

Objectives and potential applications of VSC part

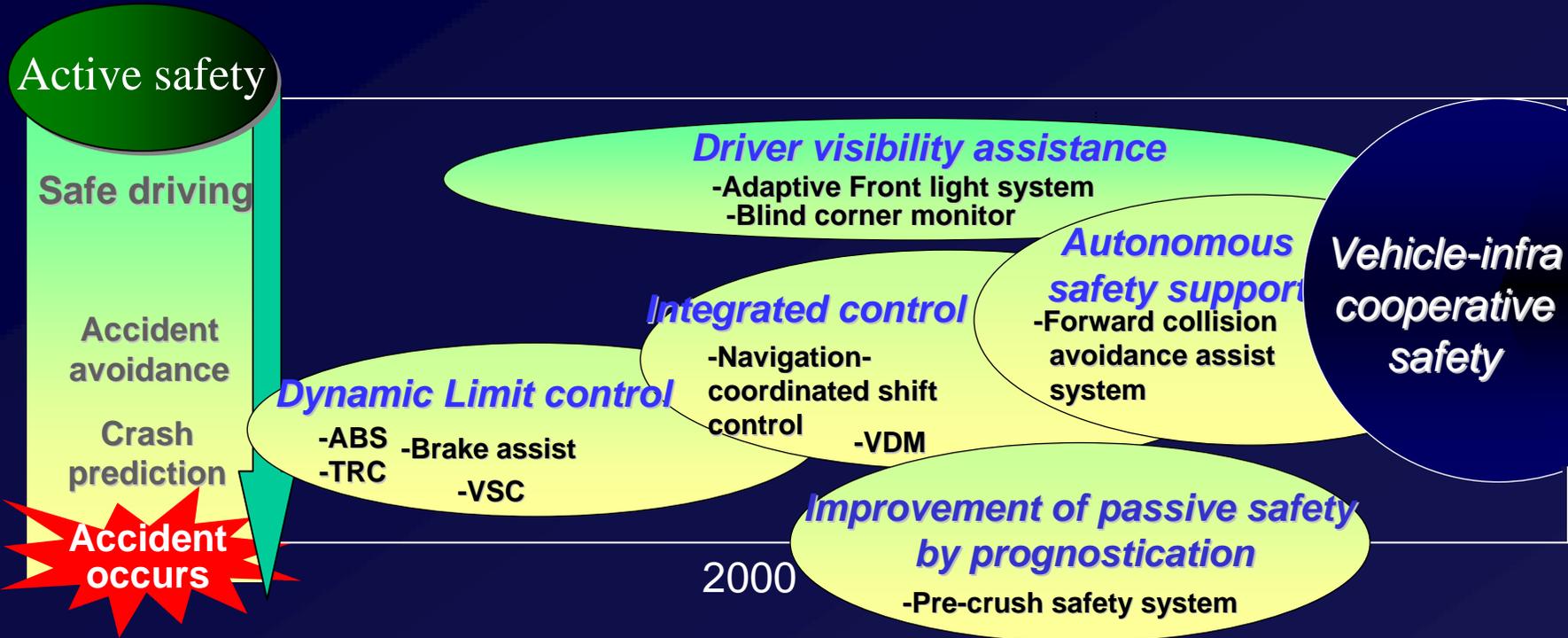
Toward “zero-nize”

May 2005

Hiroyuki Kanemitsu

Toyota Motor Corporation

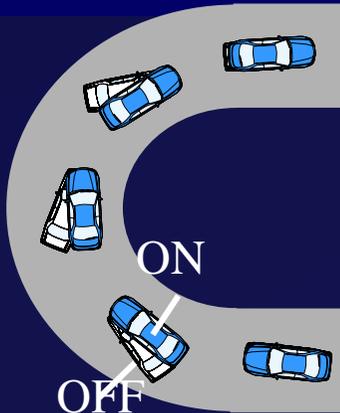
Casualty Reduction by Autonomous Safety System



