Joint UNECE-Belgium Workshop on Intelligent Transport Systems

“Towards a new transportation culture: technology innovations for safe, efficient and sustainable mobility”

Intelligent Speed Assistance (ISA) - where technological reality meets regulatory needs

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UNECE, ITC and WP.29

- UNECE works to facilitate economic integration and cooperation among its member States. Key actions include:
  - negotiation of international legal instruments
  - development of regulations and recommendations

- ITC negotiates and adopts international legal instruments on inland transport that support the development of efficient, harmonized and integrated, safe and sustainable pan-European transport systems.

- WP.29 is a unique framework that allows for the development of globally harmonized regulations on vehicles.
Why do we need a worldwide regulatory framework for vehicles?

Crucial need to update regulations constantly to cover new technologies and to harmonize technical requirements internationally.
The World Forum administers 3 Agreements:

The ‘58 Agreement deals with type approvals of wheeled vehicles, equipments and parts based on their *reciprocal recognition* through Contracting Parties (51 Contracting Parties, 134 UNECE Regulations)

The ‘98 Agreement concerns the establishment of global technical regulations (gtrs) (34 Contracting Parties, 15 gtrs, adopted in 2009)

The ‘97 Agreement concerns the adoption of uniform conditions of inspections for roadworthiness and pollution (11 Contracting Parties)

The 58 & 98 should have similar technical provisions (parallel)
The structure of WP.29

World Forum for Harmonization of Vehicle Regulations (WP.29)

- **Active Safety**
  - Lighting and light-signalling (GRE)
  - Adaptive Front-lighting Systems
  - Installation of lighting and light-signalling devices

- **Passive Safety**
  - Brakes and running gear (GRRF)
  - Electronic Stability Control (ESC)
  - Lane Keeping Assist System (LKAS) and Parking Assist Systems (PAS)

- **General Safety**
  - Passive safety (GRSP)
  - Pedestrian protection
  - Frontal/lateral impact protection
  - Child restraint

- **Environmental protection**
  - Pollution and Energy (GRPE)
  - On-Board Diagnostic systems
  - Electric Vehicles and Environment (EVE)

- **Noise (GRB)**
  - Quiet road transport vehicles

> 40 non-permanent technical groups
WP.29 is worldwide, unique and transparent

- Agreements are open to all nations of the UN (GOs and NGOs can participate with a consultative status)
  - Decisions are taken by the Governments of CPs

- No other worldwide organization covers this area

- Transparency: all regulations, calendars of meetings, agendas, working and informal documents and reports are freely available on the website:

  www.unece.org/trans/main/welcwp29.htm

(including the Terms of Reference & Rules of Procedure as well as the status documents of the three Agreements)
UNECE’s approach to ITS

- In March 2012 ITC recognized that ITS could become a major challenge for the future.

- **ITC approved** the “UNECE Road Map”.

- As the use of ITS solutions faced and still continues to face obstacles, the formulation of a common strategy was necessary.

- The UNECE Road Map for promoting ITS includes 20 global actions to be implemented between 2012 and 2020.
The current situation on ISA

Innovations such as Intelligent Speed Assistance (ISA) systems available today

While ISA can provide several benefits, drivers remain wary of the new technology.

So far, no project of Regulation on this subject presented to WP.29.
ISA systems can be **passive** or **active**:

- **Informing**
  - The system informs the driver of current speed limit and changes in speed limits

- **Warning**
  - The system warns the driver if speed limit is exceeded

- **Intervening**
  - The system automatically corrects the speed of the vehicle to conform with the speed limit
Possibilities

ISA can use satellites that beam limits automatically to cars from a database or cameras able to read road signs.

