Necessity of International Understanding on ITS Technology Diffusion

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1. ITS for In-vehicle Applications

(1) ITS Technologies are expected to remarkably enhance safety, abate congestion, and protect the environment through the reduction of fuel consumption and exhaust emission.

(2) In Japan trial calculations were performed on the effects of ITS technologies, showing that fatal and serious accidents can be potentially reduced by 40% in Japan.

2. The ITS has already been put into market. - Prompt response is needed -

(1) The ACC has been put into market in Japan, the United States and Europe; and the lane-keeping support system in Japan.

(2) The running test for stop-&-go system and forward obstacle collision prevention support system is conducted on public roads.

(3) Deliberations on standardization of ITS technologies has already started.

ASV technologies

<table>
<thead>
<tr>
<th>No</th>
<th>ASV technologies</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ACC</td>
<td>On the market</td>
</tr>
<tr>
<td>2</td>
<td>Stop-and-go system for following a preceding vehicle in congested traffic</td>
<td>Driving test on public roads</td>
</tr>
<tr>
<td>3</td>
<td>Lane keeping support system</td>
<td>On the market</td>
</tr>
<tr>
<td>4</td>
<td>Automatic braking system for reducing injury</td>
<td>On proving ground</td>
</tr>
<tr>
<td>5</td>
<td>Lane departure warning system</td>
<td>On the market</td>
</tr>
<tr>
<td>6</td>
<td>Rear lateral/lateral collision avoidance advisory system</td>
<td>On proving ground</td>
</tr>
<tr>
<td>7</td>
<td>Curve overshooting prevention support system</td>
<td>On the market</td>
</tr>
<tr>
<td>8</td>
<td>Emergency braking advisory system</td>
<td>Driving test on public roads</td>
</tr>
<tr>
<td>9</td>
<td>Night-time forward pedestrian advisory system</td>
<td>On the market</td>
</tr>
<tr>
<td>10</td>
<td>Two-wheel vehicle presence advisory system</td>
<td>On proving ground</td>
</tr>
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</table>

3. Problems When Current Safety Regulations are Applied to ITS

1. When the current regulations are forced to be applied, the ITS technologies cannot be introduced, for they may conflict the current regulations.

2. Since no relevant regulation exists, these technologies may be introduced to the market without thoroughly studying their negative aspects in advance. This may diminish the safety.

3. If a certain technology is evaluated in the market as being not safe, a hurdle for introducing the technology again into the market will be very high. Thus, there is the possibility that its introduction into the market will be retarded.

4. Some technologies are too innovative that it is difficult to judge their safety. As a result, each government may handle the technologies in a different way.
An ITS technology works as a system. The system assesses by a sensor the situation around the vehicle, informs or alerts the driver about possible hazards, and controls safety devices.

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2. A good human machine interface is also indispensable.

### 3. Problems When Current Safety Regulations are Applied to ITS

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### Example: Automatic braking system for reducing injury

- **How ITS Technology should be discussed?**

  - i) To what extent should the sensors read the distance between the vehicles, the road surface $\mu$, etc.?
  - ii) What will be the timing and method for alerting the driver?
  - iii) Should we also discuss technologies to prepare for the collision? (Automatically tensioning the seatbelt, drawing the headrest to the passenger’s head, etc.)
  - iv) What will be the timing for braking?
  - v) Is it necessary to use lamps to alert the following vehicles of the danger?
  - vi) To what extent should the impact energy be reduced?
  - vii) Should we also discuss technologies to prepare for the collision? (Automatically tensioning the seatbelt, drawing the headrest to the passenger’s head, etc.)

### 4. Solution to Negative Aspects and Subjects to Be Tackled for Dissemination

- **Necessity of Common Understanding**

  - New risk of accidents:
    - The driver may become overconfident in the ITS technologies, thus neglecting his primary responsibilities. As a result, the safety is degraded.

  - For the dissemination of the ITS, it is necessary to have common understanding of safety under concerted cooperation of respective countries.