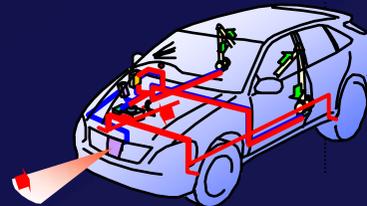
Lane keeping assist



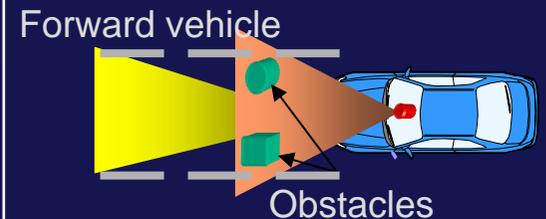
VSC & VDIM



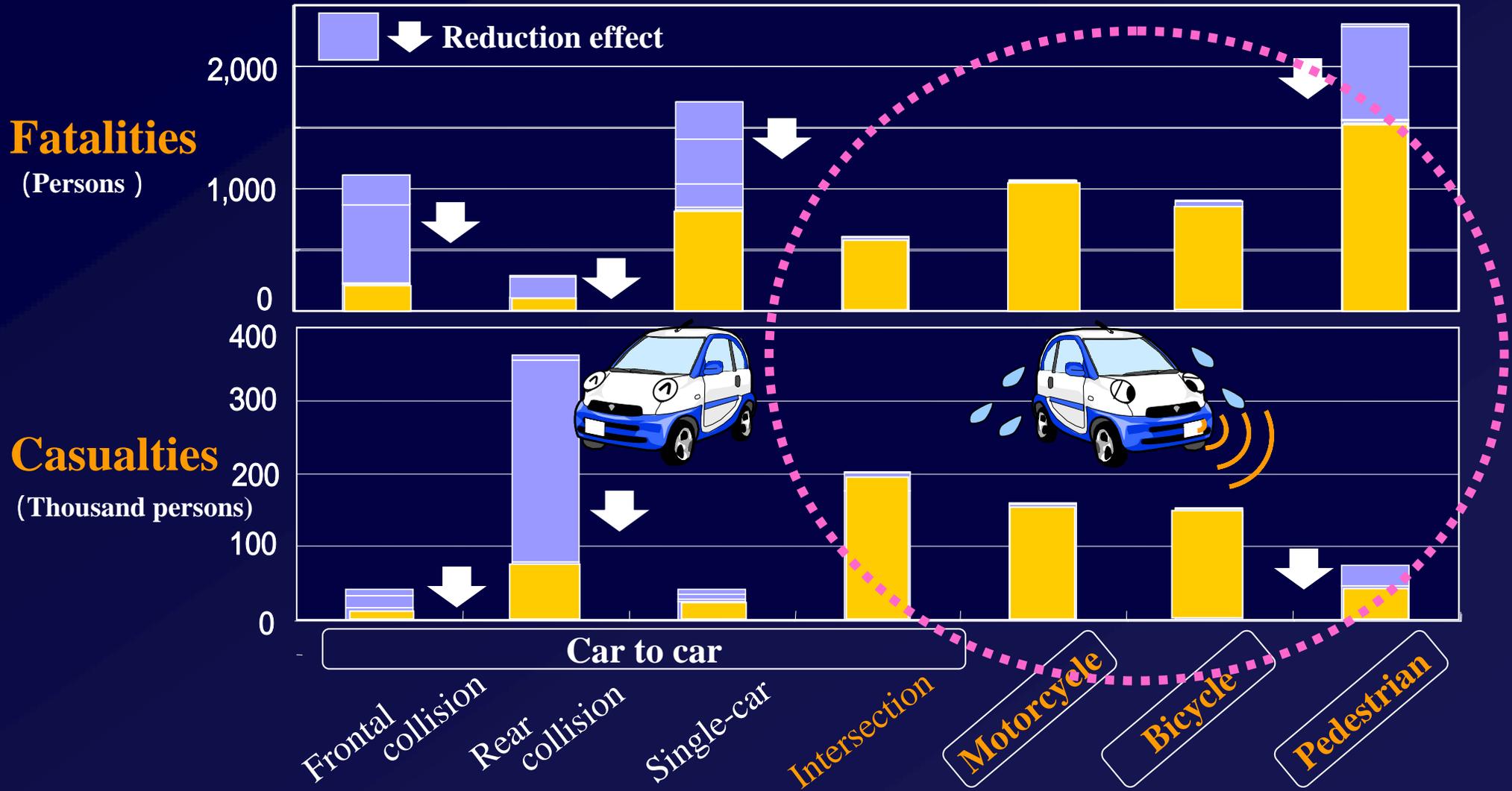
Pre-crash safety



Forward collision avoidance assist system



The Effect of Casualty Reduction by Autonomous Safety System

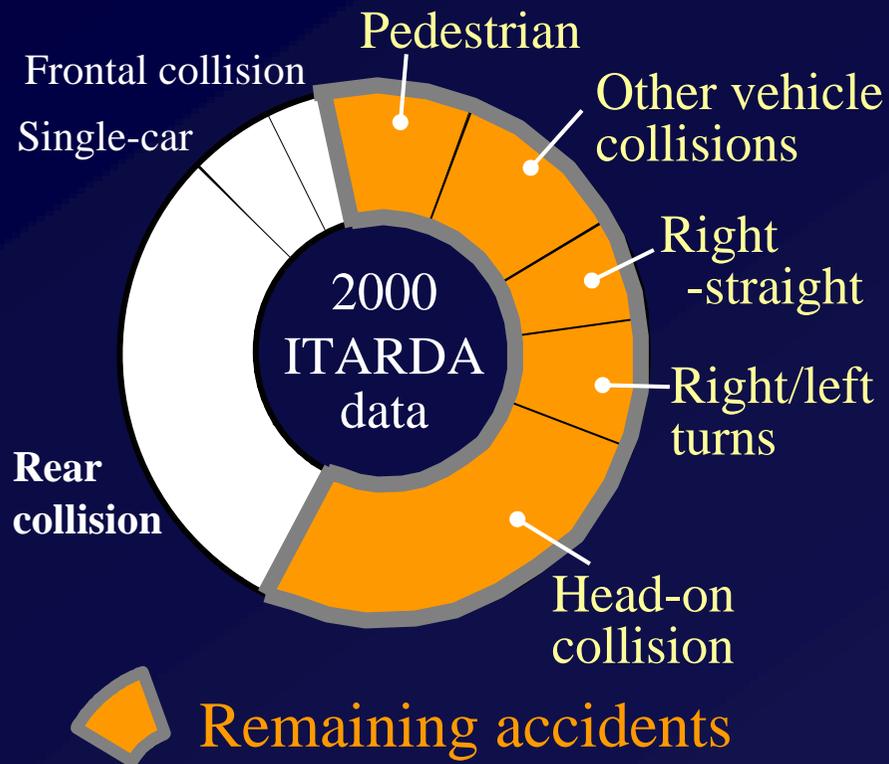


■ Autonomous systems does not significantly reduce accidents relating intersections, motorcycles, bicycles , and pedestrians

