ASV - 4

The Fourth Phase of Advanced Safety Vehicle Project - technologies for collision avoidance -

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Today's contents

Safer Vehicles by technologies for collision avoidance

& related activities

ASV4 will develop the achievements of ASV3

- ***New technologies development***
- ***Study on promotion of popularization***

The ASV4 project will follow a new Vehicle Safety Policy based on *"The 2006 MLIT Transport Policy Council's Report on vehicle safety "*

achievements of ASV3

History of ASV

Phase 3:2001-2005

Crash mitigation brake
Lane keep assistance
ACC, etc have been introduced in the market

System verification tests were done on the test course of Tomakomai

Concept of Driver Assistance
Based on "Design Principle"

Concept Specifications for communication technologies
- *Consideration on "Role of inter-vehicle communication" for driver assistance to avoid crash*

Phase 2:1996-2000

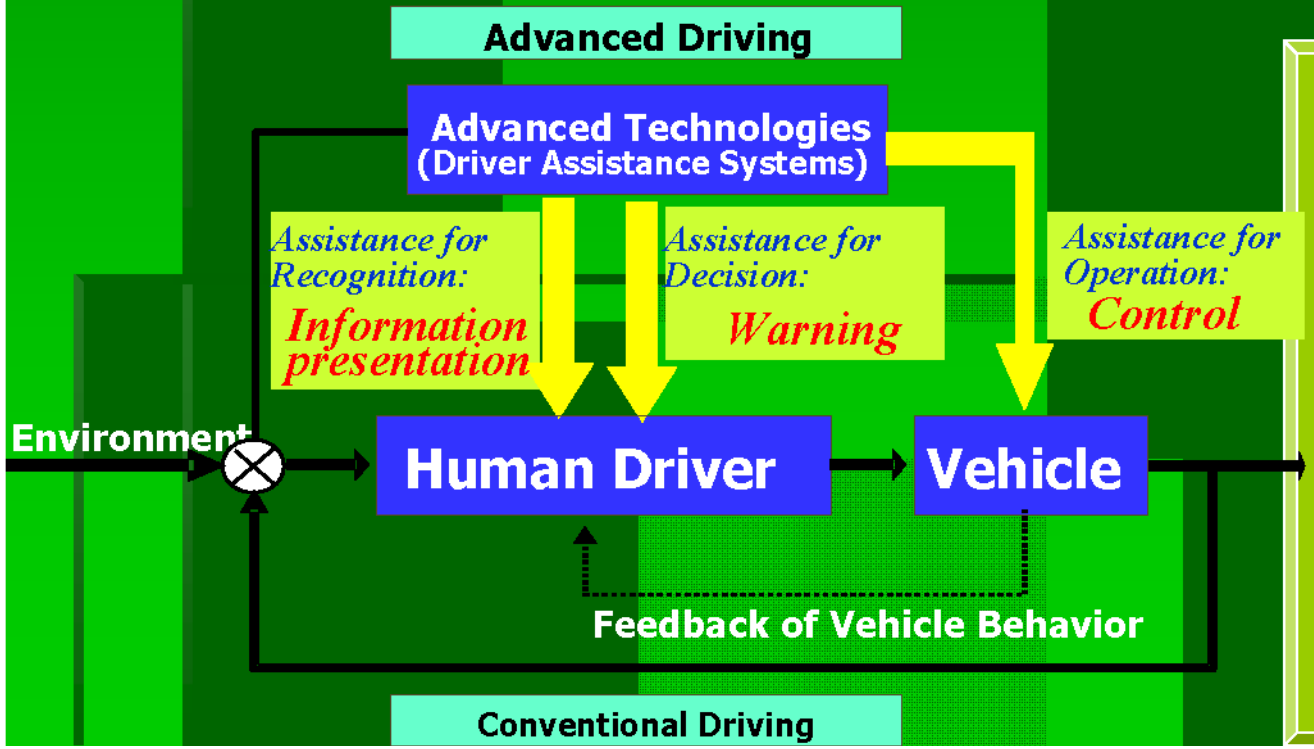
Phase 1:1991-1995

- *Cooperation among academia, industries and government*
- *Study of technical feasibility*

Design Principle
Driver Assistance
Driver Acceptance
Social Acceptance

What is appropriate driver assistance ?

