

Scalable Data Collection and Dissemination over Vehicle-to-Vehicle Wi-Fi Communications

HONDA
TOYOTA

Honda, Toyota

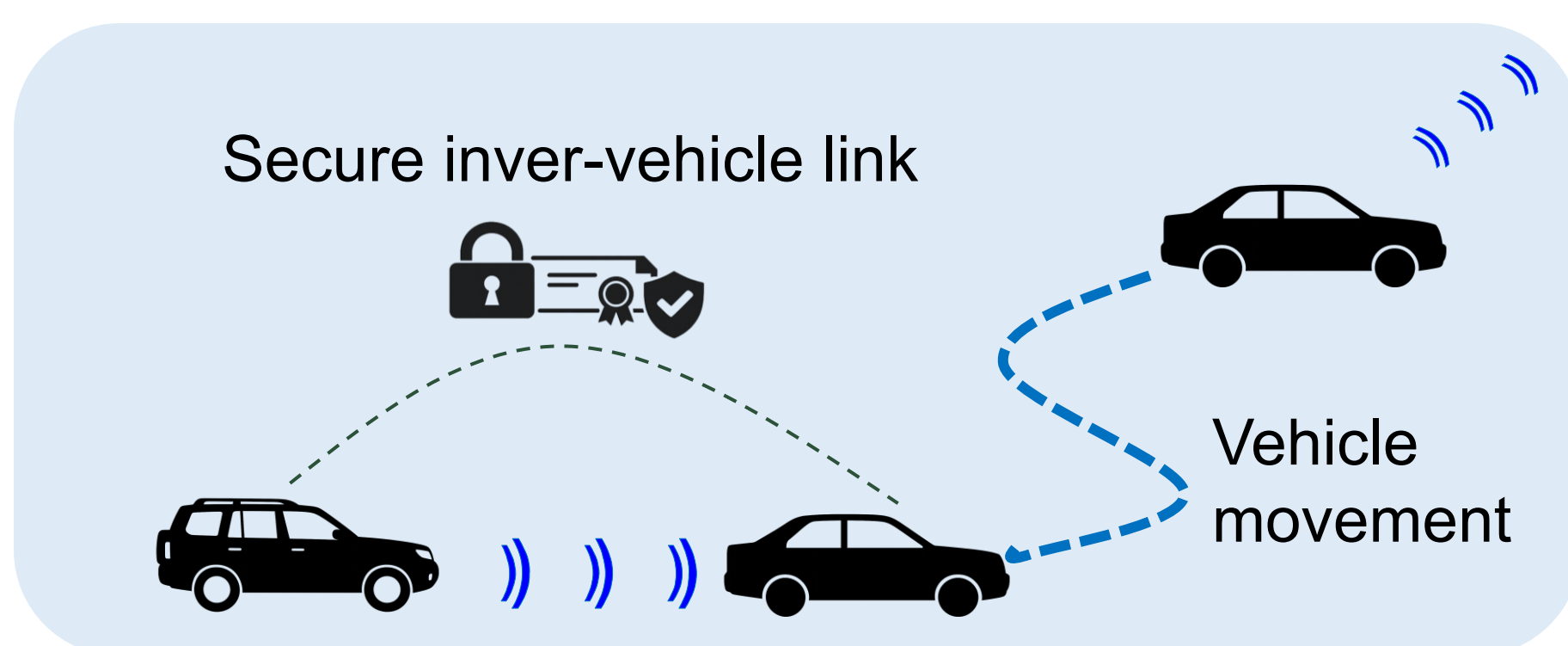
Goal

Establish a scalable end-to-end pipeline for handling and managing high-volume automotive data, leveraging **heterogeneous vehicular communications and distributed computing**.