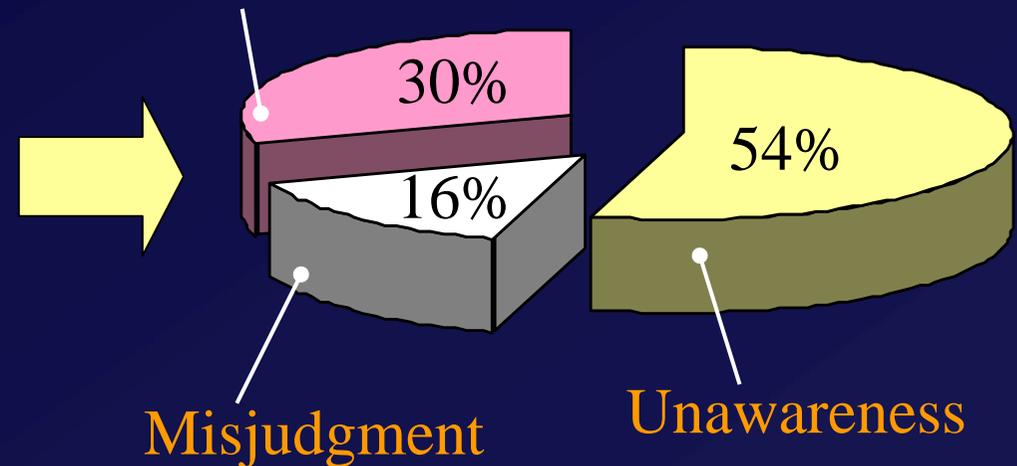
Analysis of Remaining Accidents

Accidents (casualties)

Details



Traffic rule violation



■ Remaining accidents are caused by unawareness, misjudgment and traffic rule violation

Objectives of Vehicle-Infra Cooperative Safety System

- Driver support to aware traffic signal or other vehicles etc.
- Prevention of misjudge and rule violation by driver