- "Autonomous systems" with on-board sensors have been developed and introduced in the market along with considerations on better HMI from the viewpoint of "driver assistance" and "driver acceptance".



Control as an assistance for operation

Pre–crash

Example: Collision mitigation brake

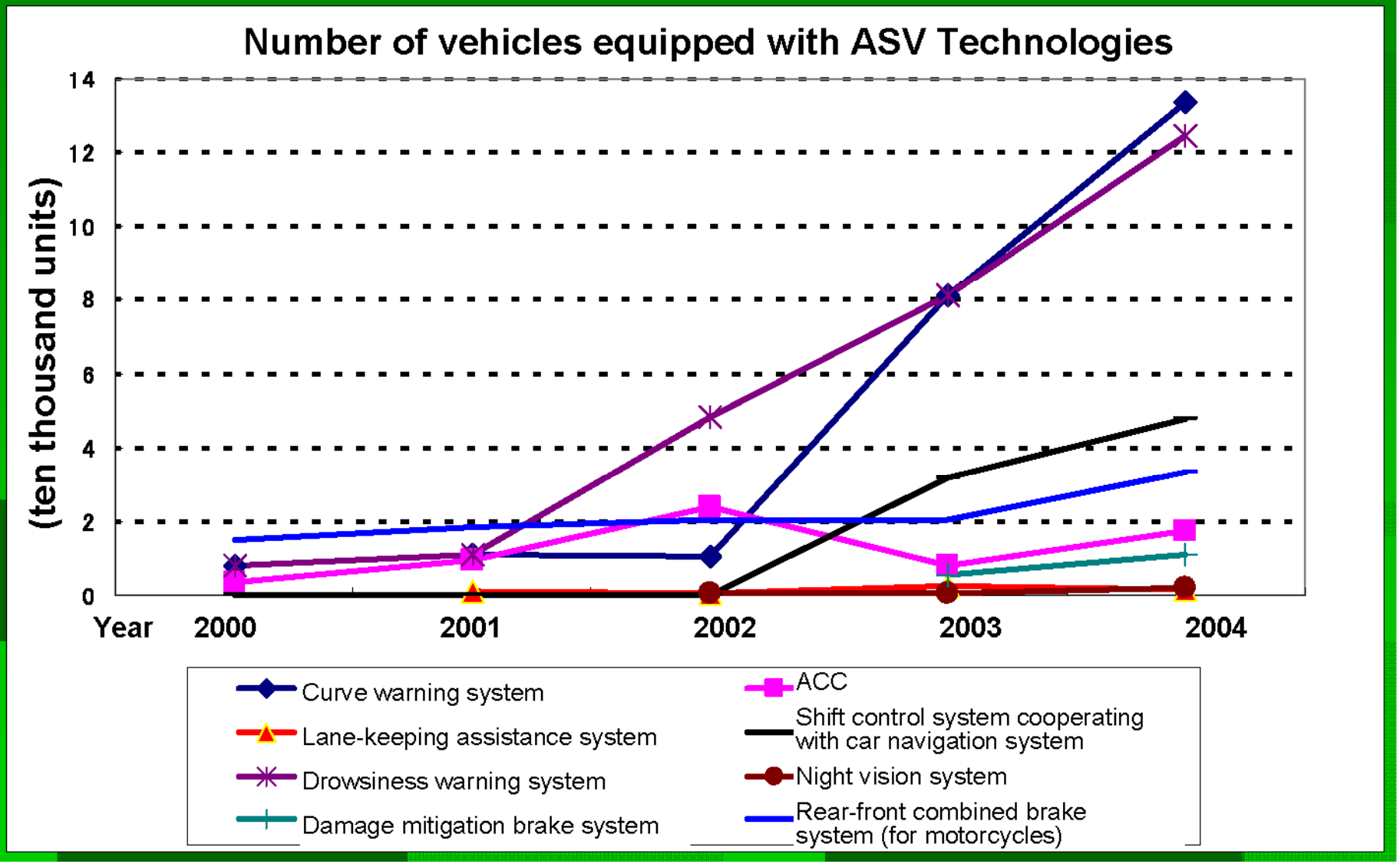
Normal driving keeping the idea of

"driver in the Loop"