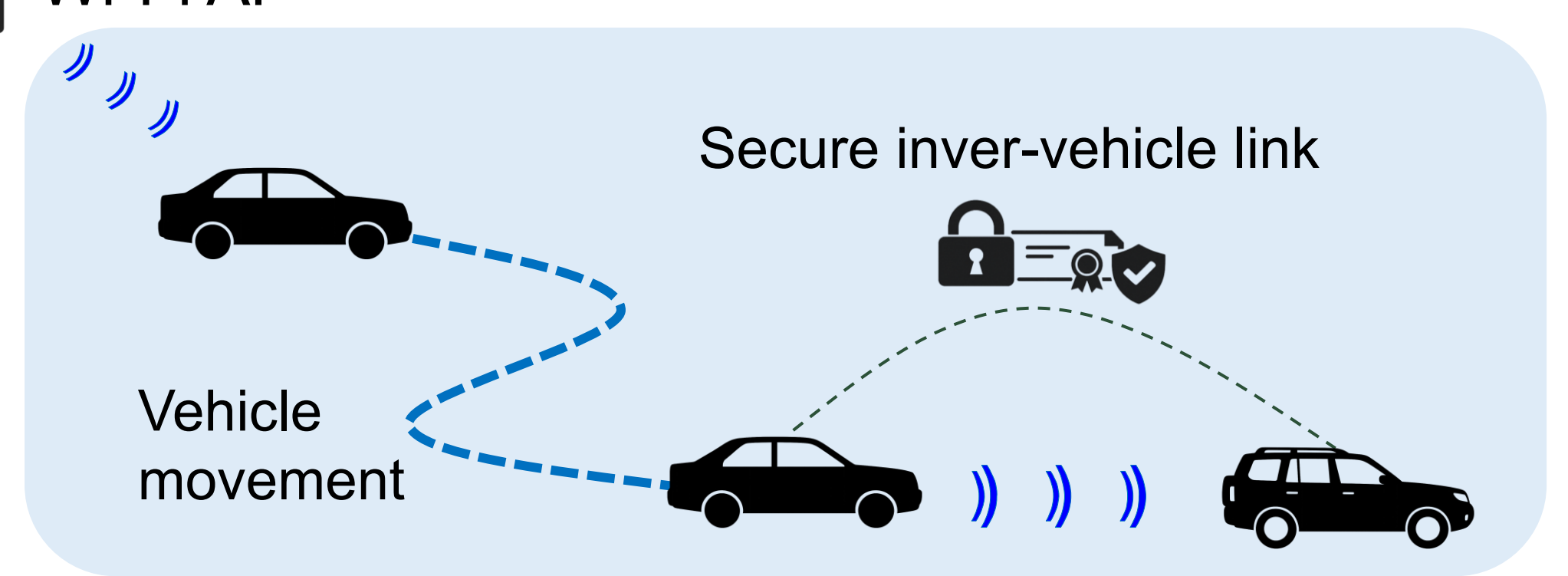
Concept

Cloud / Edge  Data-Driven Service Development 

Wi-Fi AP 



Vehicle data collection over V2V communications

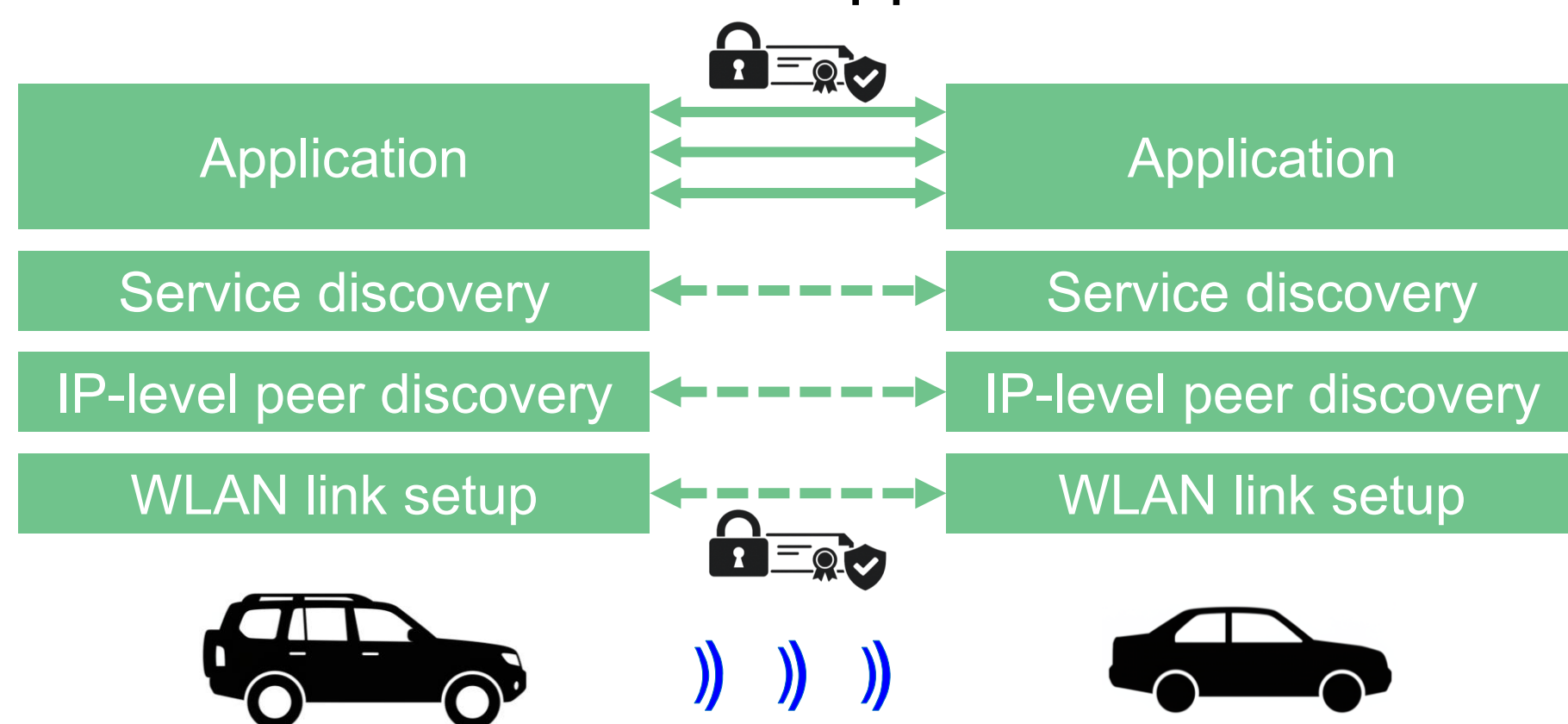