Driver



Vehicle & Infrastructure

Autonomous system



Driving support information

Alerts / Warnings

Intervention

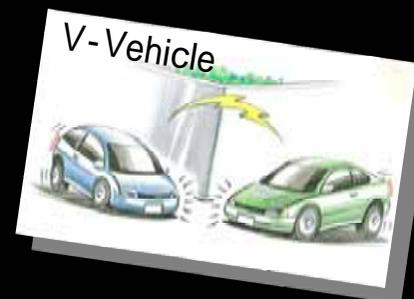
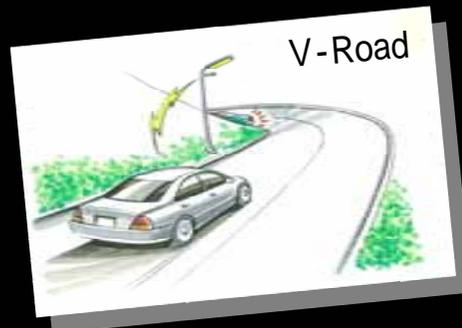
Information improvement

vehicle-infra cooperative system

Driving support by preview information

Judgment support

Control by traffic rules



Examples of Vehicle-Infra Cooperative Safety System

Awareness Support

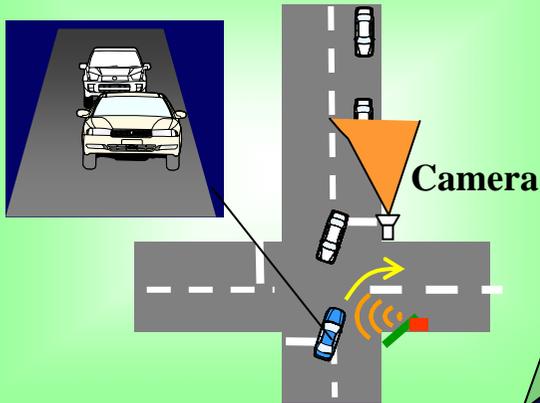
Prevention of misjudge and rule violation

