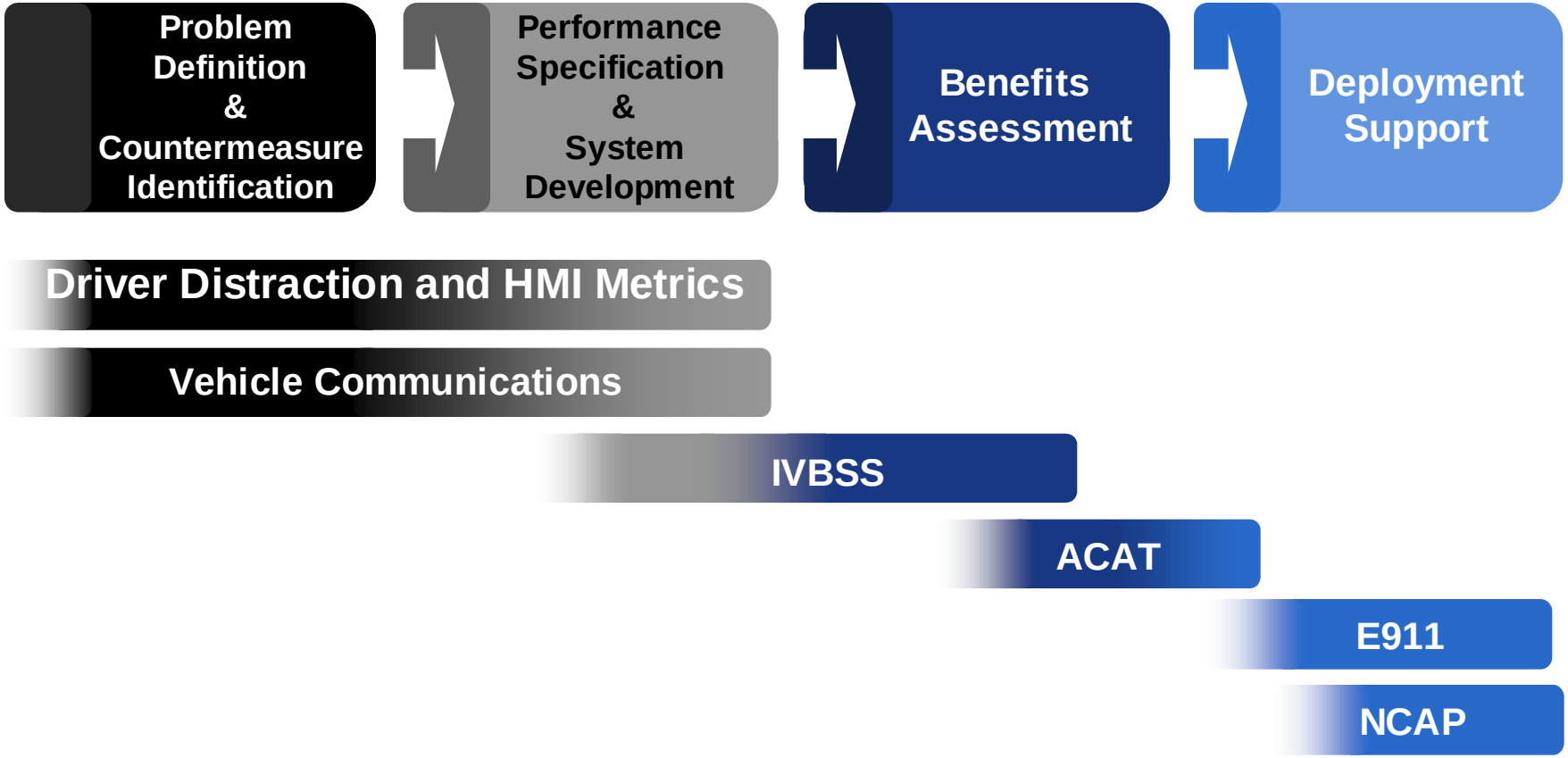
2005 GES



NHTSA's Role

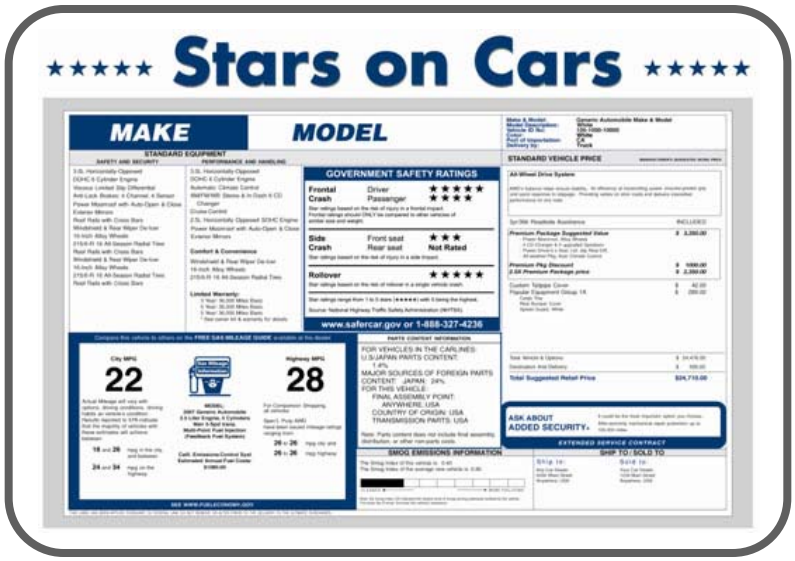
- **Continue to encourage the development and integration of advanced technologies through ITS**
- **Evaluate technology's effectiveness**
- **Help ensure minimum performance**
- **Educate consumers**
- **Encourage the market (e.g. NCAP) where appropriate**
