

The Domain of Truck & Bus Safety Research

# Vehicle Design & Technology

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# Vehicle Design & Technology

- Technology Development
  - Avoiding the Collision
  - Surviving the Collision
  - Modifying Driver Behavior
- Technology Deployment
  - Market Picture
  - Economics
  - Legal and Regulatory Issues

# Avoiding the Collision

## Near-term technologies

- Advanced braking systems
- Stability control
- Improved lighting and visibility
- Collision avoidance warning systems
- Driver alertness monitoring
- Vehicle condition monitoring

# Avoiding the Collision

## Futuristic technologies

- Full or partial automatic vehicle control (autonomous)
- Vehicle-infrastructure communications
- Vehicle-vehicle communications and collision avoidance

# Surviving the Collision

- Heavy vehicle occupant protection
- Protection for occupants of lighter vehicles
- Protection of pedestrians

# Modifying Driver Behavior

- Voluntary driver feedback
- Driver performance monitoring
- Unintended behavioral changes
- Driver acceptance of new technologies

# Deployment

“It’s not about the technology. It’s about how to get it on trucks.”

# Market Picture

- Commercial vehicles are very diverse
- Vehicle design is user-driven
- Drivers and owners are usually not the same
- Safety needs are different for different market segments

# Economics

- High exposure/high cost of crashes increases benefits
- High vehicle cost lowers percentage cost of safety equipment
- Low sales volumes raise per-unit costs
- Life-cycle costs more important than initial purchase price
- Bearers of costs different from recipients of benefits

# Legal and Regulatory Issues

- Regulation may be only way to achieve significant deployment
- Individual cost vs. public benefit
- Individual privacy vs. public benefit
- Fear of tort litigation