IETF®

AECC
AUTOMOTIVE EDGE
COMPUTING CONSORTIUM

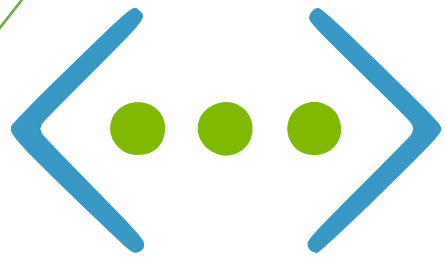
Multi-Access Multi-Use SD-VAN

LISP WG IETF Yokohama

Sharon Barkai

- LISP Nexgon Informational
- LISP PubSub Standard Track
- LISP and IPSec Standard RFCs
- RFC 8378 SFMCast Experimental

Multi-Access Multi-Use



Network Virtualization Overlays (NVO)

Network Function Distribution (NFD)

Identity Location Connectivity:

- Infotainment connected to Internet
- Using OEM public IP address space

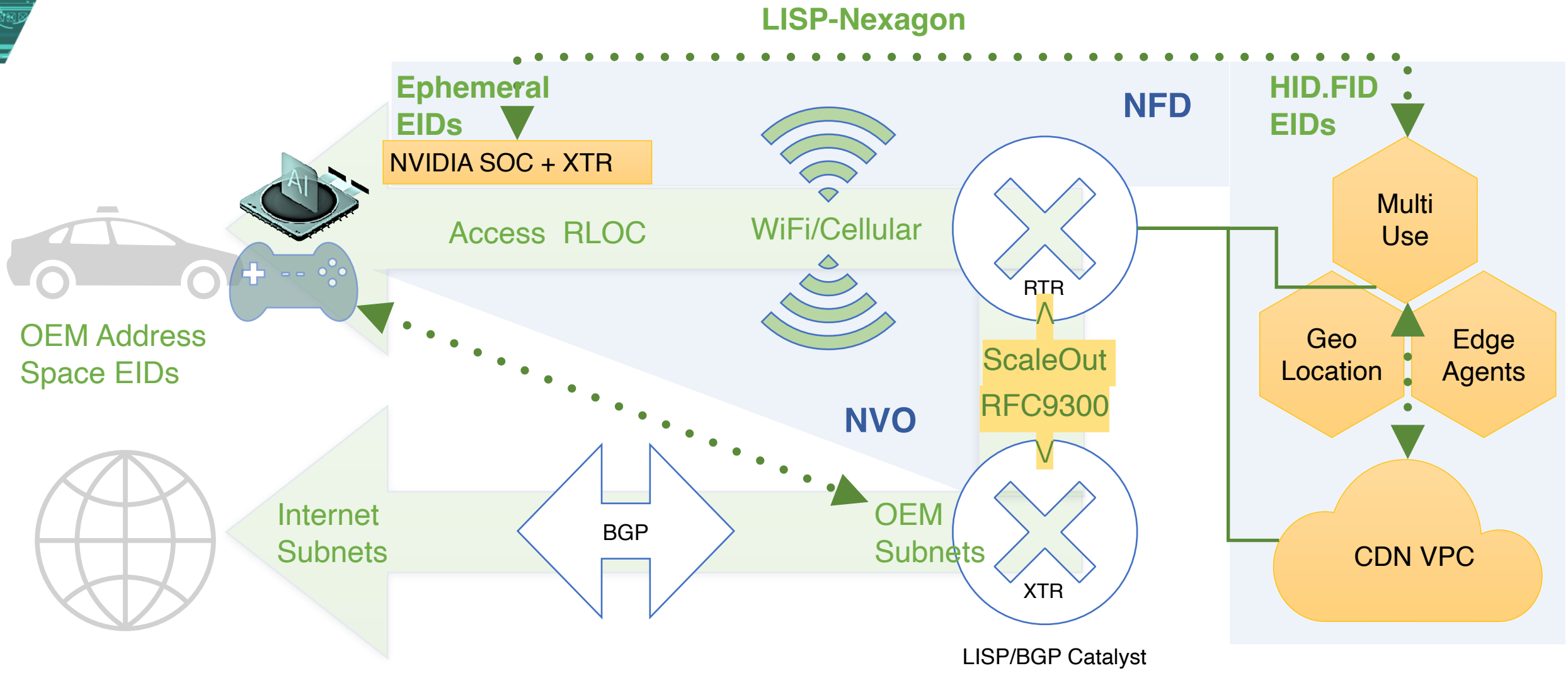
- Vehicles toggle wifi/cellular RLOC
- Seamless to the Internet sessions