Example: ACC, Lane Keep Assist

achievements of ASV3

ASV *Autonomous systems* in Japanese market



Collision Avoidance by ASV *Communication Technologies*

Role of inter-vehicle communication is to help autonomous systems

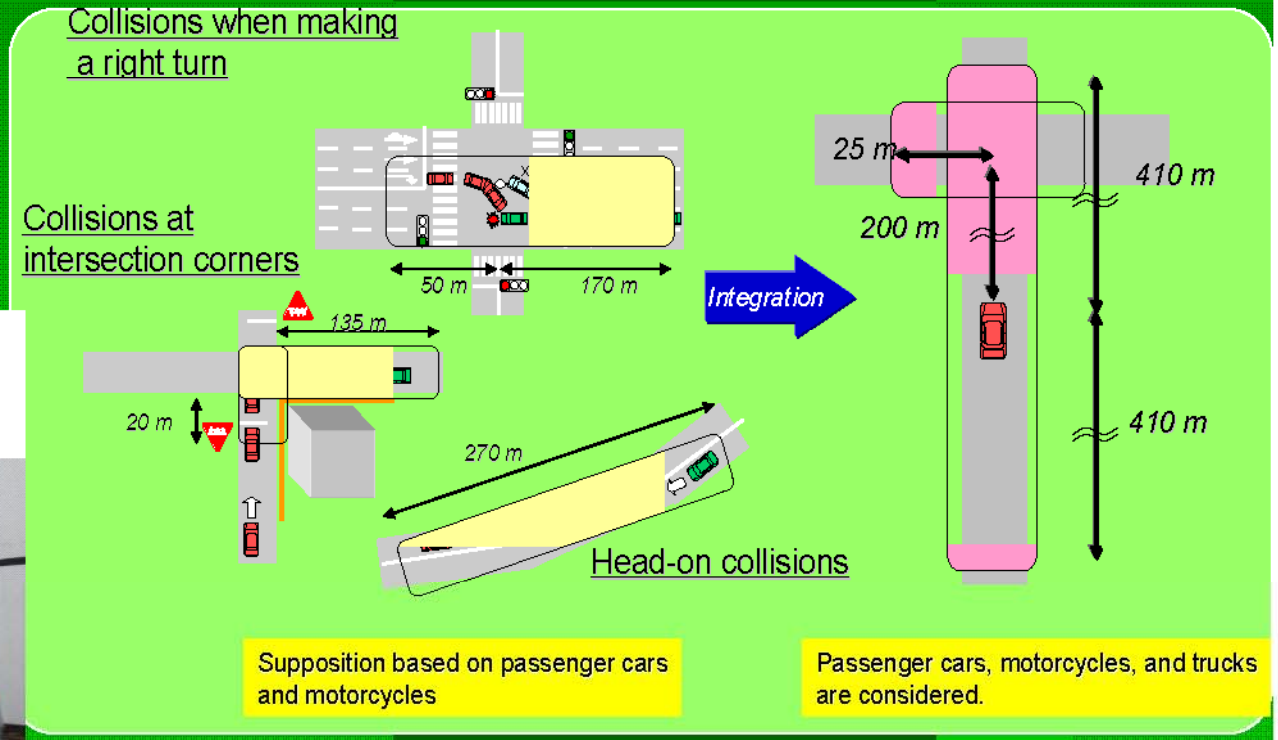
- Autonomous, on-board sensor type, driver assistance systems have been developing and systems are already in the market.
- On the other hand, such autonomous systems cannot respond to events that are not detected by on-board sensors. (How to detect invisible cars?)
- So, desired role of communications technologies is to cover invisible events to help autonomous technologies.