Information Support

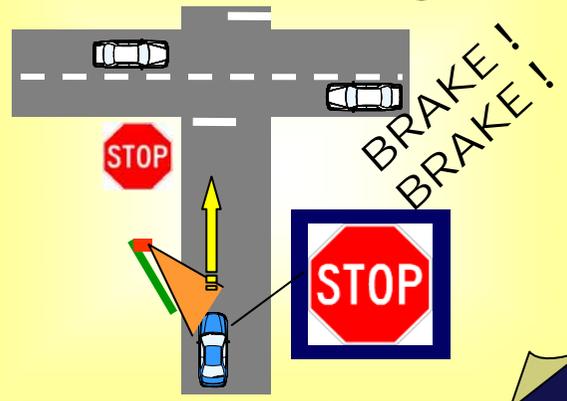
Alerts / Warnings

Intervention

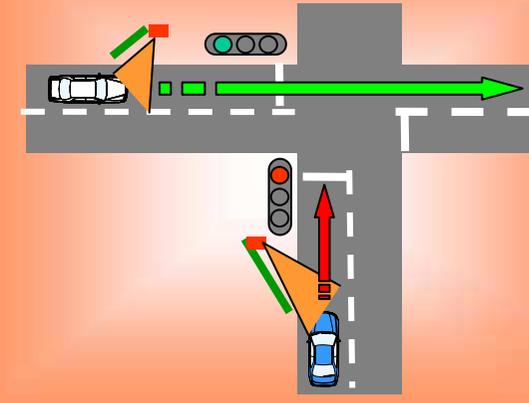
Invisible vehicles



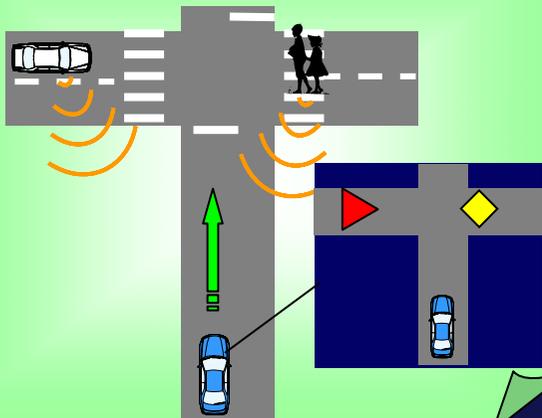
Traffic rule warning



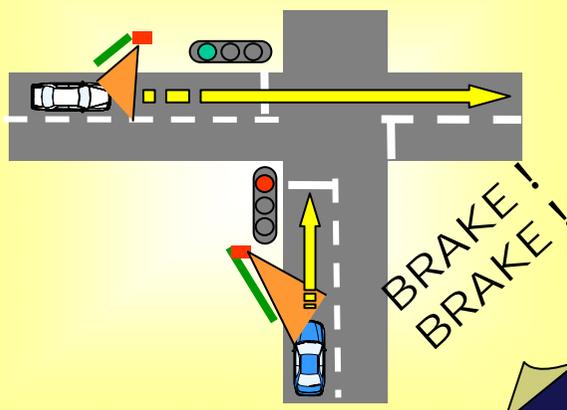