Function Location Delegation:

- Dynamic Mapping while Driving
- Regional Inference while Parked

- H3 based EIDs of Edge Geo Agents
- Ephemeral EIDs of Far-Edge Agents

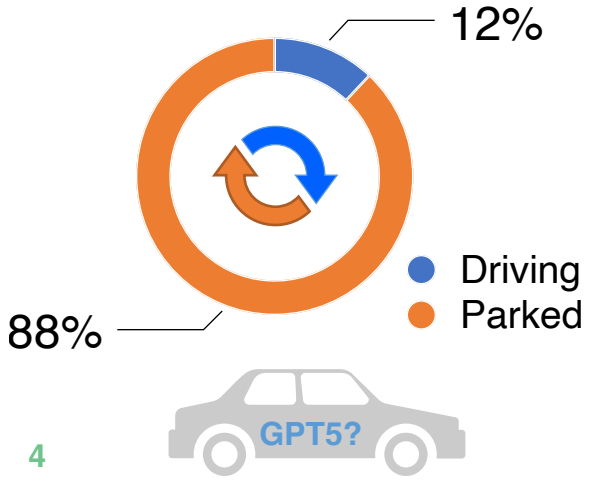
Multi-Access Multi-Use SD-VAN



Automotive Network Functions

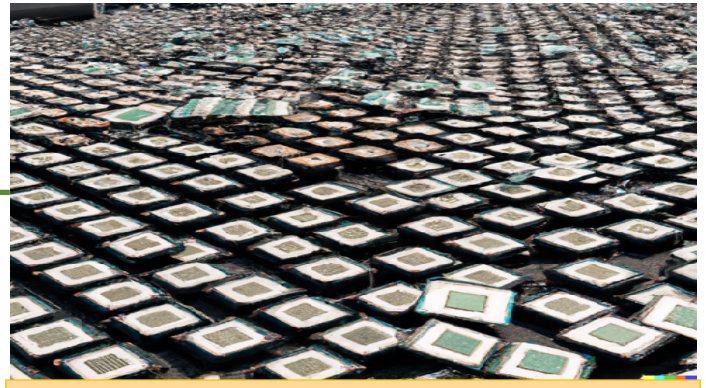
If Immediate && ! Multi => Vehicle
If Multi && ! Immediate => Cloud

- **Immediate && Multi-Vehicle**
  - Agents consolidate Vehicle Perception **AI** while **driving** => Dynamic Maps
  - Agents delegate Vehicle Perception **HW** while **parked** => Regional Inference



