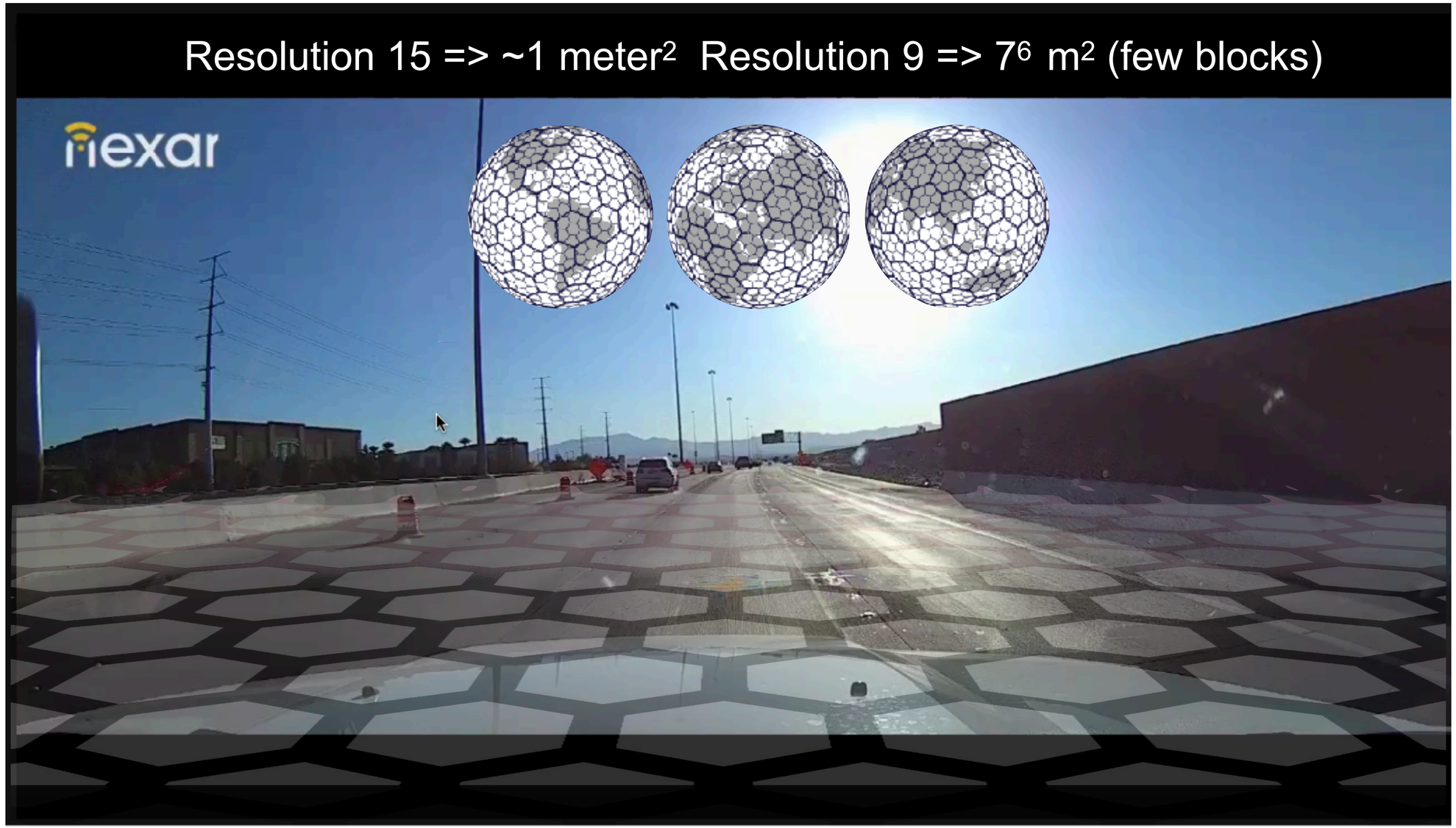
IETF-LISP-NEXAGON

Model & Interface for Live Street Feed

The Nexagon Model

- The streets and roads are complex dynamic physical environments
- We divide this world into tiles based on hierarchical hexagonal grid (#H3)
- Each tile is simple and has pre-known lane, sidewalk, junction.. position
- Tiles have reference and accumulated historical sensory data and images
- Tiles compute attributes with ranging dynamics: signs, blockages, hard-stop
- Each tile has 6 known neighboring tiles, in a lane neighbors have directionality
- Dynamic state computed per tile in a given moment impacts neighboring tiles
- We algorithmically associate IPv6 Addresses with aggregate tiles as street-feed

