In-Vehicle Emergency Call Systems: From National Deployment to International Harmonization

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ERA-GLONASS System: Four Years from Concept to Operation

May 2010 - Start of ERA-GLONASS project (Government Contract signed)

1. Design and deployment of ERA-GLONASS infrastructure
2. Legislation enabling the creation and operation of ERA-GLONASS System
3. In-Vehicle System requirements definition
4. Ensuring Interaction with emergency response services

January 2015 - Full-scale operation startup

First vehicles equipped with ERA-GLONASS devices are undergoing certification and are expected on the roads in Q2 2015
Development of the UNECE Regulation for Vehicle Emergency Call Systems

- The World Forum for Harmonization of Vehicle Regulations (WP 29) at the 159th session, March 2013: the Russian Federation announced its intent to propose a new UN Regulation governing emergency call systems.

- WP 29 at the 160th session, June 2013: an informal working group (IWG) was established under the Working Party on General Safety (GRSG) for developing the new UN Regulation for emergency call systems.

- IWG on automatic emergency call systems started its work chaired by the Russian Federation.

- The UN Regulation draft discussed at IWG meetings:
  - 08 – 10 October 2013 (Geneva)
  - 05 – 06 December 2013 (Paris)
  - 26 – 28 February 2014 (Moscow)
  - 28 – 30 April 2014 (Paris)
  - 02 – 04 September 2014 (Turin)
  - 18 – 20 November 2014 (Prague)
  - 25 – 27 February 2015 (Paris)

- The next IWG meeting to discuss the UN Regulation scheduled for 31 March – 2 April 2015 (Rüsselsheim)
eCall/ERA-GLONASS Standardization Challenge

- Cross-disciplinary standardization required
- Competency spread in different industries
- Regulated environment
- International standardization due to global nature of the car industry
- Interoperability requirements (vehicles cross borders)
- Adjacent areas / applications should be taken into account
- Customer perception matters

Minimum requirements do not always work due to a complex service chain
AECS Functions and Regulation Scope

- GNSS Receiver
- Micro
- Back-up Battery
- Speaker
- Hads-free audio
- GLONASS
- Galileo
- GPS
- Position determination
- Indicator
- Button
- Automatic Triggering Signal
- Wireless communication
- Data transmission mechanism and format
- Autonomous performance
- Wireless infrastructure
- System infrastructure
- Crash performance and crash resistance
- HMI requirements
Legacy Networks and System Infrastructure
Define Minimum Requirements

Europe: 2G, in-band data transmission directly to PSAP
Russia: 2G & 3G, in-band and SMS data transmission, dedicated system infrastructure
Japan: 3G, packet data transmission, dedicated system infrastructure
Self-Consistent Components Benefit from ‘Traditional’ Approach

Hands-free audio: good chance to sync with P.emergency ITU-T recommendation
Crash performance and resistance: well established crash testing methods (Reg 94 & 95)
HMI requirements: defined in UNECE Reg. 121
Can Position Determination Requirements be Performance-Based?

GNSS coverage is global, so no barrier for harmonization. However, test methods are technology-dependent.
GNSS Requirements are Technology-Related

- **Horizontal position accuracy:**
  - Open sky conditions shall not exceed 15 m
  - Urban canyons conditions shall not exceed 40 m
  - PDOP not more than 2.5 and 4 respectively
  - 95% of the measurements done
  - Speed up to 140 km/h

- **Sensitivity:**
  - Acquisition: at least minus 144 dBm
  - Tracking: at least minus 155 dBm
  - Reacquisition: at least minus 150 dBm

- **Time to first fix** not to exceed:
  - 60 sec for signal level down to minus 130 dBm
  - 300 sec for signal level down to minus 140 dBm

- **Re-acquisition time** after block out of 60 sec not to exceed:
  - 20 sec at signal level down to minus 130 dBm

Technology-neutral test methods could hardly be defined
AECS Regulation:
First Attempt to Regulate Networked Car

- **Connected Car technologies are rapidly developing**
  - V2V
  - V2I
  - Driving automation

- **Standalone performance criteria are insufficient**
  - Selected technologies must be supported
  - Compatibility with infrastructure is required
  - Focus on performance in cooperative systems

- **Non-functional criteria matter**
  - Security
  - Privacy
  - Data integrity and reliability
  - Driver distraction
Can the Networked Car be regulated as a network element?
Thank you

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