achievements in ASV3

Concept Specifications

for Communication Technologies

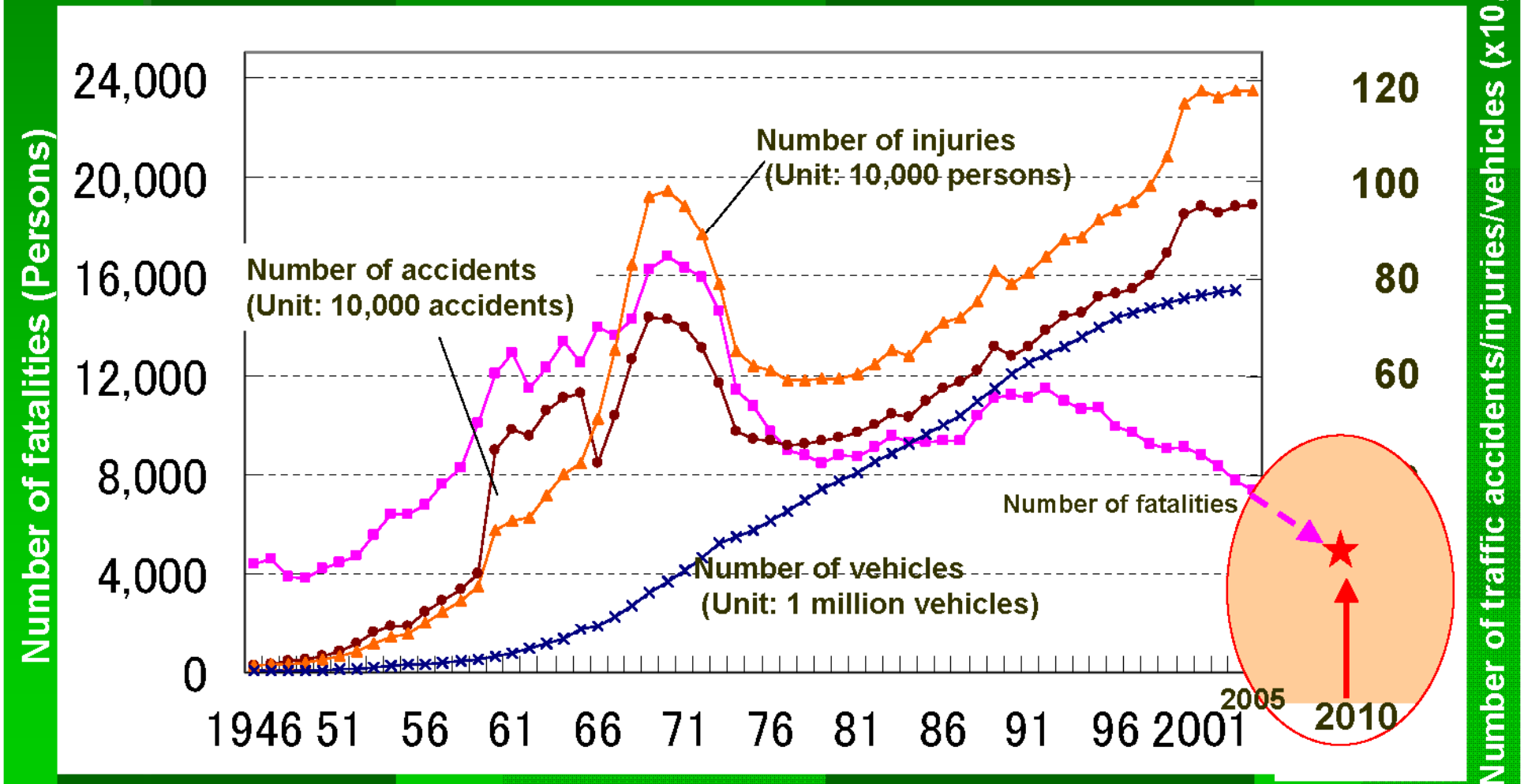
- Modeling of collisions to be covered by communication tech.
- Communication range derived from accident (collision) models
- Concept specifications defined from the communication range .



