Human Factors for IntelliDrive℠

Stephanie Binder
National Highway Traffic Safety Administration

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What is human factors?

- The application of knowledge about human abilities, limitations, and other characteristics to the design of equipment, tasks, and jobs
  - Human-centered design
  - Robust set of evaluation methods and design heuristics
- For IntelliDrive, it will focus on distraction

What is distraction?

- Distraction is anything that take away visual, manual, or cognitive resources from the driving task
- Main components:
  - Resource demand
  - Exposure
  - Multitasking strategies
- These efforts will not include other types of inattention

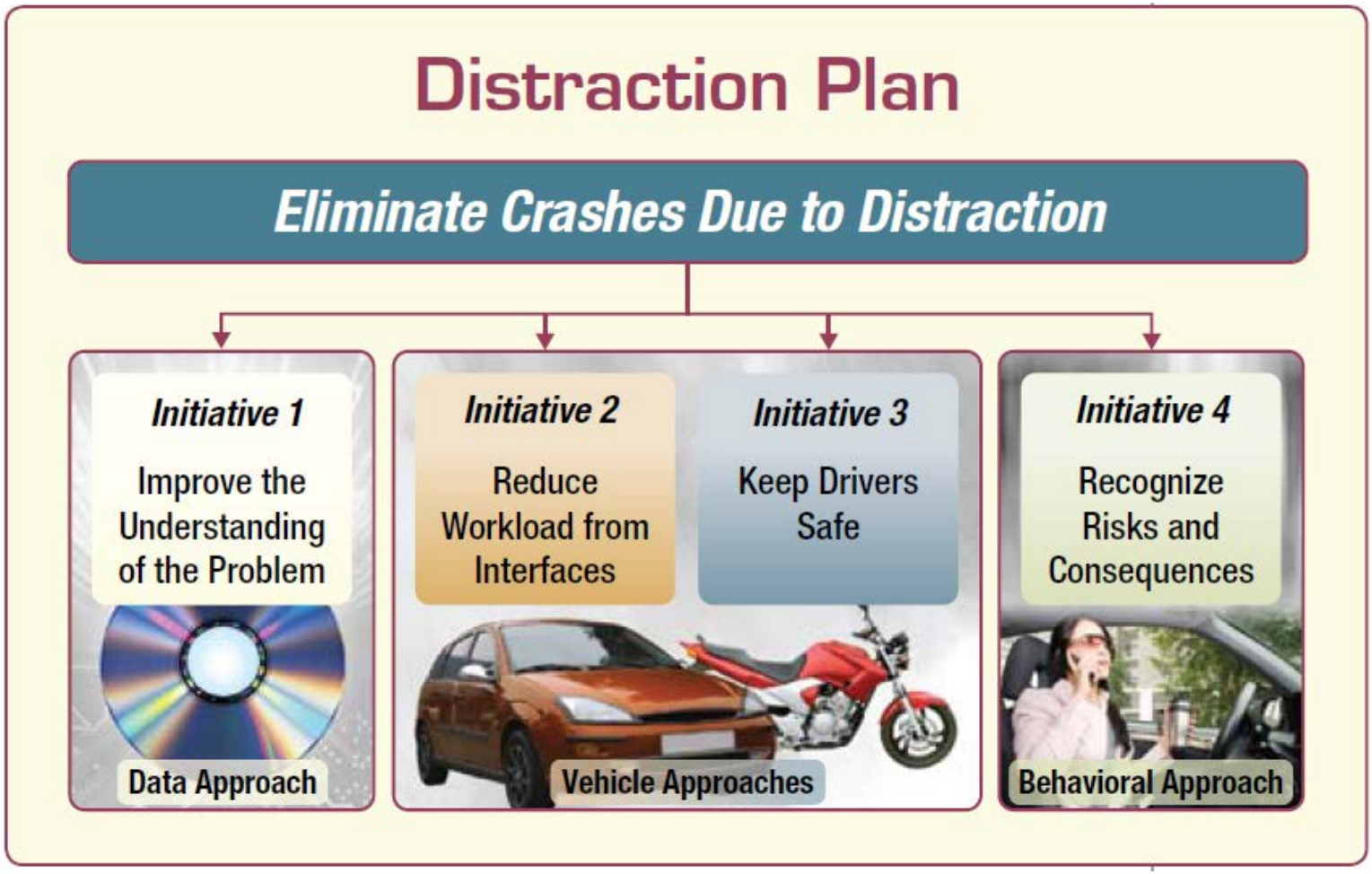
More on distraction

- NHTSA analyses showed that 5870 people we killed and another 515,000 were injured in distraction-related crashes in 2008.

