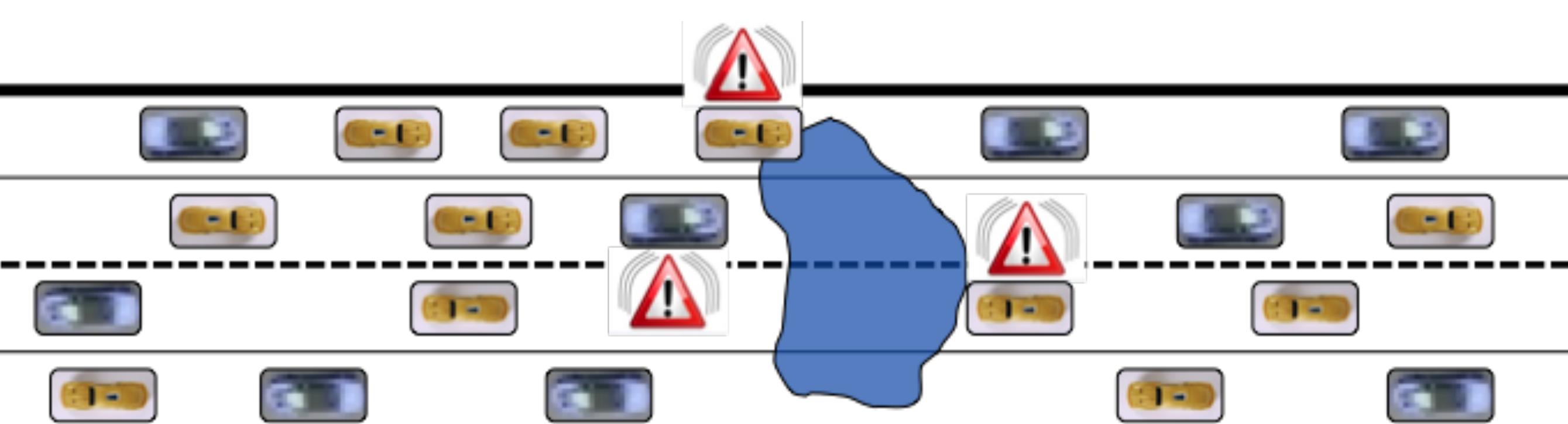


Safety Information Dissemination in Vehicular Networks using Facilities Layer Mechanisms