Verification test at TOMAKOMAI in 2005

Safety Policy of Government of Japan

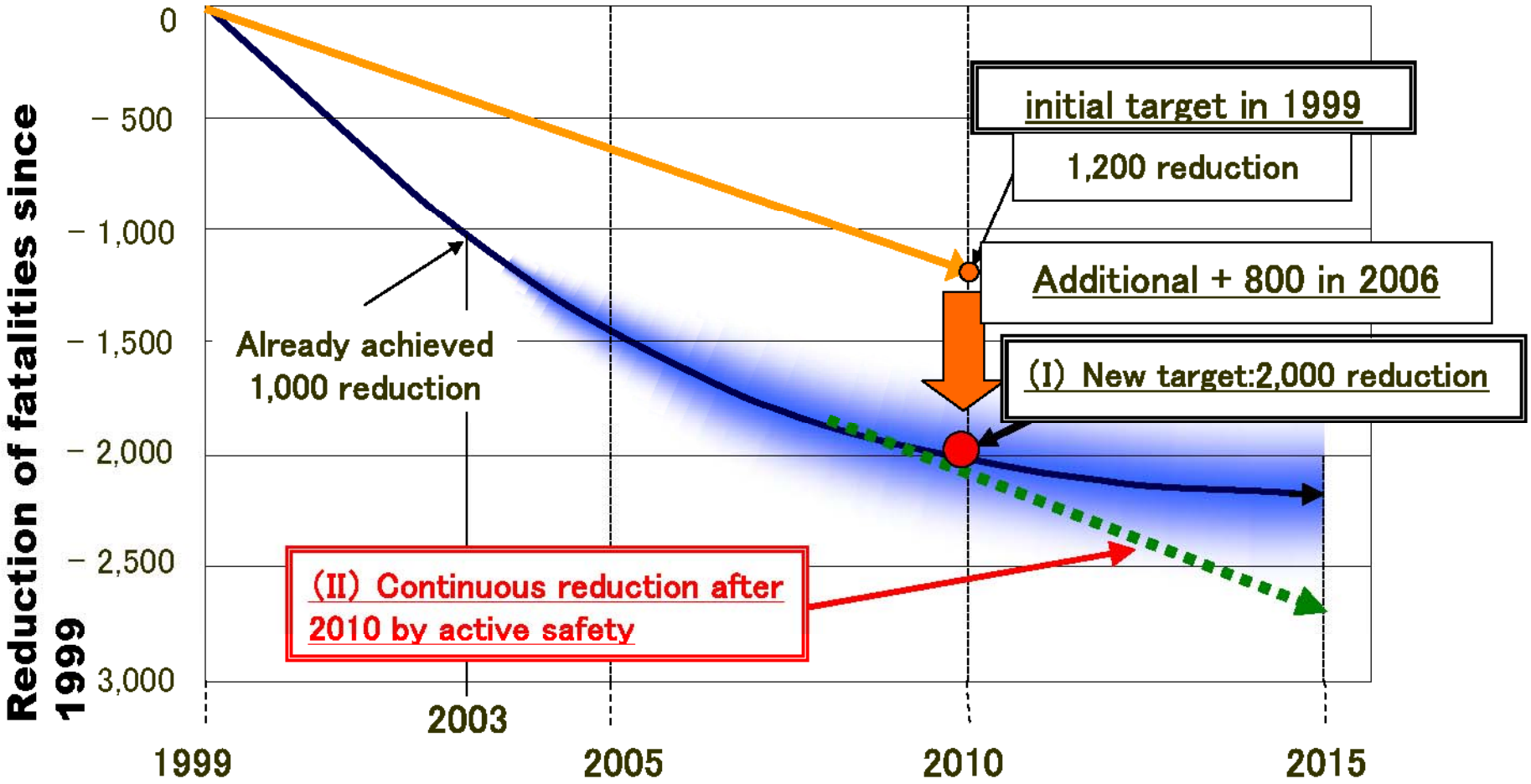
Target of safety measures
Government of Japan



[Based on Traffic Accident Occurrence Conditions (National Police Agency Traffic Bureau)]

"The 2006 MLIT Transport Policy Council's Report on vehicle safety "

Target of safety
by vehicle safety measures



"The 2006 MLIT Transport Policy Council's Report on vehicle safety "

Strategies for active safety measures

After success of passive safety measures, prompt action should be taken now to expand utilization of active safety for continuous reduction after 2010 .

