

## **mmWave beam control for geocasting in vehicular networks**

The increasing amounts of sensor (camera) data generated by vehicles may require increasing communication bandwidth between cooperatively driving vehicles. A promising way to provide high data rate links between vehicles is using mmwave communications. However, in order to overcome the severe propagation path loss at mmwave frequencies, beam forming with high antenna gains is required. For cooperative driving, it may be important to distribute sensor (camera) information to multiple vehicles in an area (geocasting). An open research area is how to control the beamforming for such geocasting. Wider beams allow for reaching multiple receivers at the same time, at the cost of link budget, i.e., range. Relaying can help covering larger distances if the range of a mmwave transmission is insufficient. It has been shown that information exchanged using beacon messages at below 6 GHz (covering a larger range omnidirectional) can help for mmwave beam control [1]. This assignment investigates how variable beam widths and relaying can help for mmwave geocasting in vehicular networks, and how these can be controlled in a distributed way using sub-6GHZ beacons.

Contact: Geert Heijenk