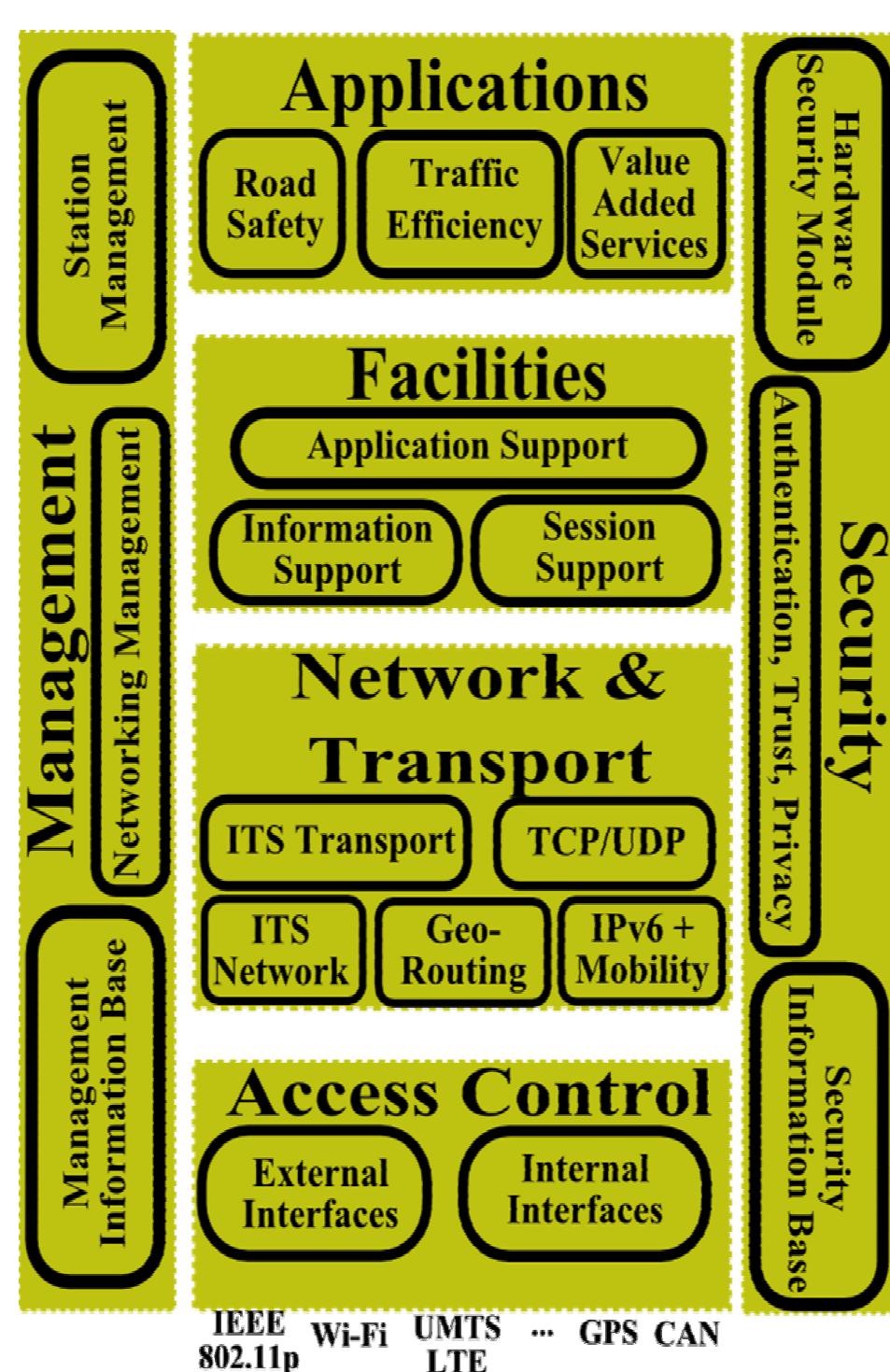
Mohammad Irfan Khan, Razvan Stanica

Université de Lyon, INRIA, INSA-Lyon, CITI-INRIA, F-69621, Villeurbanne, France
 {mohammad.khan, razvan.stanica}@insa-lyon.fr

Context



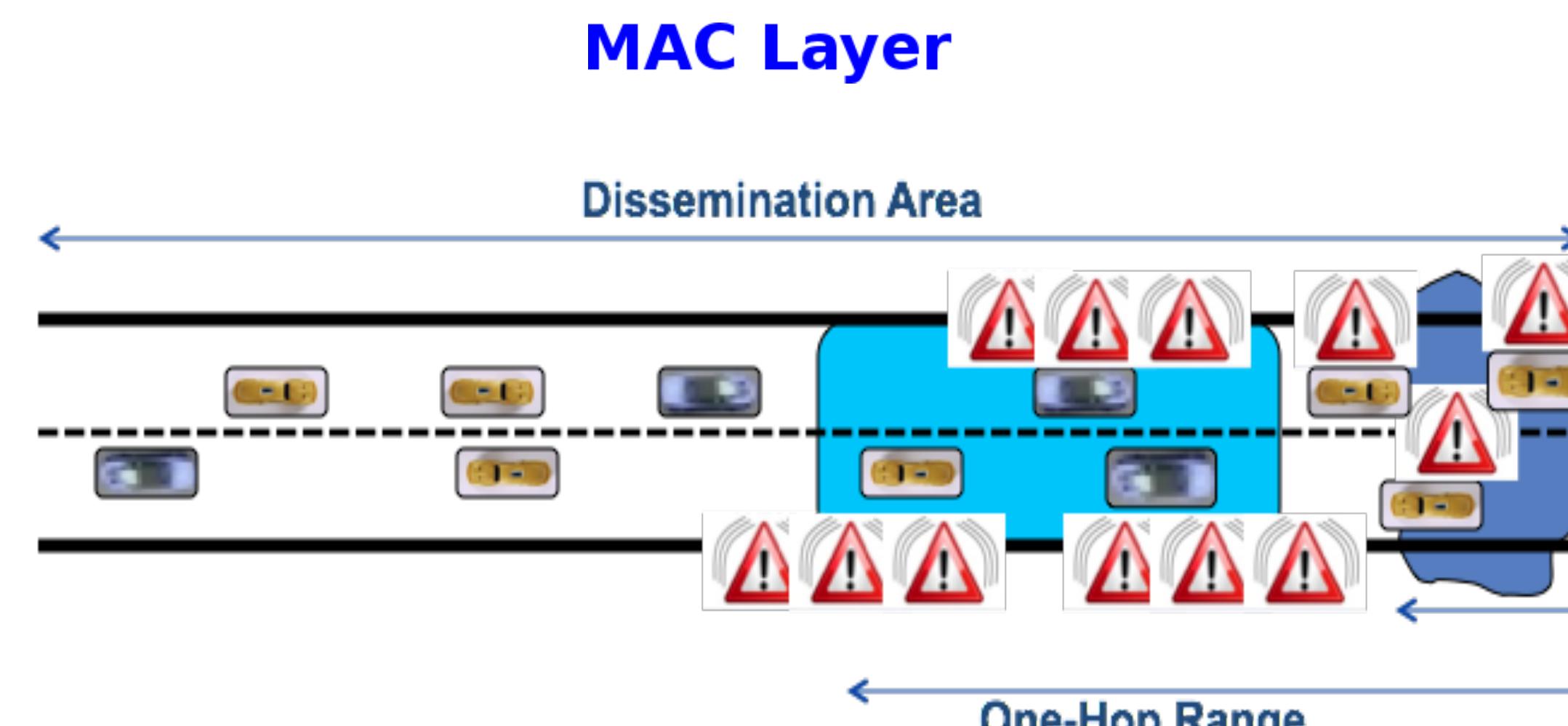
- Increased **road traffic safety** through the use of vehicular ad-hoc networks.
- Cooperative Awareness Messages **transmitted periodically** for proactive safety.
- Decentralized Environmental Notifications triggered by a **hazardous situation**.
- Messages produced by the **facilities layer**.