Control by traffic signal



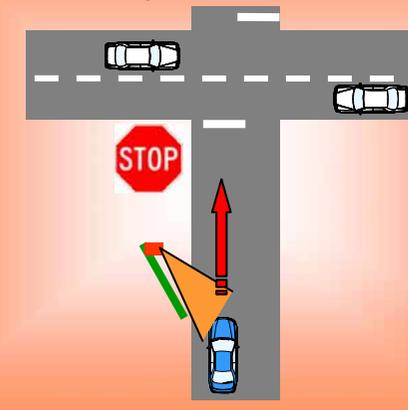
Pedestrian & vehicles



Traffic signal alert



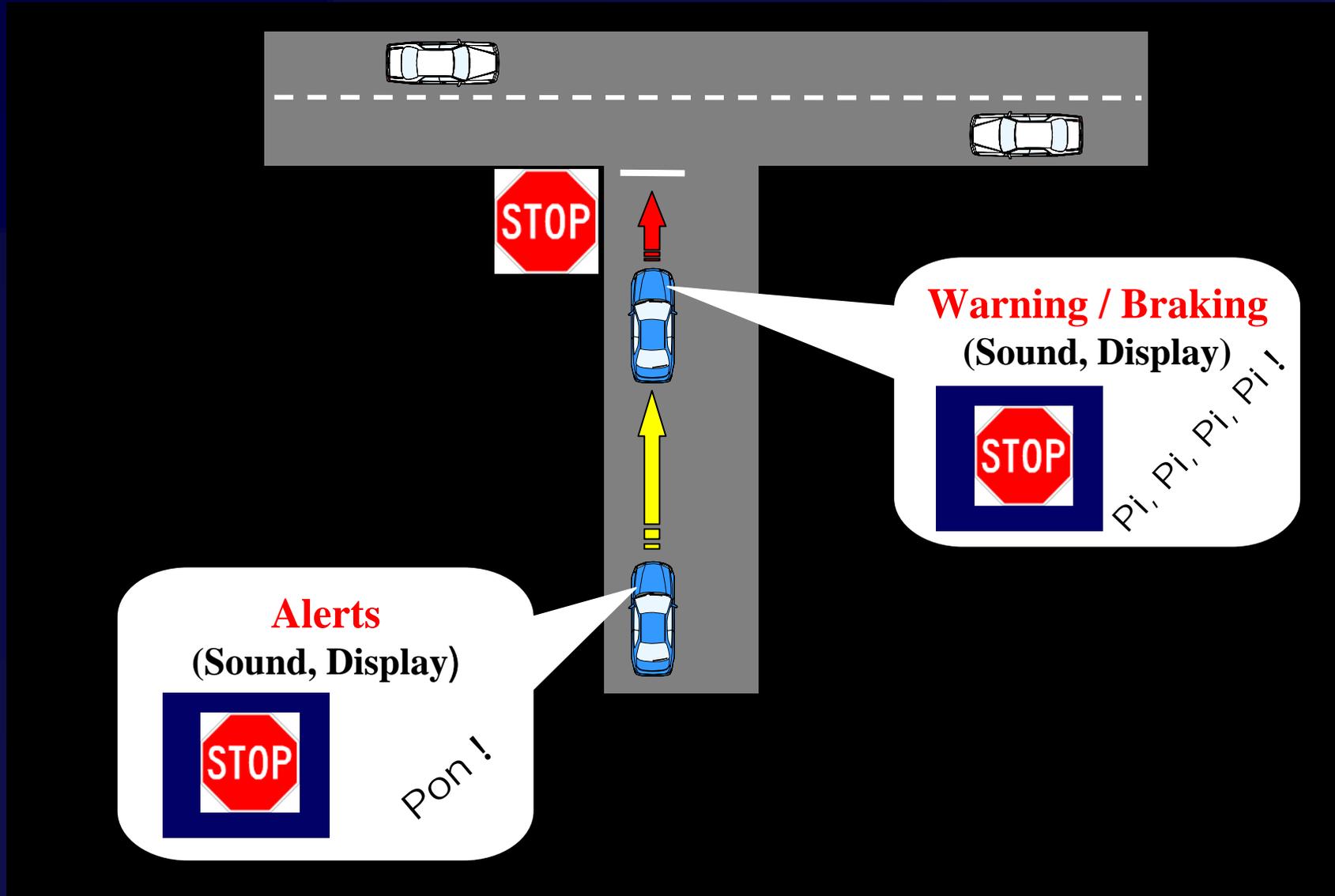
Control by traffic rules



Operation Image of Vehicle-Infra Cooperative Safety System

Driver's view