- **Regulate (e.g. ESC) where appropriate**

Intelligent Technology Research



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



Advanced Technology for NCAP – Phase 2 Concept

Task 1

Identify next generation technologies

-OEMs/suppliers
-NHTSA programs

Task 2

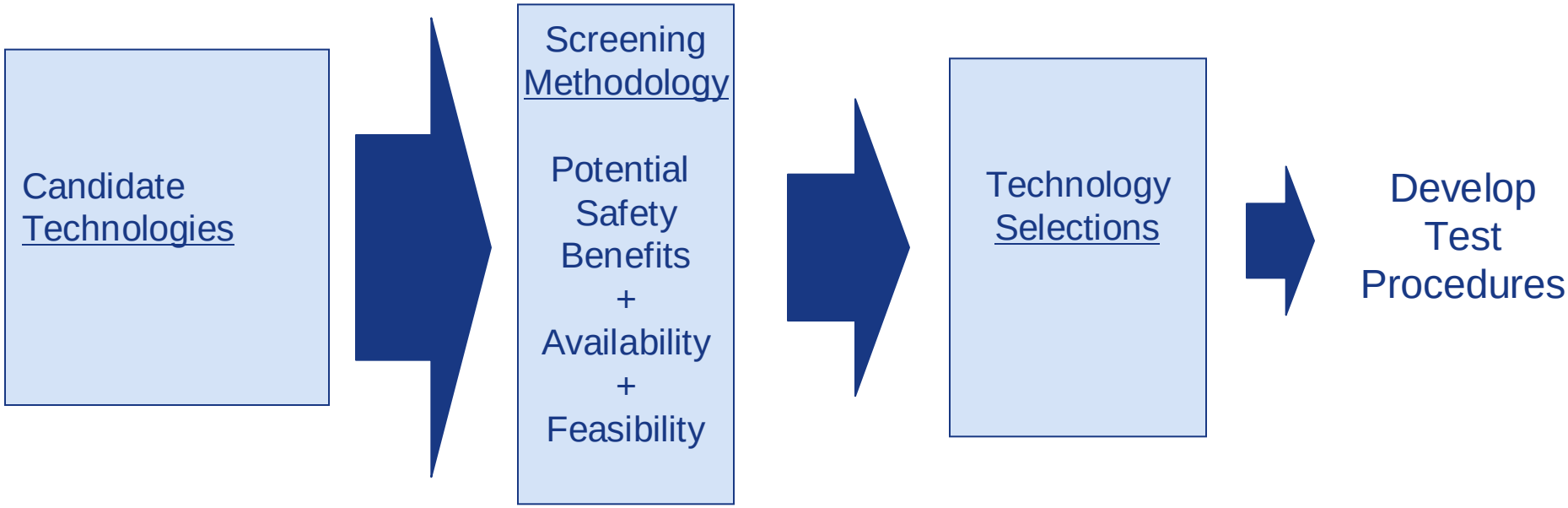
Identify technologies with highest benefit potential