Dynamic Mapping

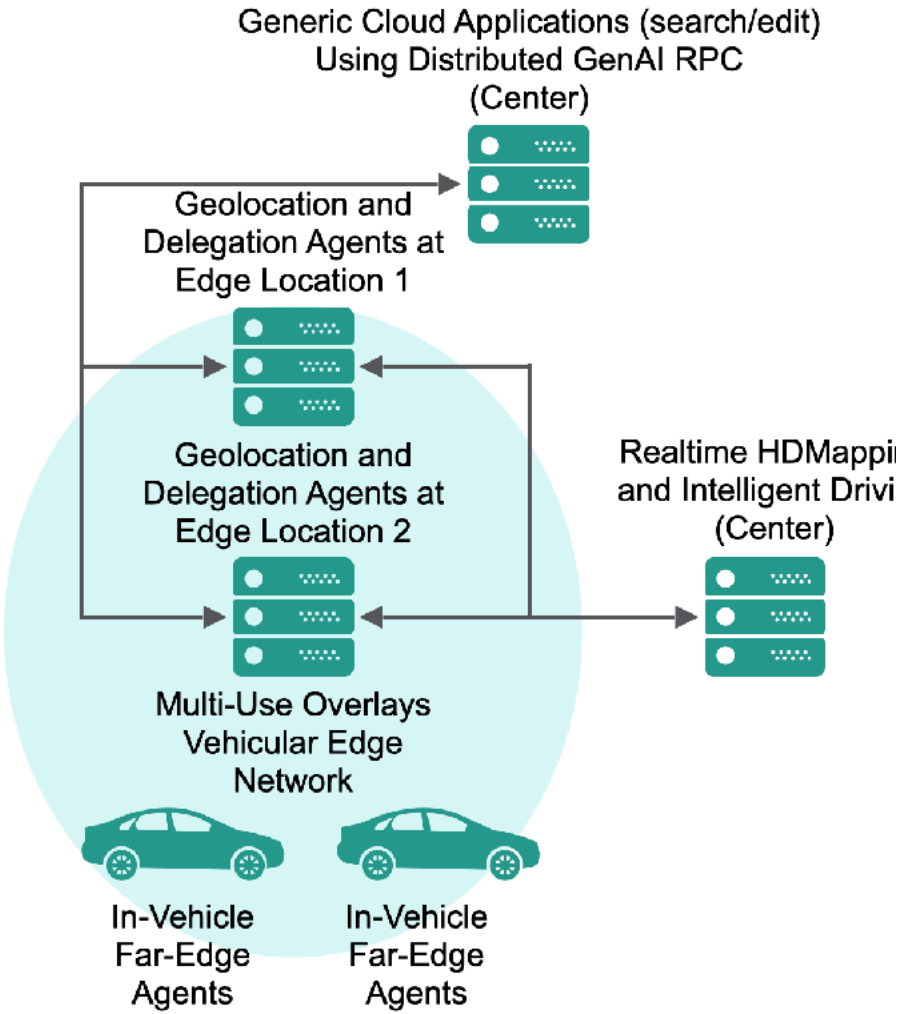
Function Consolidation Delegation



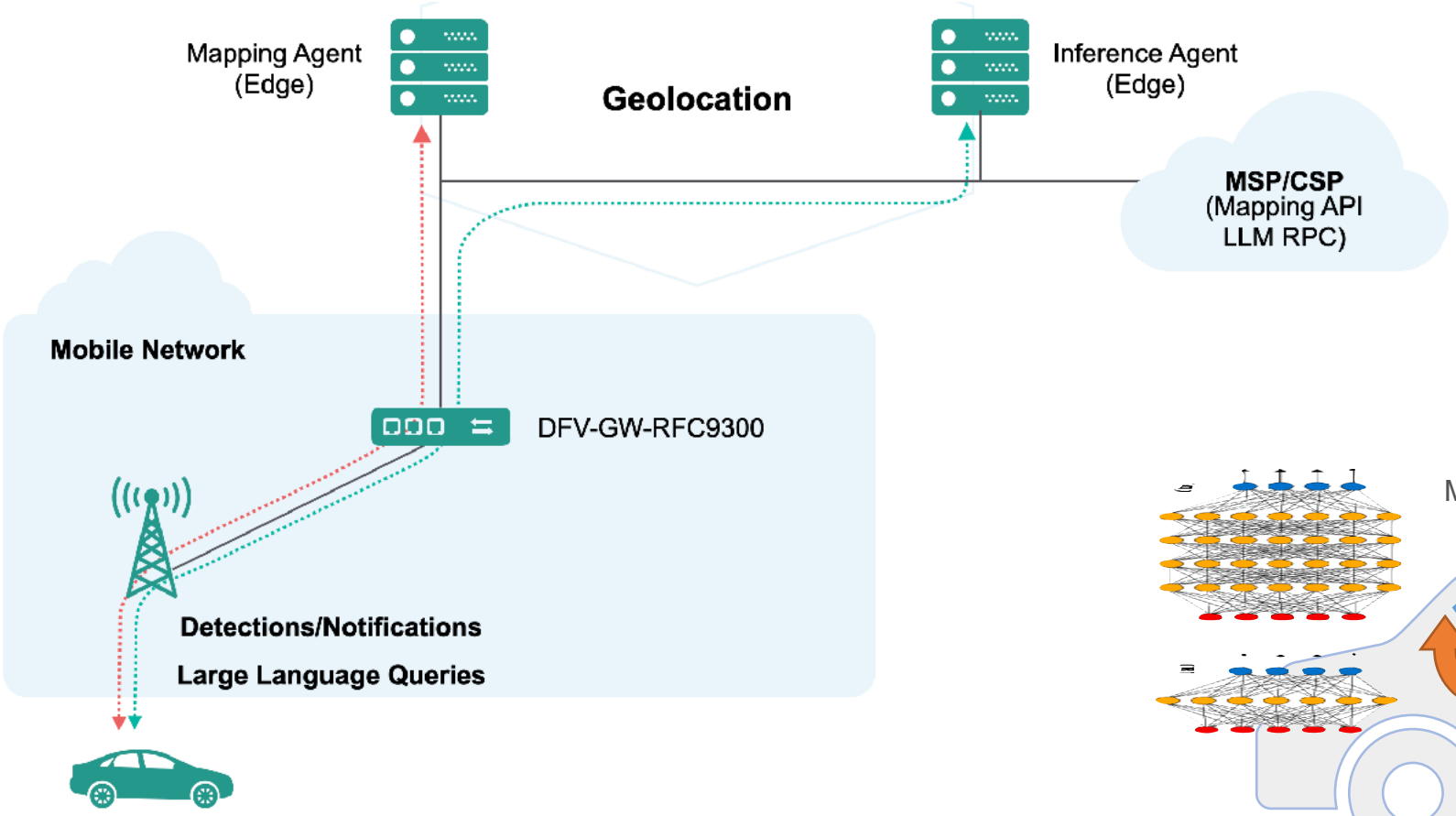
Regional Inference

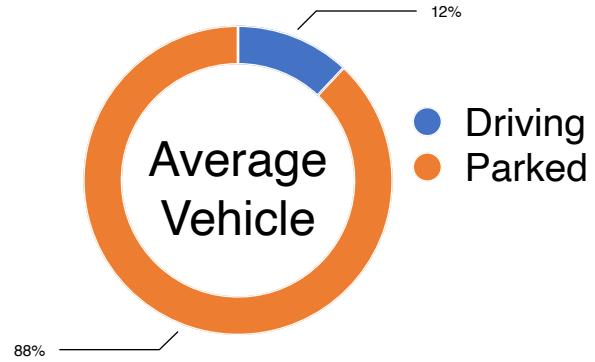
Automotive Network Functions

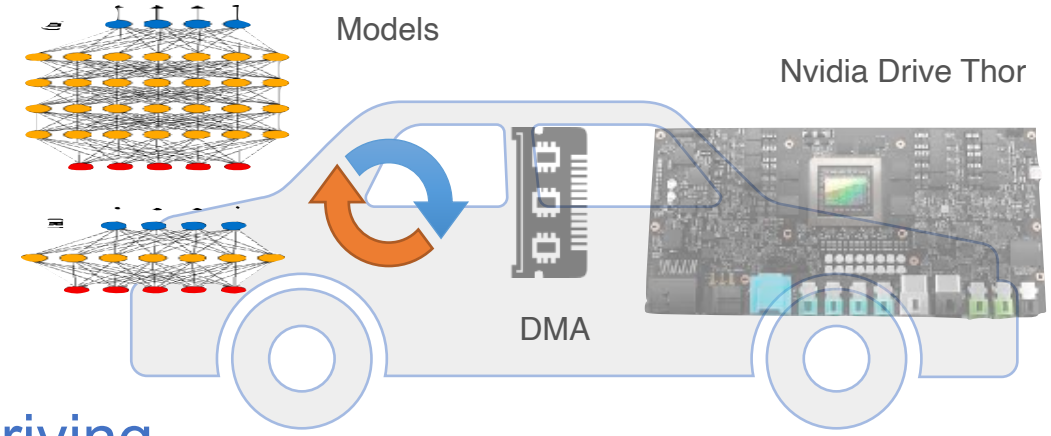
Automotive Edge Agents		
Observed Entity	• Locations current Conditions • Through Driving Vehicles	• Virtual Clusters of AI Models • Across Parked Vehicles
Digital Entity	Location Edge Agents	Delegation Edge Agents
Connection	SD-VAN DFV: Vehicles <> Edge Agents	
Datamodel	Enumerated Tiles Behavior & Routes	AI Model & Capacity per Vehicle & regional Agent
Services	• Mapping • Notifications • Navigation	• Reflecting Models and Capacities per area • Steering RPC to Vehicles



