Innovation und Technologie (BMVIT), Abteilung Mobilitäts- und Verkehrstechnologien (Abt. III/I4)

Quelle: iV2plus Vernetzungsplattform der FFG (www.ffg.at/verkehr) und des Bundesministerium für Verkehr, für Verkehrswesen

To answer these research questions the following tasks are foreseen:

Through the execution of expert interviews and market research, the user requirements shall be captured with respect to lane-specific road-maps in the field of ITS and road maintenance. In the next step a dedicated FCD analysis based on statistical methods (cluster analysis and regression modelling) will be validated. Among others, the question will be answered whether the lateral deviation of the acquired position data would be sufficient for the current task if it comes to different traffic environments. The determined parameters from this error analysis will be fed into the process of developing a new methodology for the generation of lane-specific networkgraphs.

The semi-automatic process shall be realized in a first prototype that generates typical models of the corresponding network-graph. Furthermore new fields of applications for lane-specific maps in public institutions, road authorities and automotive industry shall be stimulated. The innovative domain of cooperative services and toll collection represents promising market potential, which shall be evaluated throughout the project. The generated network-graph in LaneS consisting of nodes and edges, will contain lane-refined elements, which will be referenced towards existing maps (e.g. GIP or commercial maps or OSM). Thus, LaneS provides an extension to the digital maps, which can as act as enabling technology for ITS services.

The project LaneS aims to develop methods and prototypes for semi-automatic determination of lane-specific road-maps on the basis of floating car data. In this context first prototypes shall be realized and validated with the focus on modelling of the corresponding network-graph. Furthermore new fields of applications for lane-specific maps in public institutions, road authorities and automotive industry shall be stimulated. The innovative domain of cooperative services and toll collection represents promising market potential, which shall be evaluated throughout the project. The generated network-graph in LaneS consisting of nodes and edges, will contain lane-refined elements, which will be referenced towards existing maps (e.g. GIP or commercial maps or OSM). In this regard, LaneS provides an extension to the digital maps, which can as act as enabling technology for ITS services.

The project LaneS aims to improve traffic safety and efficiency through intelligent infrastructure in digital form of the road network. This approach will be based on a lane-specific roadnetwork-graph. In the basis of conventional GPS data (and future Galileo data respectively) / FC-data, a method shall be analyzed and realized in form of a first prototype, which represents the precise location of single lanes (e.g. a highway). The motivation for this project comes with the gained know how from the IMPAKT project, which was funded by BMVIT. Recent feedback from public institutions and potential application fields indicate a strong demand for lane-specific road-maps, in order to enable ITS services in the field of road maintenance. This has been confirmed by a series of letter of interests (e.g. LOI-Partner BMVI / Federal Ministry of traffic innovation and technology of Germany; in the field of lane-specific FCD-services -> LOI-Partner INRIX-Traffic; winter services -> LOI-Partner MobiWorx or in the domain of cooperative services -> LoI-Partner ITS Vienna Region und Traffic Control Centre of Bavaria).

In this context the following research topics shall be analyzed:

- Which are possible applications in the domain of intelligent traffic systems (e.g. Car-2-Car, Car-2-Infrastructure, lane-specific floating car data, autonomous driving, tolling, traffic information) or with respect of road maintenance (determination of the road condition, winter services), that can be identified to require a lane-specific road-map?
- How can the road infrastructure be mapped in a cost-effective manner and containing the lane-specific property, on the basis of only floating car data (GPS and Galileo position-fixes of arbitrary vehicles).
- What are the performance requirements with respect to position accuracy and availability of GPS / Galileo position fixes, for the individual application domains?
- What are the potential benefits, that can be identified for the different actors (e.g. public institutions, road authorities, industry or other service providers)?

The semi-automatic process shall be realized in a first prototype that generates typical models consisting of nodes and edges. This refined map data will contain lane-specific elements, which will be referenced towards existing maps (e.g. GIP or commercial maps or OSM). Thus, existing digital maps will be maintained as basis and extended, without any changes on the underlying models. Finally the market potential and applicability of LaneS for possible users like public institutions, road authorities, infrastructure providers and mobility/services providers as well as automotive industry will be evaluated with respect to the domain of ITS.

LaneS

FCD basierte Erzeugung von fahrstreifenfeinen Straßengraphen, Nutzungspotenziale für IVS und Straßenerhaltung

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