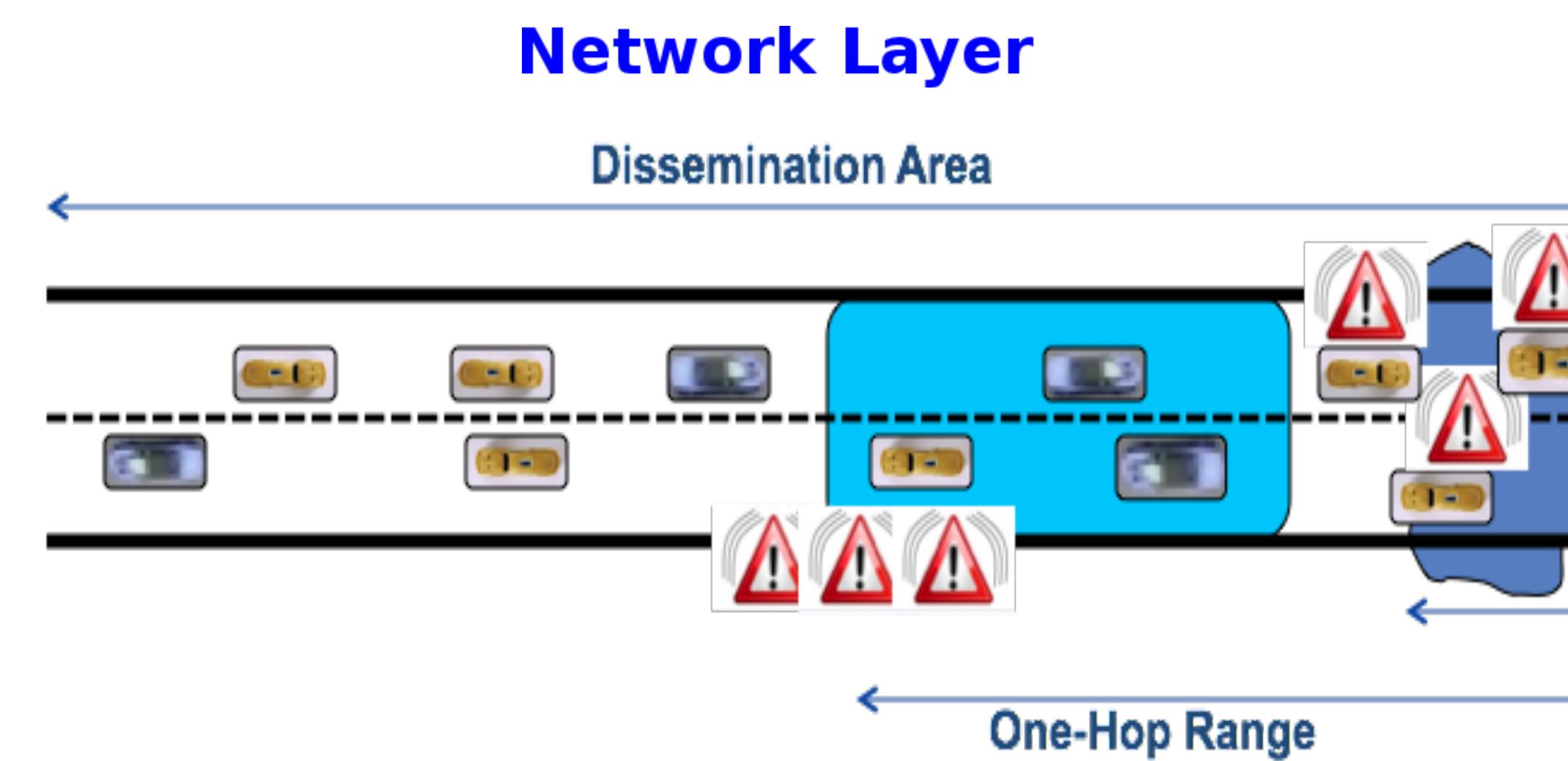
Conclusion

- The first study to consider both CAM and DEN messages.
- Ignoring the background safety beaconing traffic results in highly unrealistic results.
- The relay selection in geographical forwarding is problematic under high vehicular density.
- MAC layer forwarding is not practical, because of the high overhead it introduces.
- Network layer forwarding results in redundant transmissions when multiple vehicles detect the same event.
- The facilities layer keeps an accurate image of a vehicle's neighborhood in a Local Dynamic Map structure.
- By reducing congestion, facilities layer mechanisms can reduce by 50% the information propagation delay in high density networks when compared to a network layer approach.

