In this study, the authors demonstrated the potential of V2V and V2I in a Het-Net environment with Wi-Fi, DSRC and LTE that guarantee the optimal utilization of available communication options and minimize the corresponding backhaul communication infrastructure requirements while considering connected vehicle application requirements.For a broad range of CVT applications (i.e., safety, mobility, environmental), a viable communication option should include V2V and V2I capable of utilizing a Het-Net optimally without losing connectivity while moving from one communication network to another.Field tests revealed that the message delivery time during the handoff was much higher than the CVT safety application latency requirement of 200 ms. However, Het-Net could provide supplementary connectivity for CVT safety applications to warn vehicles upstream about any safety hazardous conditions downstream, so that they can take proactive actions to avoid the problem locations.ns-3 simulation experiments with a larger number of connected vehicles, compared to the field tests, were conducted for a DSRC and LTE Het-Net scenario to complement and validate the findings from field tests that included a limited number of connected vehicles.The handoff between networks (Wi-Fi to LTE, DSRC to LTE and vice-versa) require several seconds to establish a connection and resume the data transfer, which means that Het-Net could not be used to support time sensitive safety applications.The performance of a CVT application using Het-Net depends on the availability of multiple wireless communication options, acceptable communication latency, data security, and reliability of timely message delivery.Consequently these networks must be reconfigurable for developing such a robust synchronized Het-Net.