Content distribution over V2V communications

PoC Trials

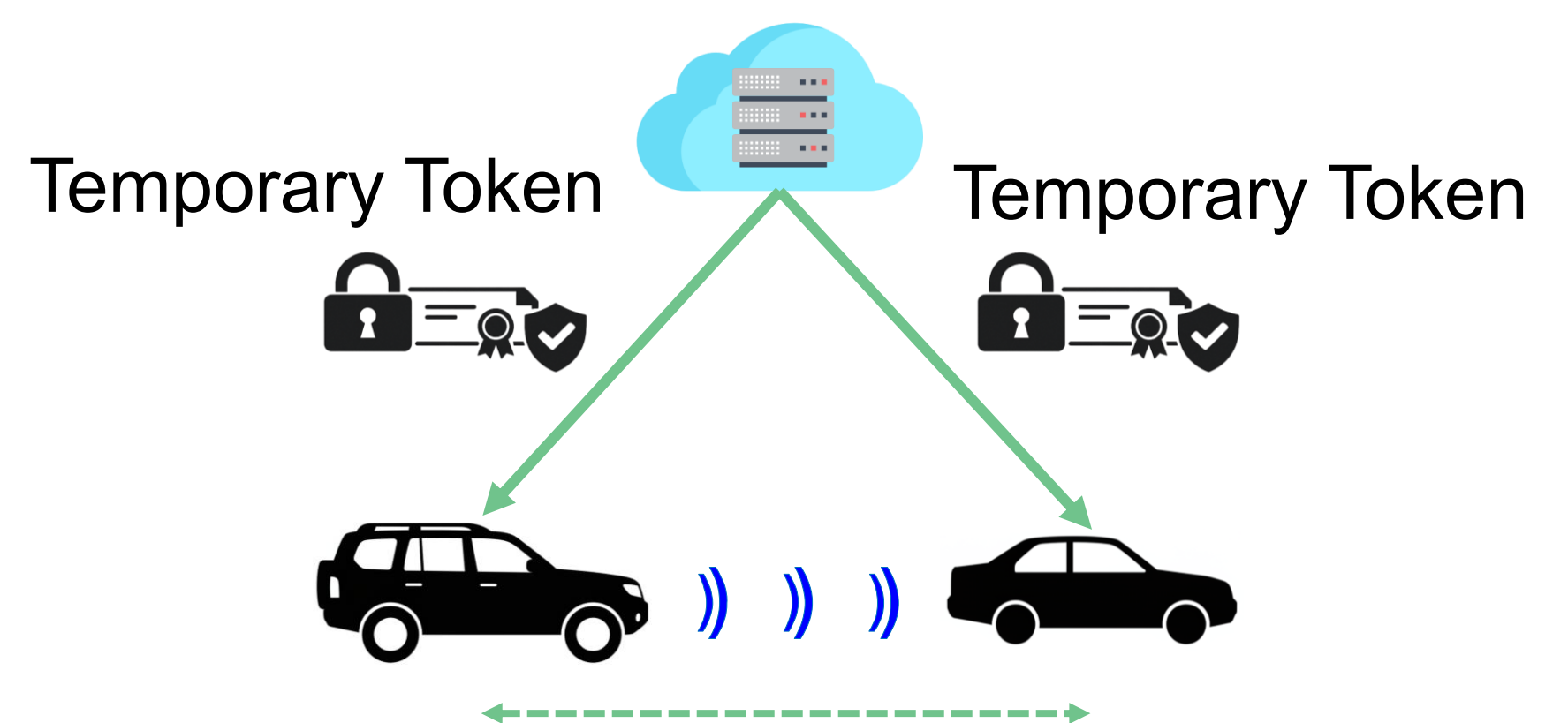
Multi-stream V2V file transfer

Multistream file transfer over HTTP/2 with app-level mTLS