Some things that distract:

Type of Secondary Task	Odds Ratio
Reaching for a moving object	**8.82**
Insect in vehicle	6.37
Looking at external object	**3.70**
Reading	**3.38**
Applying makeup	**3.13**
Dialing hand-held device	**2.79**
Inserting/retrieving CD	2.25
Eating	1.57
Reaching for non-moving object	1.38
Talking/listing to a hand-held device	1.29
Drinking from open container	1.03
Other personal hygiene	0.70
Adjusting the radio	0.50
Passenger in adjacent seat	**0.50**
Passenger in rear seat	0.39
Child in rear seat	0.33

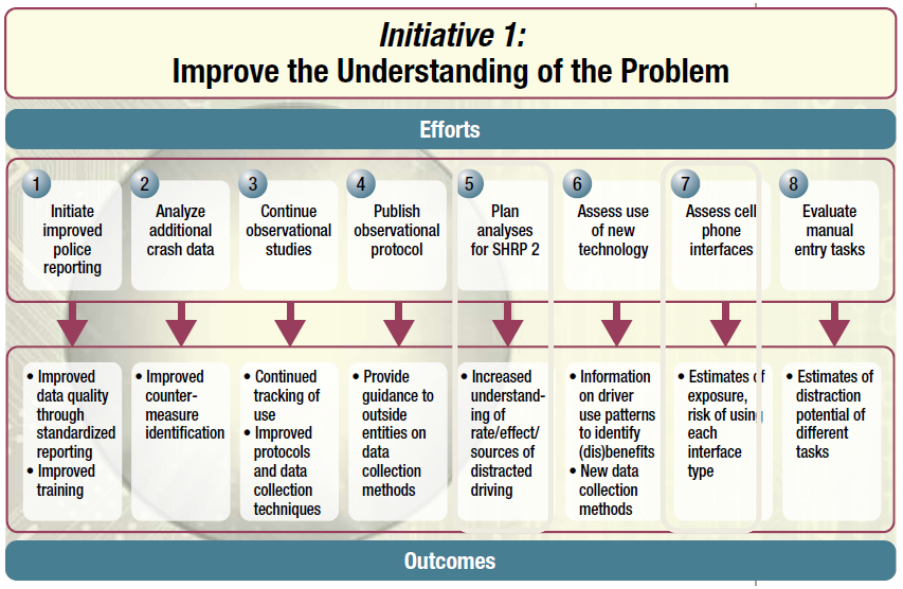
NHTSA Distraction Plan



Improve Understanding

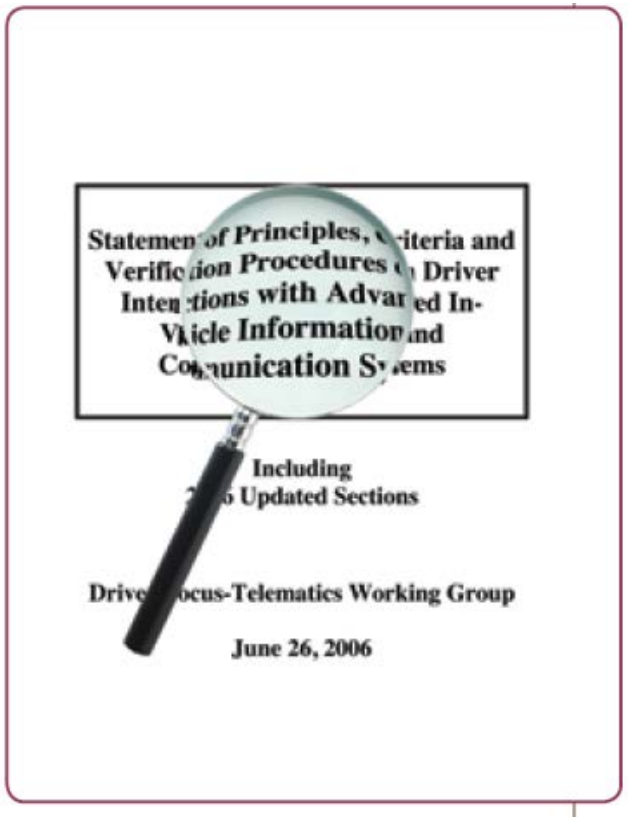
- Assess use of new technology
  - Allows us to keep tabs of capabilities of new technologies
  - Will result in better countermeasures