Information Dissemination

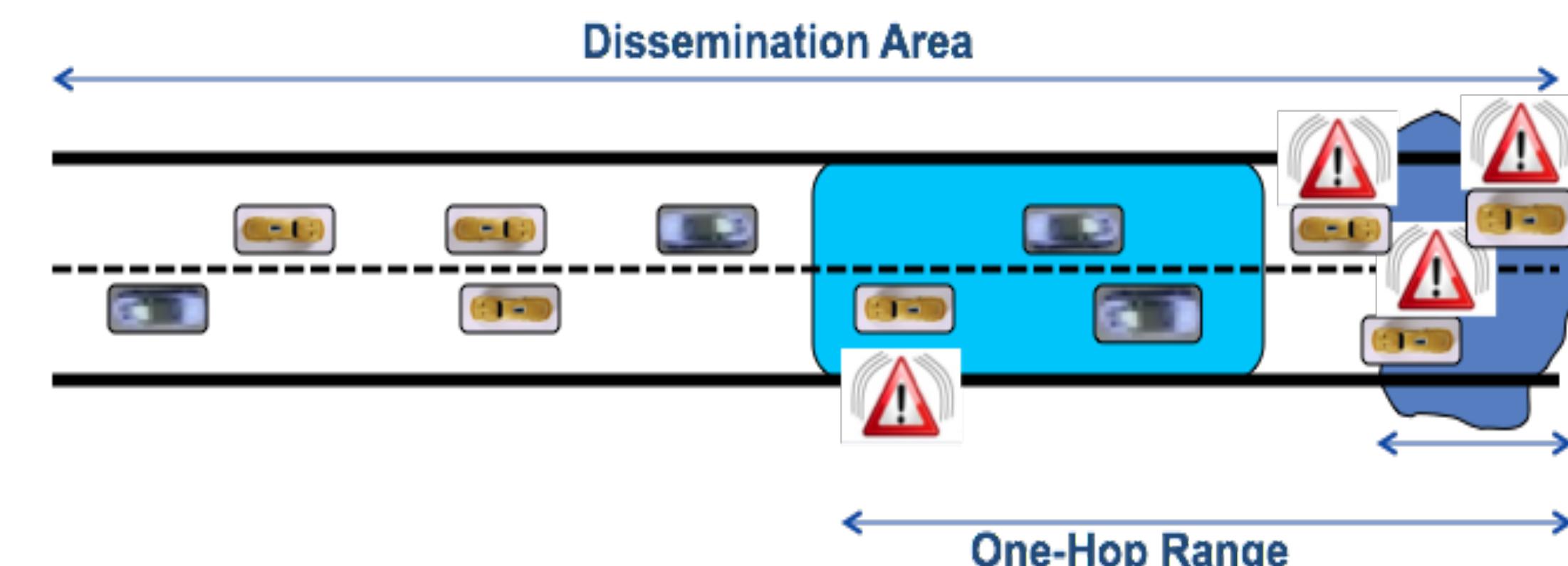


Forwarders can not distinguish the initial source. Geographical forwarding does not work, resulting in basic flooding.



Forwarders can not distinguish the same event has been detected by different vehicles. Geographical forwarding eliminates redundant relays.