Task 3

Recommend Priority Technologies

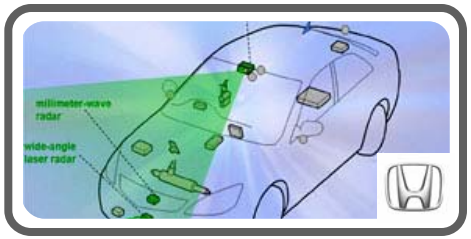
Tasks 4/5

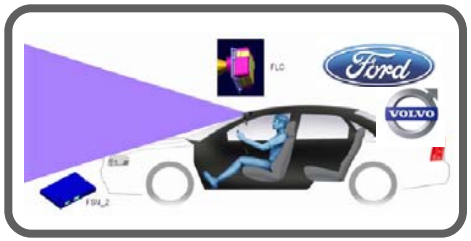
Agency decision point – if go, develop objective test procedures for each selection

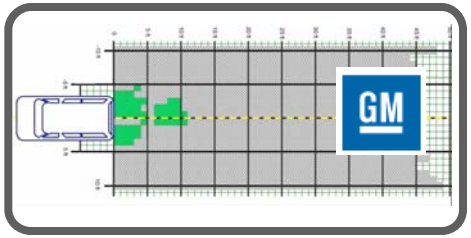


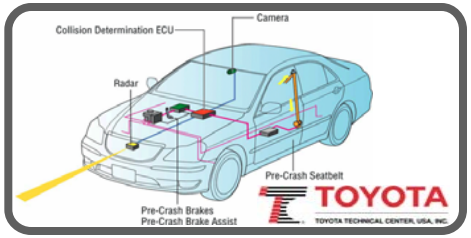
Advanced Collision Avoidance Technologies (ACAT)

- **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



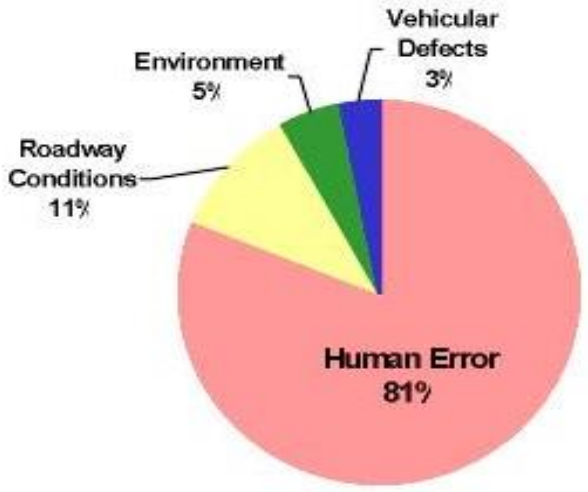






Human Factors Research

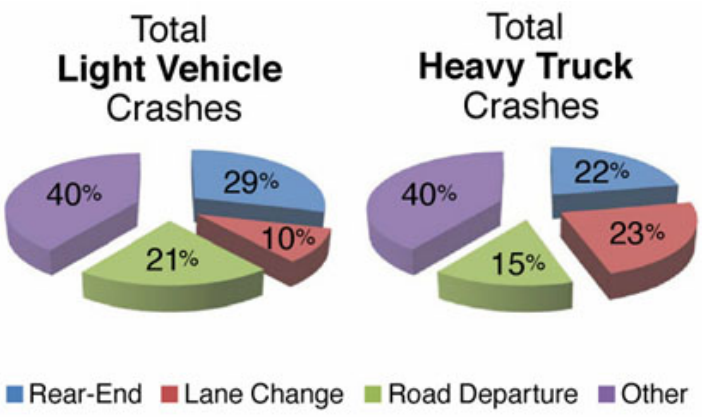
- **Human Machine Interface (HMI) is critical to ensure:**
  - Effective crash prevention and mitigation
  - No unintended consequences
    - Increased driver workload
    - Risk compensation
  - Consumer acceptance