- Evaluate manual entry tasks
  - Provides more information of the impact on different manual entry tasks



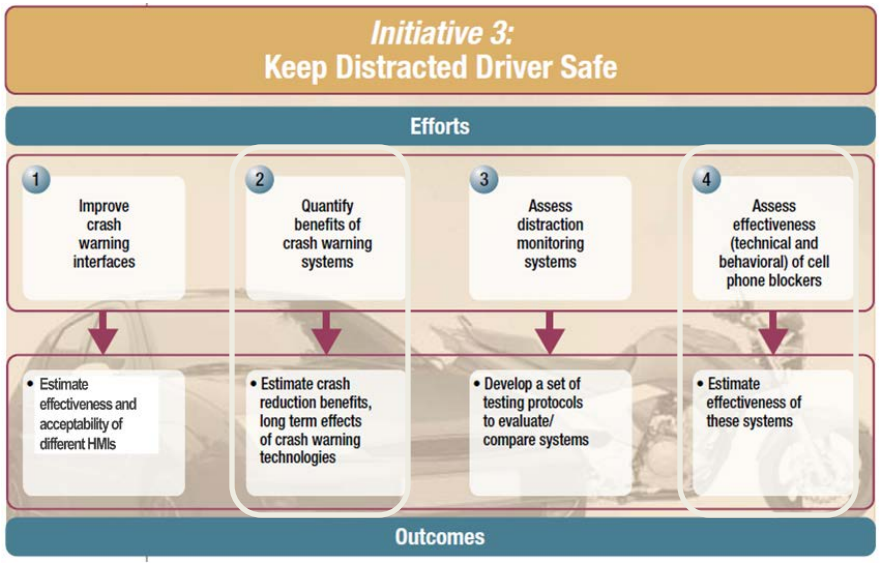
Reduce Workload from Interfaces

- Guideline development
- Phased approach:
  - Phase 1: In-vehicle visual-manual interfaces (2011)
  - Phase 2: Portable devices (2013)
  - Phase 3: Voice interfaces (2014)
- Smaller scope of ID technologies will allow shorter timeframe



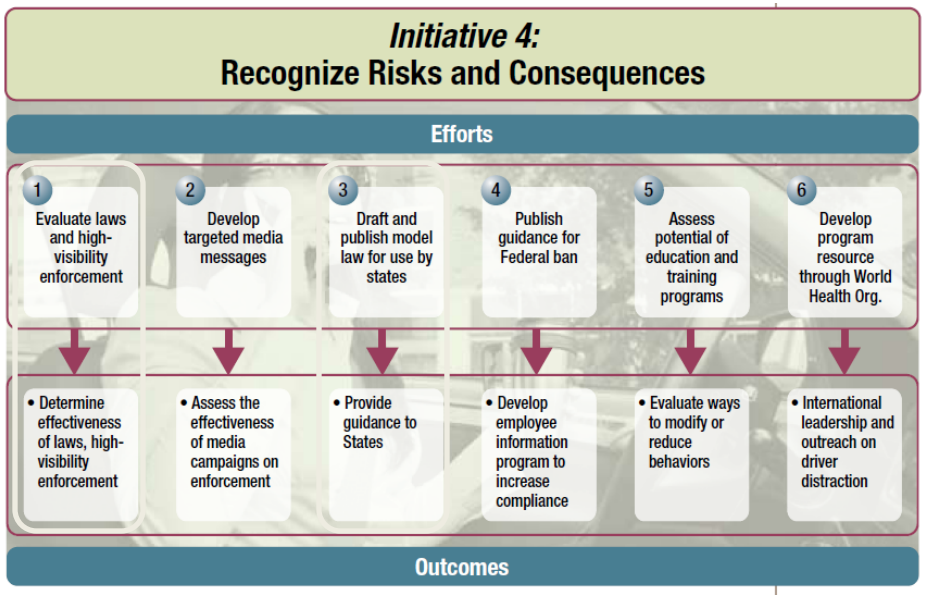
Keep Drivers Safe

- Quantify benefits of crash avoidance systems:
  - Will allow us to better estimate the long-term effects of crash-avoidance systems
  - Measure unintended consequences



Recognize Risks and Consequences

- Includes effectiveness of high-visibility enforcement/laws
- Also includes education and public awareness.



Primary Outcomes

- Better understanding of driver behavior
- Improved driver assistance technologies, including distraction monitoring
- Voluntary design guidelines for IntelliDrive technologies