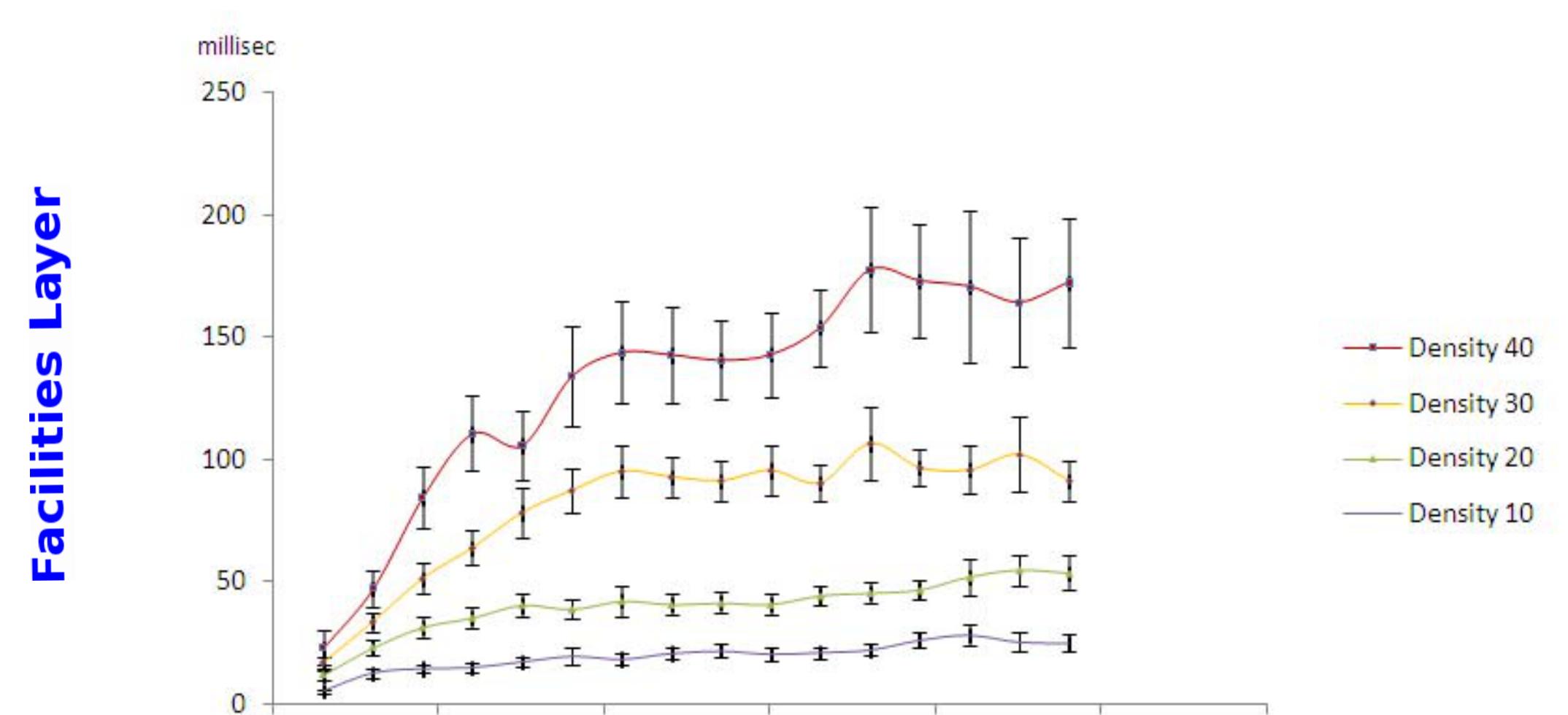
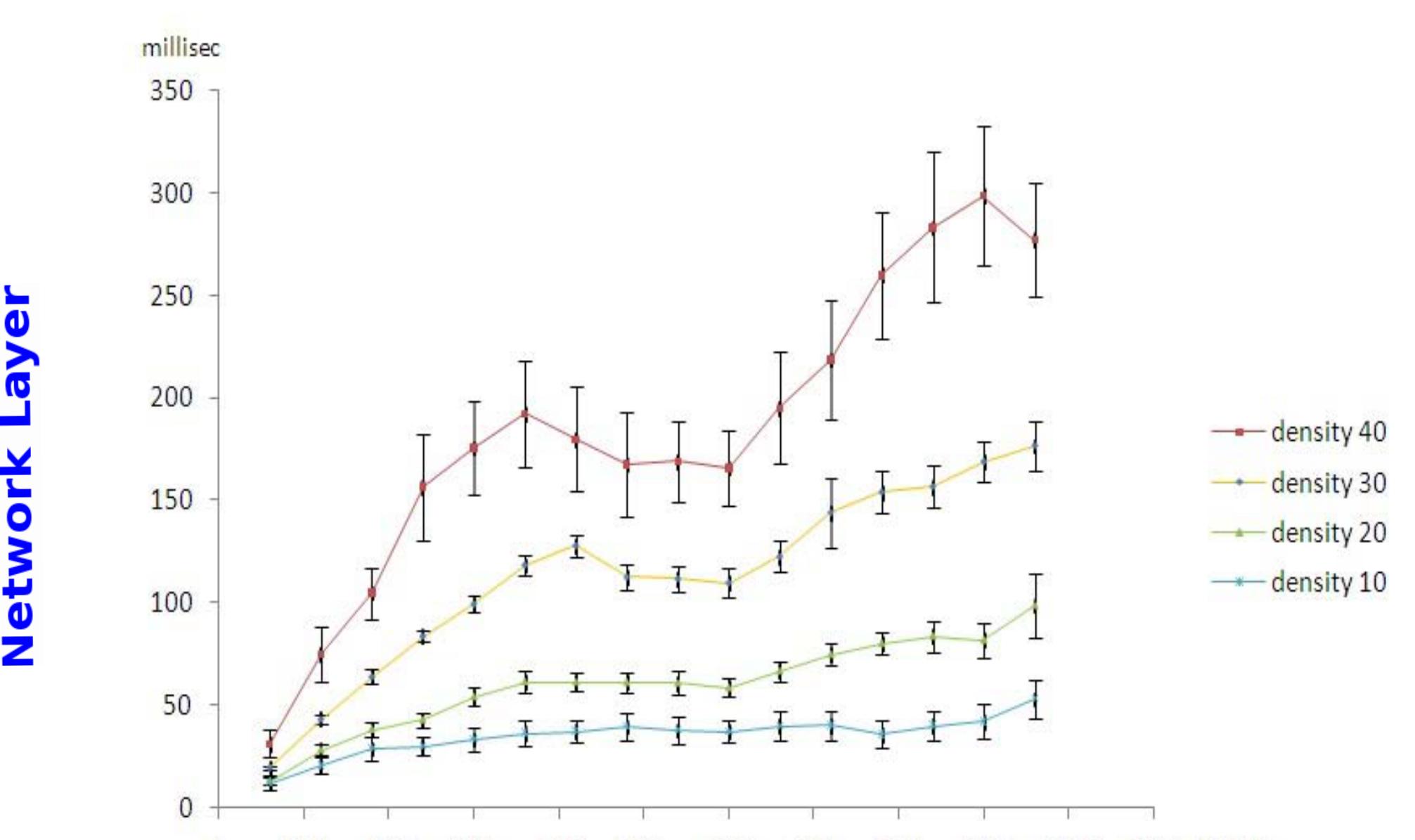
Facilities Layer