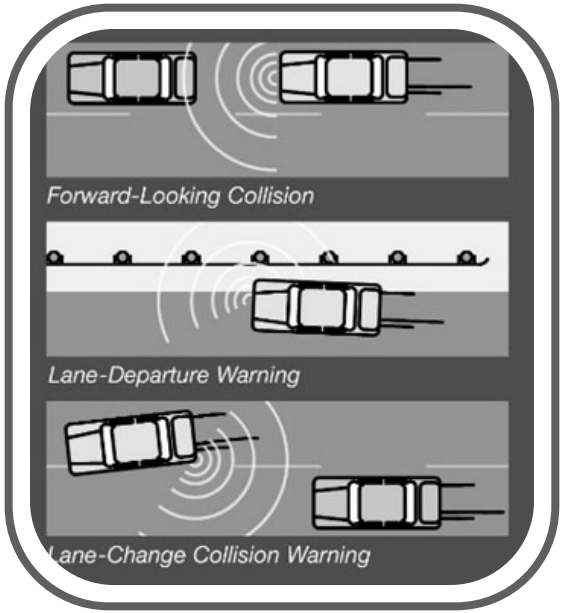
Source: Syntheses Report: Examination of Target Vehicular Crashes and Potential ITS Countermeasures, Wassim Najm, et al, DOT HS 808 263

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

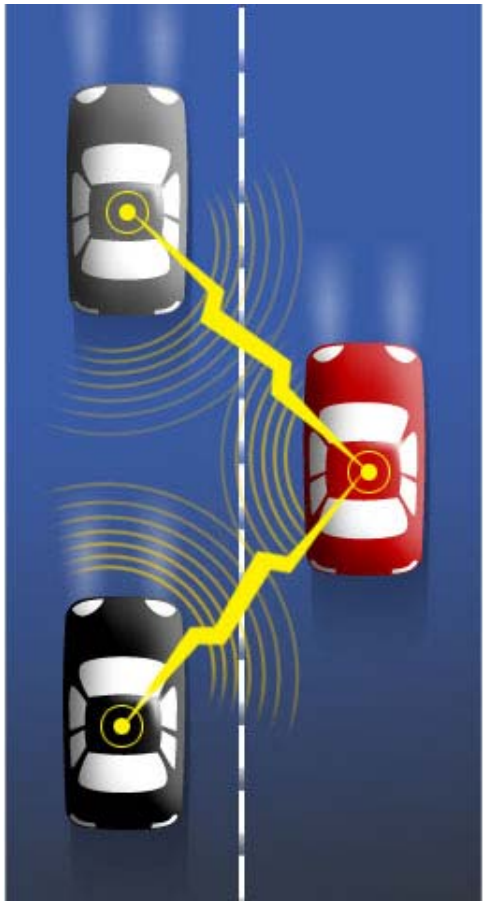


Rear-end, run-off-road, and lane change crash countermeasure systems could prevent over 48% or 1,836,000 target crashes.



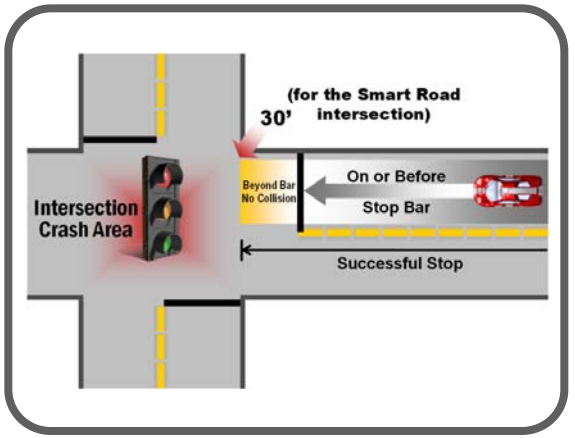
Vehicle to Vehicle Communications

- **Initial Safety Applications**
  - Emergency Electronic Brake Lights
  - Forward Collision Warning
  - Blind Spot Warning
  - Lane Change Warming
  - 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**