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# **Brief Review up to Now**

**March 11, 2011, Geneva  
UNECE/WP29/ITS Informal Group  
19th Meeting**

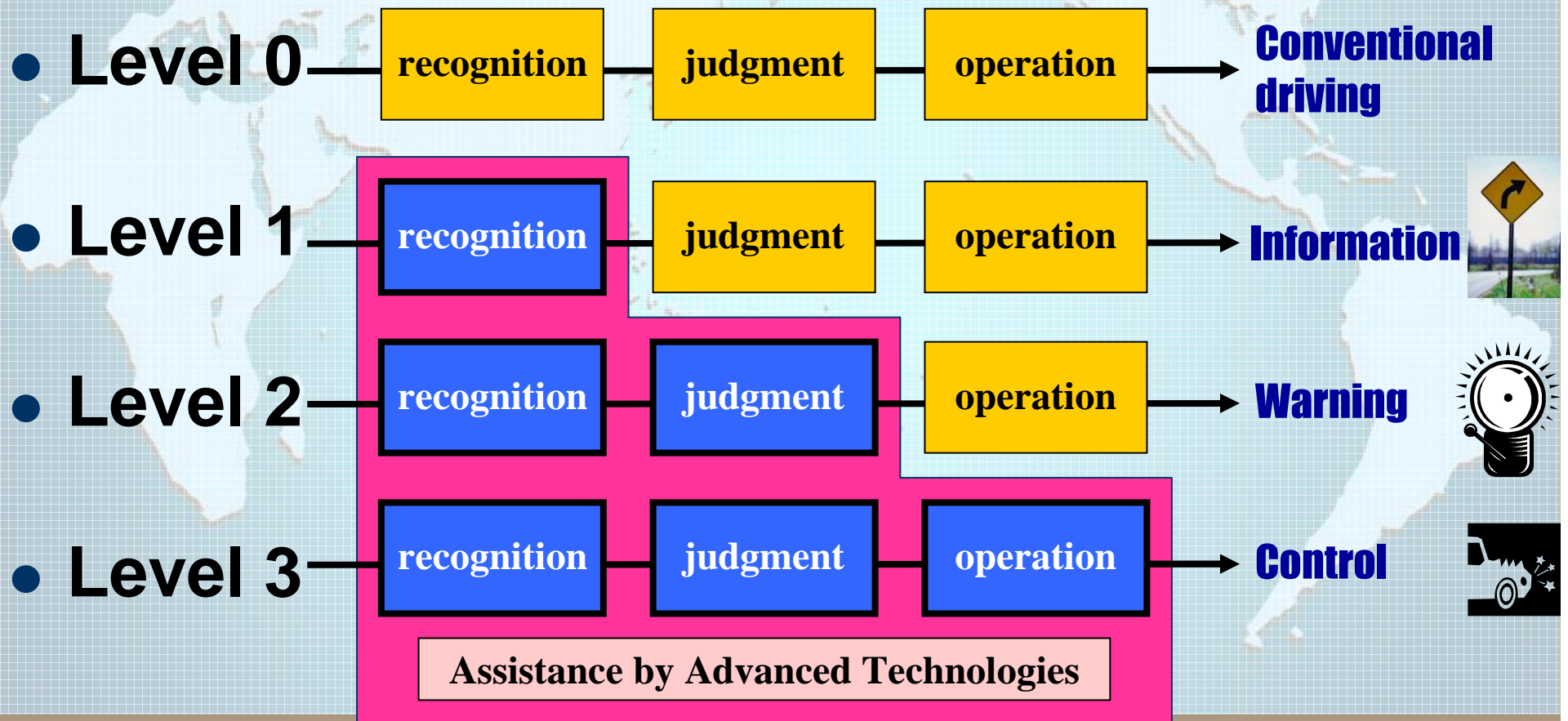
**T. Onoda & K. Hiramatsu, Japan**

# Current activities:

- TOR : November 2004
  - To develop common understanding of driver assistance systems
- Report of Two Years Activities : March 2007
  - Appropriateness of "Driver in the Loop" under normal driving condition
  - Effectiveness of damage mitigation under pre-crash condition where collision is no longer avoidable
- Proposal of Warning Guidelines to WP29 : March 2010

# How ADAS assist driver in terms of HMI :

## Behavioral Model of a Driver



# Report of two years activities :

- Information :
  - To keep monitoring the situation of self-commitment basis guidelines in each region for a time being
- Warning :
  - To develop high-priority warning guidelines in cooperation with IHRA-ITS WG
- Control :
  - To have following understanding as a base for future consideration

## ● Control (continued) :

- Systems should be designed in which driver is always held responsible for his/her driving. For this purpose followings are effective.
  - Installation of auditory or visual announcement devices providing information on the system functioning
- Control systems activated under normal driving condition should be designed based on “Driving in the loop”, where driver should be involved in driving in a way or other. For this purpose followings are effective.
  - Announcement is made when the driving initiative is transferred from system to driver.
  - Driver is kept involved in driving operation. For example, starting initiative should not be given to system.
  - System allows switching on or off by driver
  - System allows overriding by driver
- As for Control systems to reduce collision speed activated under pre-crash condition where collision is no longer avoidable, there is no room for necessity of overriding and driver is not very likely to depend on system.

# What are warning guidelines ?

- **Purpose** : to provide basic recommendations for the design of high-priority warnings on ADAS
  - Better understanding from drivers
  - Reduced confusion
  - More accurate and consistent expectations
- **High-priority warning** : to be delivered at critical situation where the driver is required to take immediate action or decision to avoid crash event

# Warning guidelines

1. High-priority warning should be noticeable in the driving environment.
2. High-priority warning should be distinguishable from other messages in the vehicle.
3. High-priority warning should provide spatial cues to the hazard location.
4. High-priority warning should inform the driver of proximity of the hazard.
5. High-priority warning should elicit timely response or decisions.
6. Multiple warnings should be prioritized.
7. False/nuisance warnings rate should be low.
8. System status and degraded performance of high-priority warnings should be displayed.

# Application of warning guidelines to AEBS and LDWS :

- ▶ High-priority warning should be noticeable in the driving environment.  
-----, two modalities or more are generally recommended to make high-priority warnings more noticeable, however the warnings can be displayed using one modality if it can be ensured that the driver will notice the warning. -----

## **Proposal for draft Regulation on LDWS : 68th Session of GRRF, Sept/2010**

### **5.4. Warning indication**

**5.4.1. The lane departure warning referred to in paragraph 5.2.1. shall be noticeable by the driver and be provided by:**

- (a) at least two warning means out of optical, acoustic and haptic, or**
- (b) one warning means out of haptic and acoustic, with spatial indication about the direction of unintended drift of the vehicle.**



## Wrap up :

- ITS Informal Group submitted Warning Guidelines in March, 2010. Final decision of WP29 will be made in next June, 2011.
- "Driver in the Loop" Principles were drafted by IHRA-ITS WG, dealing with advanced driver assistance systems.



***Thank you for your attention***