

## Master 2022

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Reimaging Automotive Communication using Programmable Data Planes.

## ABSTRACT - Masterthesis

Automotive communication is constantly evolving and vehicles are turning into applications on wheels. The in-vehicular networks have tremendous scalability issues and aspects related to controlling applications. Hence, the emphasis is shifting onto Service Oriented Architecture (SoA) for different types of service-on-demands where each application is considered to be a service provider or consumer. This enables the network to handle the traffic in a more dynamic and organized manner. One example of an SoA is Scalable Service-Oriented Middleware over IP (SOME/IP). The distinctive features of SOME/IP are its discovery phase and data sharing aspect. A dataplane programmable Programming Protocol Independent Packet Processor (P4) Software Defined Networking (SDN) switch can further support the network in enhancing the dynamic and scalable aspects of the SoA. The particular features of the programmable SDN switch such as in-network caching and in-network computations can be leveraged massively in boosting the flexibility of hosting applications. This thesis aims at identifying a few solutions through which a programmable dataplane switch canescalate the benefits of SoA architecture in an automotive network and finally make recommendations on further enhancements that can be considered going forward.