- Short term measures: incentives for priority technologies should be considered.
- Middle term measures : introduction of new type of accident analysis using driving recorder.
- Future measures: development of communication technologies is important.

ASV-4

Phase 4 ASV Promotion Project

Items

Promotion:

1. Assessment of the effectiveness of ASVs.
2. Information for drivers.
3. others

New technologies:

1. Development of inter-vehicle communication
2. Study of a comprehensive safety strategy
3. others

Goals

Promotion:

Full-scale introduction of autonomous detection type driver assistance systems

New technology:

Introduction of some inter-vehicle communication type driver assistance systems

Project Period

5 years from FY 2006 to FY 2010

Market introduction

- Technical measures
  - Technical guidelines based on “ the concept of driver assistance.”
- Public outreach
  - Publication
  - Events
- Knowledge for users
  - Basic information about ASV technologies
- Industries’ effort
  - Motor vehicle industries
  - Truck operators
- Government support
  - Clear message of importance of ASVs
  - Incentive measures

ASV-4

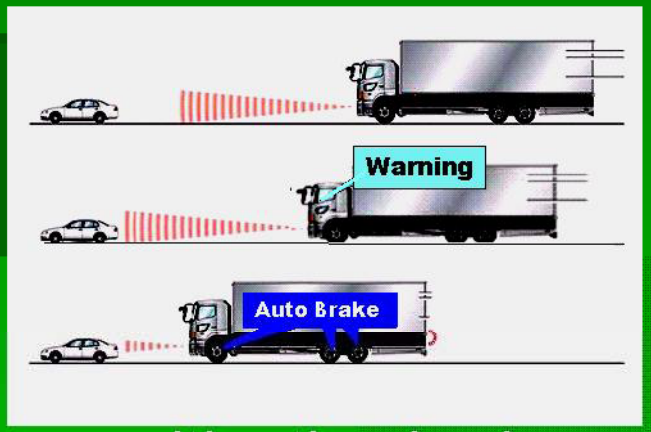
Evaluation of Effectiveness

- Evaluation of effectiveness is a base for every kind of market introduction measures.
- Data before accident are necessary for more accurate studies.
- Driving recorders are an attractive measure and studies are underway.

ASV-4 related activities

Incentives

- How priority items for incentives should be selected?
  - Matured technologies
  - Effectiveness
  - Social necessity



- Heavy duty vehicles equipped with damage mitigation brake are candidate.

Collision mitigation braking system on the heavy duty vehicles can reduce around 80 or 90% of fatal accidents.
More than 55% of accidents are rear end collision
Damage to other vehicles is 12 times more severe than collision with a passenger vehicle

ASV-4 related activities

Trials on public roads of applications using communication technologies

- Trials are planned from 2007 by the cooperated efforts of industries and government (related ministries are joining).
- Applications of “infrastructure to car communication” and “car to car communication” will be tried.
- Target is to realize partial market introduction in 2010.
- The ASV is joining the project and building on what was achieved in TOMOKOMAI.

ASV-4 related activities

International cooperation

- The ASV project has been contributing to the activities of UN/ECE/WP29/ITS informal Group

  2 years process to exchange of views to make clear direction of the role of WP29.

  Common understandings on safety concept of systems to assist driver were discussed

- Results of Verification of car to car communication have been shared through various occasions like
  - the international symposium held in Tomakomai in 2005
  - and Today in SS59 and SS64.

Conclusion

- The new safety policy and achievements of ASV3 are the base of ASV 4.
- Effective measures should be taken for market introduction of ASV technologies.
- The ASV project is joining “Trials on public roads using communication technologies” by the effort of industries and government.
- International cooperation is one of key issues.

Thanks for your attention!!

MLIT Japan