Ex: Large Language Models





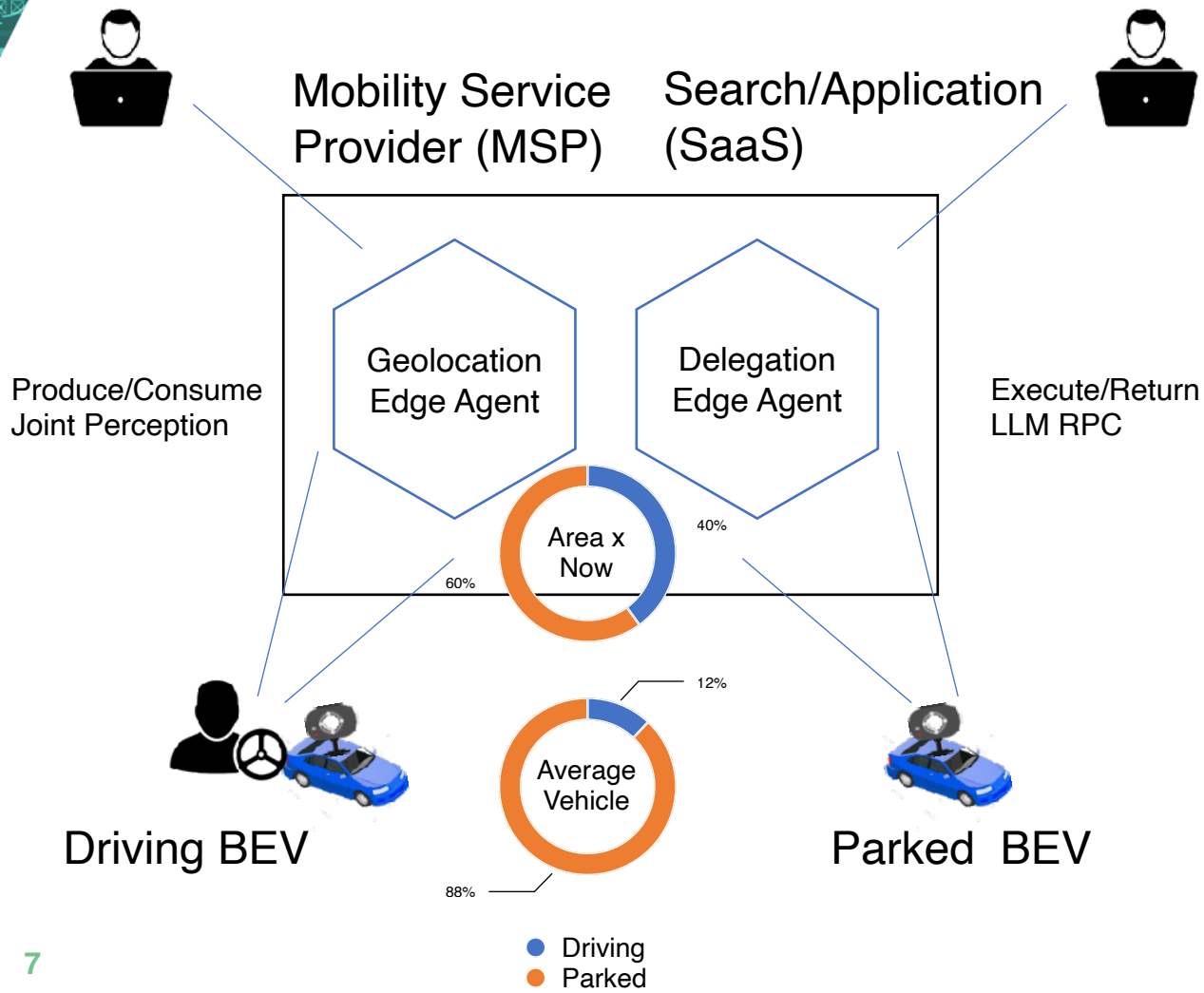


Perception AI: Media to Language While Driving

Delegated AI: Language-Language While Parked

Stake Holders

https://aecc.org/proof-of-concepts/



- In this use case the vehicular edge network executes LLM RPC using shared-perception edge/far-edge resources
- Resources
  - Edge/Far-Edge Compute
    - In-Vehicle 100 TOPS/GB-RAM In-Vehicle SOC
    - Metro-area data-center locations GPUs/CPUs
  - Software Agents
    - In-vehicle Perception and LLM-RPC agents
    - Edge Geolocation and Delegation Agents
  - Dataflow (On-Path) Virtualization Overlays
    - DFV GWs steering/tracking/encapsulating flows
    - Endpoint Identity to current IP Mapping system
- Requirements
  - Track Driving/Parked Vehicles GeoLocation/ In Memory-Model
  - Dynamically Rearrange Geolocation / Delegation Agents Mix
  - Consolidate Driving Vehicles Perception in Geolocation Agents
  - Steer LLM-RPC calls to Parked Vehicles by Delegation Agents