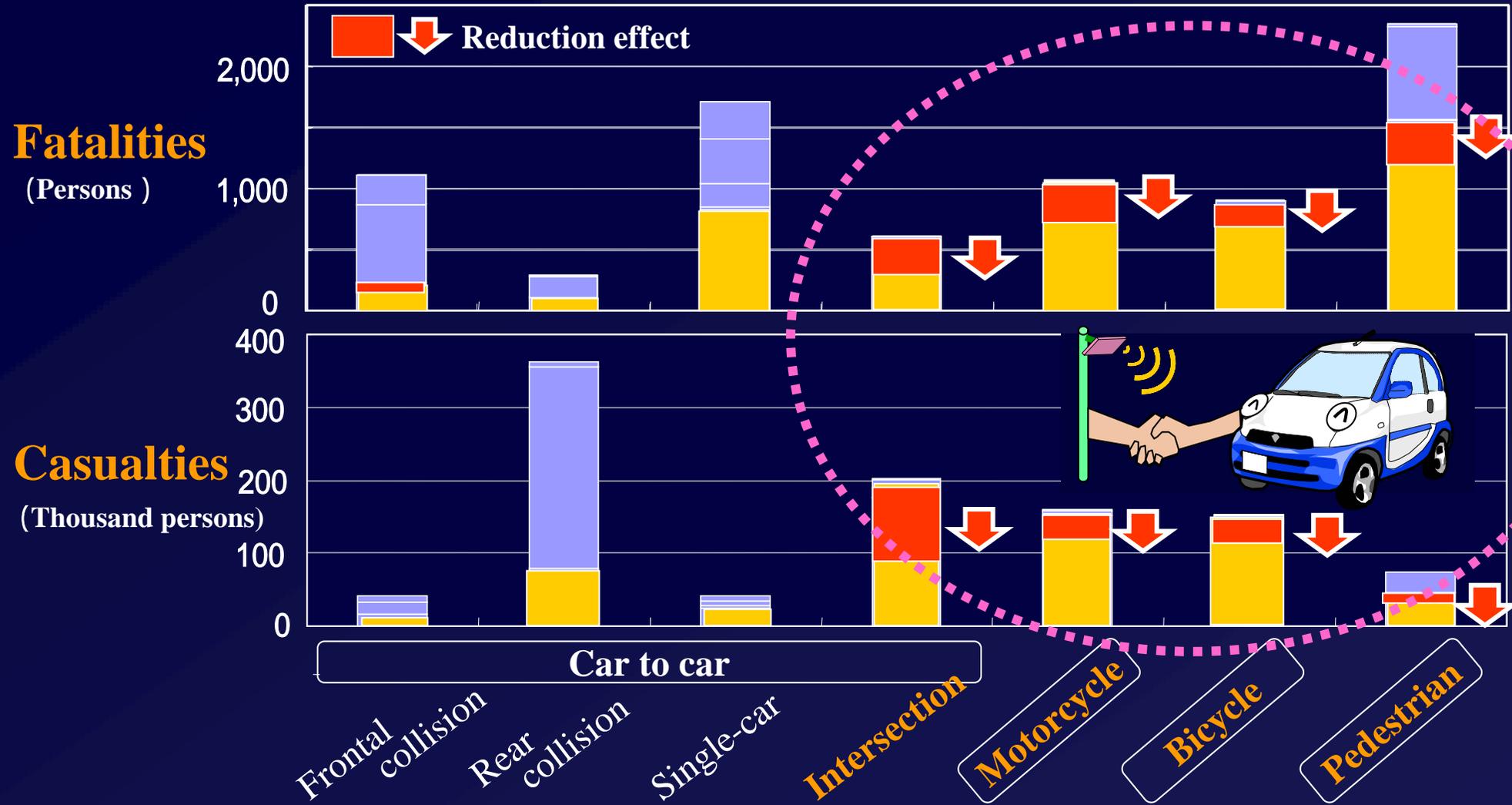
Onboard display



External appearance

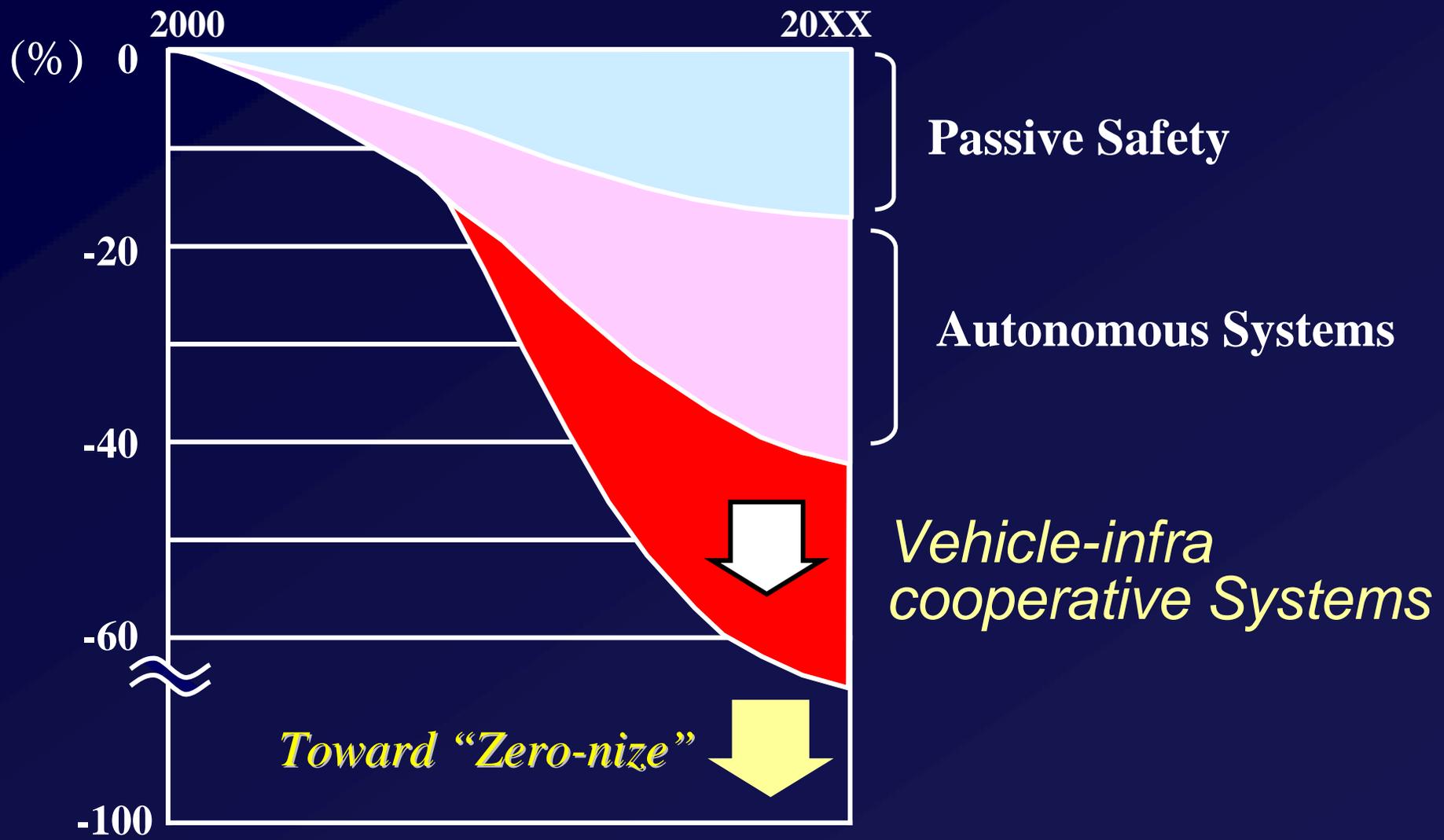
Operation by driver

Simulation of Casualty Reduction by Vehicle-Infra Cooperative Safety System

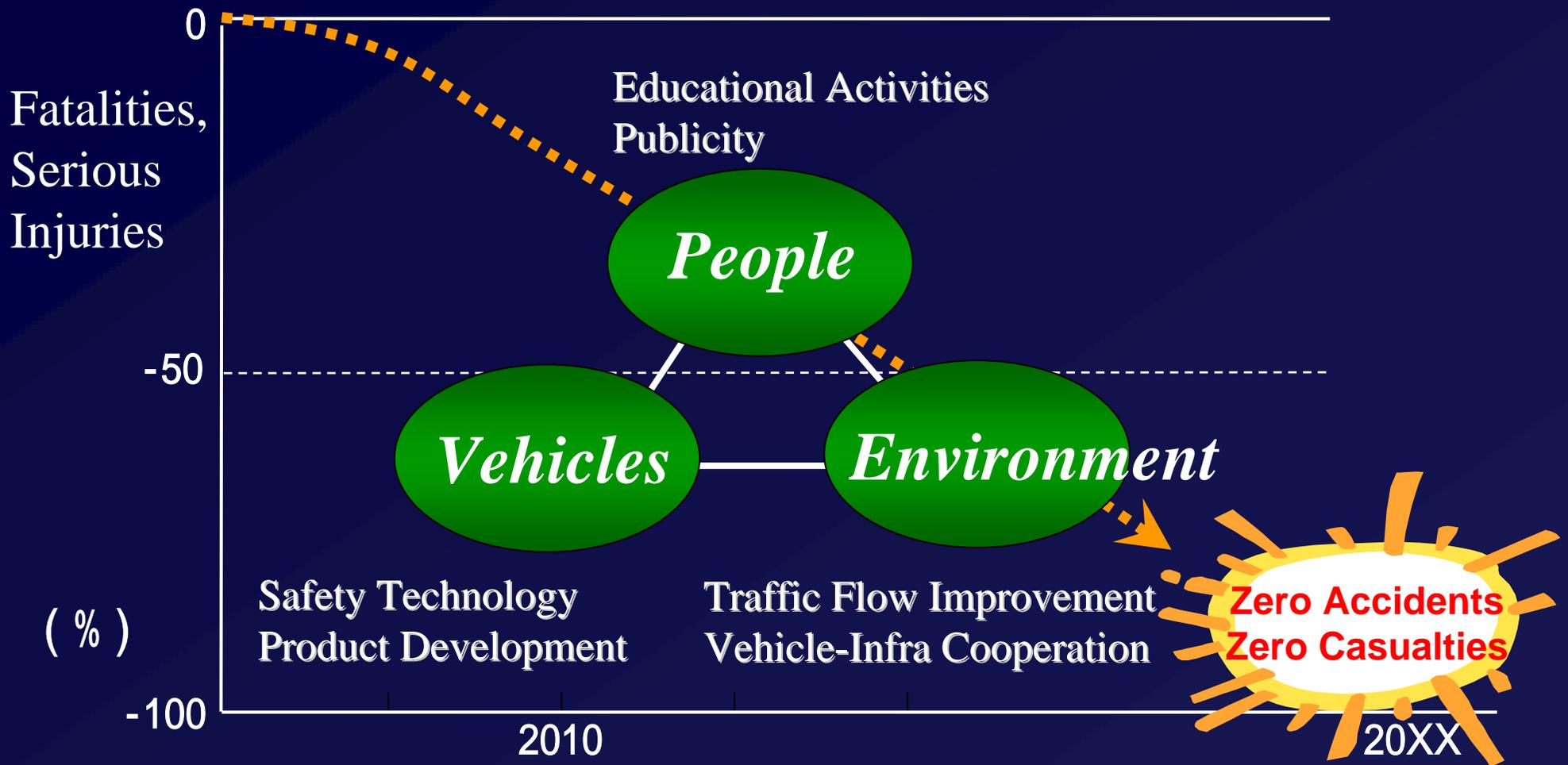


- Will reduce "car to car" accidents at intersection by half
- Will not reduce accidents relating motorcycles, bicycles, and pedestrians

Toward "Zero-nize"



Subject and Proposal



■ *The key is total countermeasure considering vehicles, people and traffic environment*