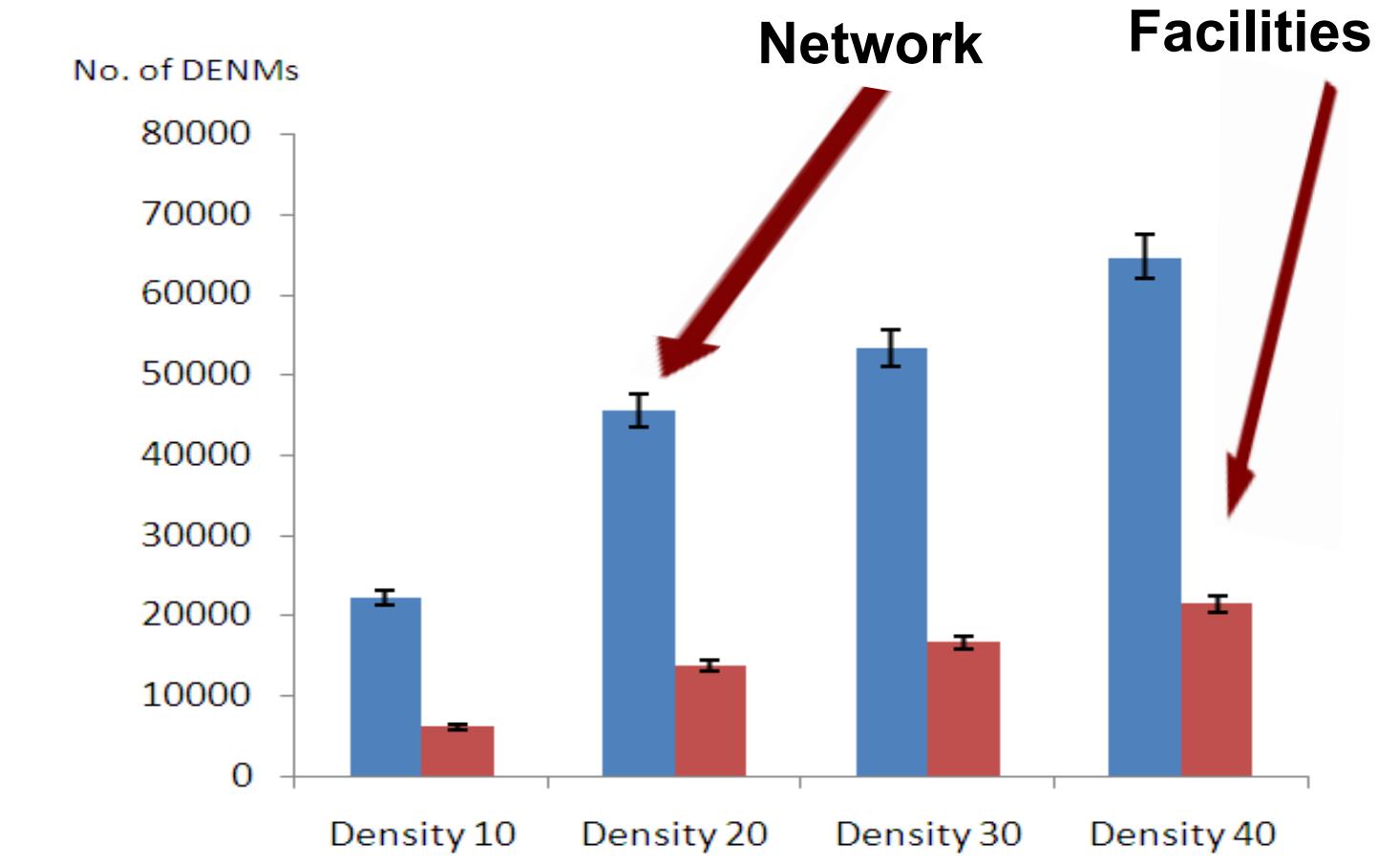
Forwarders detect the messages transport the same information. Geographical forwarding eliminates redundant relays.

Results

Delay



Number of messages



Impact on CAM

