i-Game Project

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Facts

Acronym:	i-GAME
Project title:	Interoperable GCDC (Grand Cooperative Driving Challenge) AutoMation Experience
Start date:	1-10-2013,
End date:	30-09-2016
Website:	http://gcdc.net

Objective

Speed up real-life implementation and interoperability of wireless communication based automated driving.

Approach

- Develop functional architecture;
- Demonstrate it in a multi-vendor challenge (GCDC; May 2016);
- Evaluate & disseminate.

Use Case

- Platooning with lateral control ('merging') due to a road-works warning;
- Intersection scenario;
- Emergency scenario ('give way').

Architecture

- **Communications:** Conform ETSI TC ITS Release 1 (ITS-G5; GeoNetworking; BTP).
- **Message Services**
  - **Contents:** Mostly (CAM, DENM) conform ETSI TC ITS Release 1, project specific message type for lane-change manoeuvers (ICLCM: i-Game Cooperative Lane-Change Message).
  - **Triggers:** Deviates from ETSI TC ITS (CAMs and ICLCMs are transmitted at fixed 25 Hz message rate, which was perceived necessary for further reduction of inter-message delays and reduce the average age of message content).

Additional Contribution

- Remote testing (securely) of communications, messaging and interaction protocols;
- Safety assessment.

Conclusion

The path taken in the i-Game project for CACC/Platooning/Merging *cannot* be implemented within the confines of the current ETSI TC ITS standards, hence the project issues the strong message that for such safety-critical applications, dedicated solutions (e.g., in separate frequency spectrum at higher message rates) beyond the 'CAM realm' are recommended. This has already been picked up by ETSI WG1 (CACC & Platooning Work Items).

AutoNet2030

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Source: AutoNet2030 D1.3 Public Final Report

Objectives

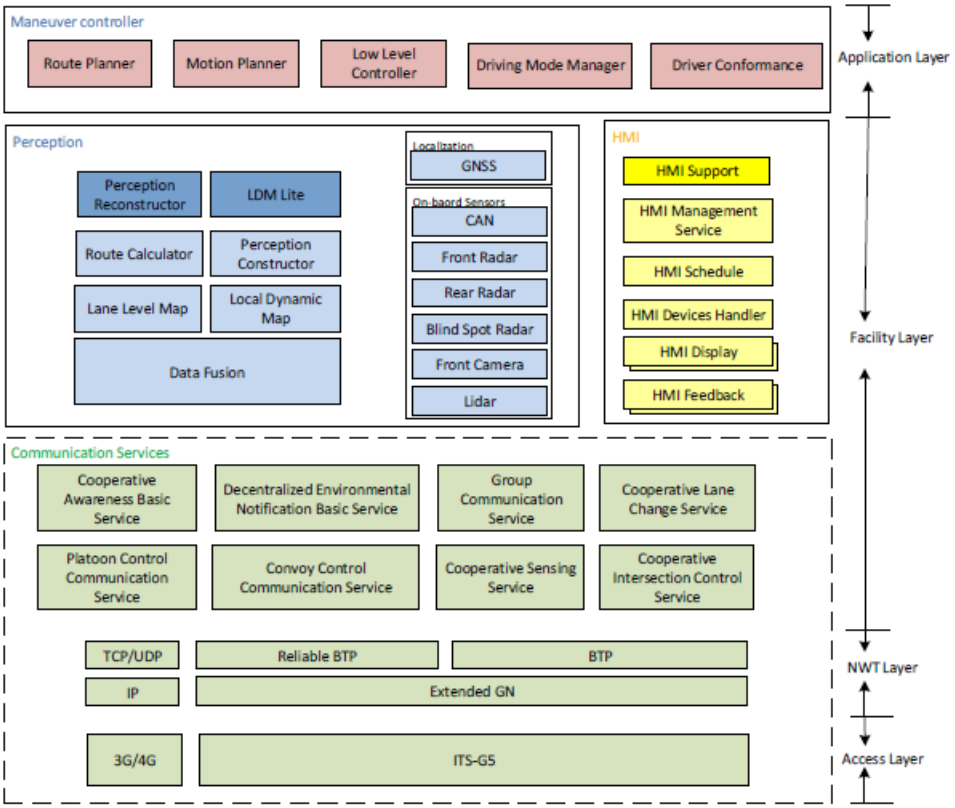
To develop and test a co-operative automated driving technology, based on a decentralized decision-making strategy which is enabled by mutual information sharing among nearby vehicles.

Selection of Results/Achievements

- Maneuver Controller
- Perception Layer
- V2X Communications
    - **Communication Requirements for Cooperative Autonomous Driving:**
        - Additional Vehicle Status Data;
        - Convoy Management;
        - Maneuver Negotiation;
        - Intersection Management;
        - Cooperative Sensing;
        - High Message Rage;
        - Data Load Control;
        - Low End-to-End Latency;
        - High Reliable Packet Delivery.
    - **Message Extensions:**
        - Cooperative Awareness (i.e., CAM);
        - Convoy Control Communication Service (CCCS);
        - Cooperative Lane-Change Service (CLCS) ;
        - Cooperative Sensing Service (CSS).
    - Smart Forwarding Algorithms;
- Human-Machine Interface

Software Components

<Taken from AutoNet D1.3>



Conclusion

In AutoNet2030 also additional message extensions beyond CAM are developed, i.e. Convoy Control Communication Service (CCCS), Cooperative Lane-Change Service (CLCS) and Cooperative Sensing Service (CSS).