VEHICLE-TO-INFRASTRUCTURE COMMUNICATION FROM AN INTER-URBAN PERSPECTIVE

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ABSTRACT

Vehicle Industry is in an innovation competition on functions and services around connected and highly automated driving. Both promising benefits in safety and environmental savings and attractiveness of the new functions for customers motivate this development.

Public sectors and society will also benefit manifold. In addition to safety and environment protection, more traffic efficiency will be achieved. Finally, mutual collaboration and support in introducing Vehicle-to-anything communication (V2X) based functions today will not only achieve the mentioned benefits but also supports local vehicle industry to be competitive in the international market.

From the perspective of an inter-urban road operator it is important to recognise, which cooperative functions are internationally agreed (e.g. in the European Strategy for cooperative and intelligent traffic systems). Single operator or national services will not be successful because the other communication partner (vehicle) is exposed to an international market and is forced to produce functions working everywhere on the international market.

Well-agreed applications today in inter-urban / highway sector comprise “Roadworks and hazard warning” and “Shockwave damping”. Both functions can be achieved by standard technology that is on its way to series introduction.

Standard messages are used in many further applications. 802.11p (ETSI ITS G5) is the existing technology for local, ad-hoc low-latency communication, build into the 2019 series by many vehicles OEMs and infrastructure industry. It is complemented by “connected services” over existing mobile internet (3G/4G), whenever higher latency and the fact that a carrier and a service provider must be involved is an acceptable scenario.

Future technologies towards 5th generation mobile radio are in development (e.g. V-LTE). Both technical concepts for matching and enlarging existing V2X to this technology and business agreements across mobile network carriers needed to achieve a seamless functioning technology have to be created.