Many ISA systems will also provide information about locations where real hazards may occur (e.g. railway level crossings or railroad grade crossings,

Misuse possible: so called “dangerous zones” (speed camera)
Benefits
RISKS: unintended behavioural consequences

- Drivers whose speed is regulated by an ISA system may try to compensate for “lost time” by accepting shorter gaps in cross traffic flow, and maintaining closer following distances.
- Complacency, and over-reliance on the system.
- Drivers who use ISA systems with mandatory, fixed limits on speed may tend to drive near that fixed limit even when conditions dictate a lower speed to be safe.*

- System found to be controlling or intrusive

* NHTSA: SUMMARY REPORT: WORKSHOP ON VEHICLE TECHNOLOGIES TO AID TEEN DRIVERS
RISKS: liability issues

- Unintended negative consequences that could affect the public’s confidence in the technology.

- Liability issues: will the driver be responsible if ISA system maintains an incorrect speed and something happens? (in cases of advanced automation)
ISA : OEM vs OFF-board systems

- Manufacturers are offering ISA based on:
  - *camera based systems*, or
  - DVD) *speed limit database*

In the same time:

- Off-board (3\textsuperscript{rd} party) solutions exist:
  - In portable GPS systems (e.g. Tomtom and Garmin)
  - APPs for smartphones (e.g. Tomtom app)
## SWOT-analysis

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<th>(1) On-board</th>
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<tbody>
<tr>
<td><strong>Strengths:</strong></td>
<td>+</td>
<td>-</td>
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<tr>
<td>Robust system - checked at the time of type approval</td>
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<td><strong>Active ISA technically feasible</strong></td>
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<td><strong>Weaknesses:</strong></td>
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<tr>
<td>Can’t be often upgraded ➔ no function when new positioning system, wrong [outdated] info</td>
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<tr>
<td>An “App” could do better and more</td>
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<td>Fast obsolescence of vehicle</td>
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<tr>
<td><strong>Opportunities:</strong></td>
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<td>Trust in the system when put on the market</td>
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<td><strong>Threats:</strong></td>
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<td>No function for old cars when system outdated</td>
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<td>No positioning system signal ➔ no function</td>
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<tr>
<th>(2) Off-board</th>
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<tr>
<td><strong>Strengths:</strong></td>
<td>+</td>
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<tr>
<td>Upgradable system, working with coming positioning systems and new functions</td>
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<tr>
<td><strong>Passive ISA only</strong></td>
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<td><strong>Weaknesses:</strong></td>
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<tr>
<td>Can’t be fully tested during Type Approval</td>
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<td>If the driver has no device, no function</td>
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<td><strong>Opportunities:</strong></td>
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<tr>
<td>Retrofit possible and easy</td>
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<td>Would ease introduction of new safety feature implementation in future</td>
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<td><strong>Threats:</strong></td>
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→ On board systems: active systems possible - Off-board systems: quick market introduction of passive systems
1. Satisfying environmental and safety regulations on a market-by-market basis is extremely expensive.

2. A UN Regulation will simplify an exceedingly complex global “regulatory arena.”

3. A vehicle certified (T.A.) once, can be marketed everywhere (Principle of mutual recognition of T.A. of 1958 Agreement).

4. Set harmonized technological neutral provisions fostering leverage of costs.

5. An affordable ISA system for all vehicle categories will help to save multiple lives and reduce road fatalities.
Difficulty foreseen because of the lack of harmonised standards or existing regional requirements:

**USA:** Positioning via GPS satellite constellation

**Russian Federation:** Positioning via Glonass satellite constellation

**EU:** Positioning via GPS and Galileo satellite constellation

**Japan:** Positioning via GPS satellite constellation
Possible risks:

Fragmentation risk due to different positioning systems:

- Could prevent mutual recognition of UN type approvals
  (key principle of the 58 Agreement)

Design versus performance requirements:

- Specific positioning system requirements versus performance requirement on vehicle positioning
- Mandatory “Multi (3) satellite constellation” (Glonass, GPS, Galileo)
- Unnecessary complication with little benefit for the national/regional consumers
Conclusions

- The existing WP.29 framework provides a single process that enables the incorporation and delivery of safety vehicle technologies into motor vehicles and their parts.

- However, an impact assessment study carried out by C.P.s to Agreements under resp. of WP.29 is needed to verify and minimize risks.

- So far C.P.s have not yet proposed initiatives.
Thank you for your attention

www.unece.org/trans