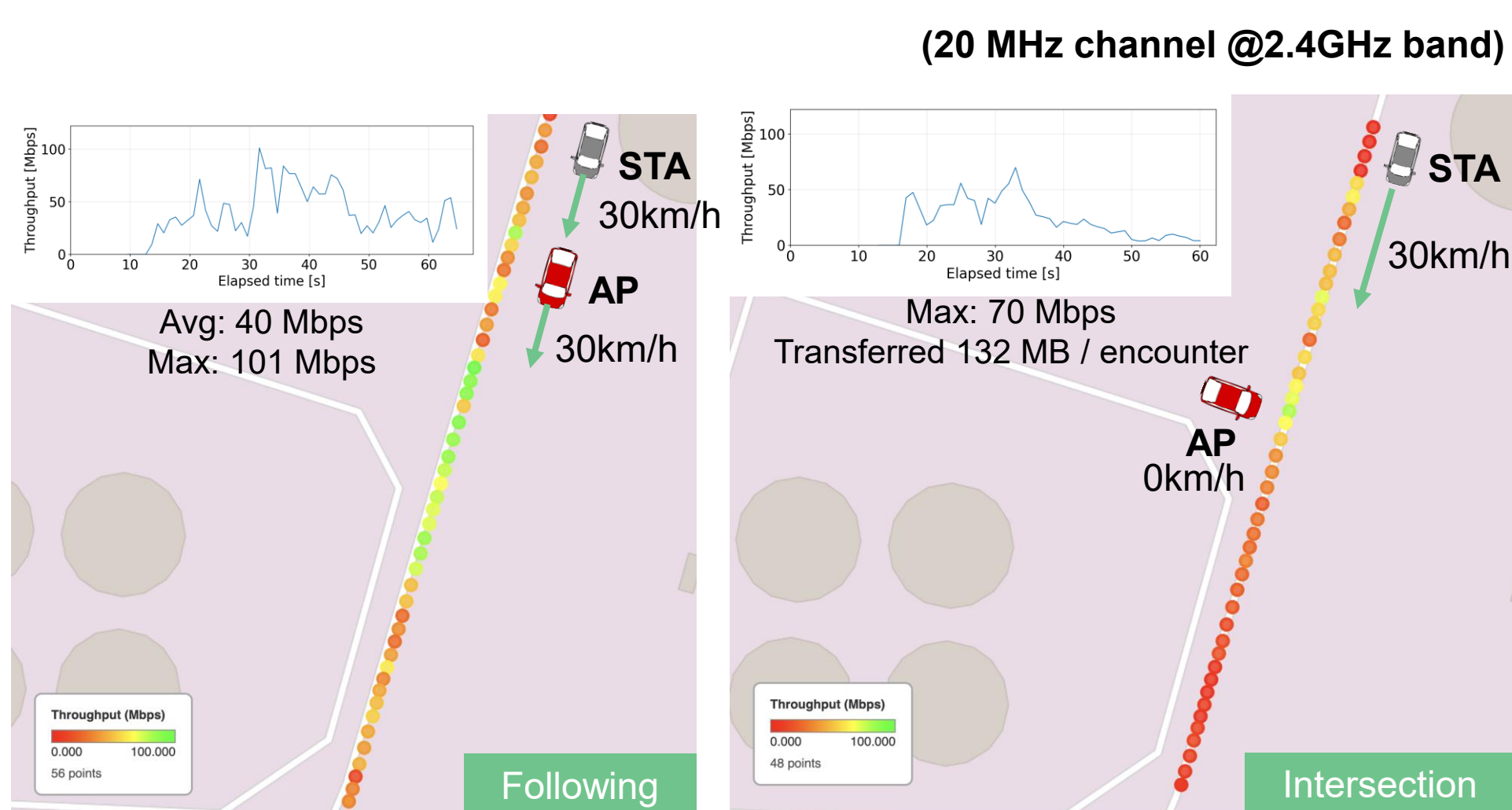
Token-based authentication

Token Server

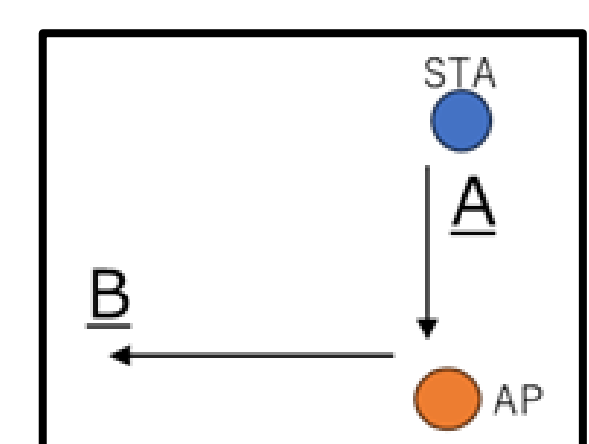
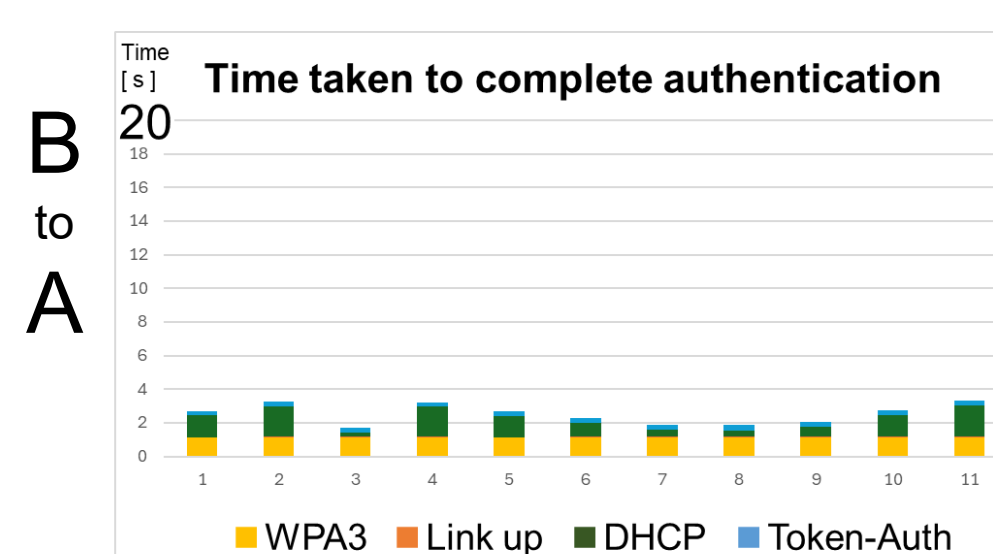
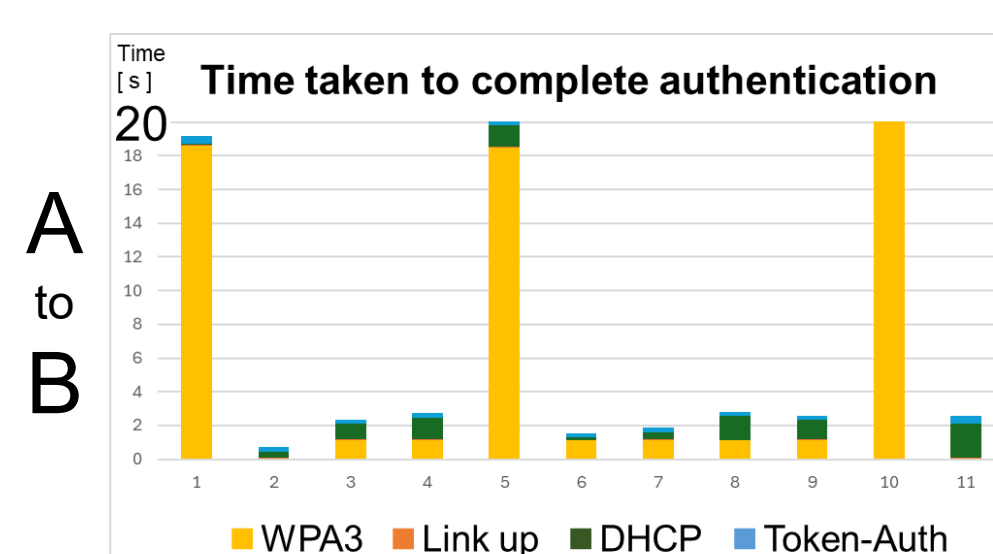


Vehicles **locally** verify other vehicles' tokens for fast and secure peer-to-peer link establishment

Key Results



Throughput Measurements of V2V Wi-Fi Communications



<Key Takeaways>

- Reliable V2V connectivity requires a relative speed of less than 55 km/h
- Mounting Wi-Fi antennas on the vehicle roof significantly improves performance
- Lightweight authentication is essential to maximizing the benefits of data offloading