Physical World on Addressable Grid

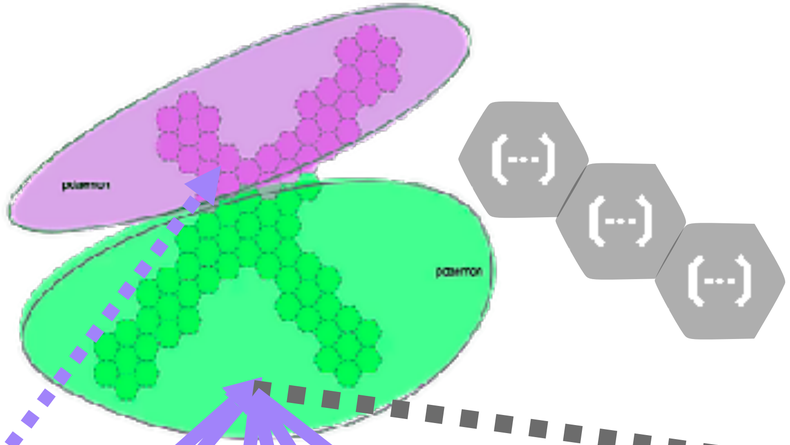


LISP-Nexagon Interface

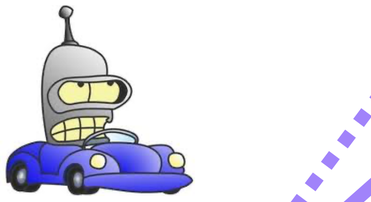
- The interface is simple and geared for stability in evolving mobile edge and vision AI
- It is based on IETF Virtual IP to route traffic to and from addressable tiles (#LISP)
- The interface defines a connectionless geo-spatial network of IPv6 channels
- The channels are multi-point to multi-point with dynamic sender and receiver clients
- Once authenticated clients can pub-sub and roam between geo channels per credentials
- Drive-by clients share current state, hazards, loads, traffic lights.. via brokering IP tiles
- Channels support heads-up situations, peds, platoons, parking.. per location and theme
- IETF LISP Supports millions of geo-spatial channels to thousands of endpoints each

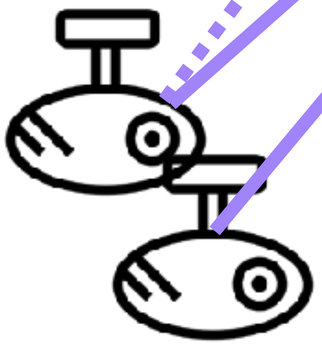
Mp2Mp Street-Content Aggregation

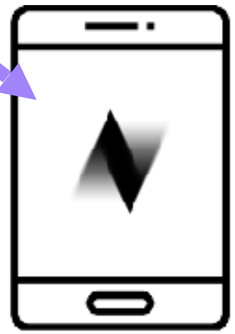
MultiPoint to
MultiPoint



```
H3EiD.Functions() {
AI1,2,3,…n
Localization
Clustering
Propagation
Aging ..
```





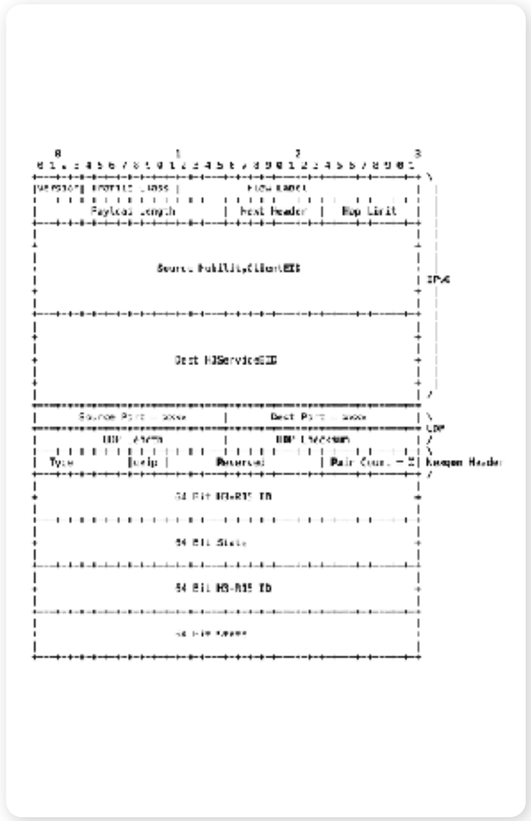


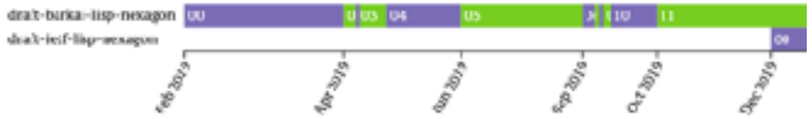
Nexagon Feed

Street feeds share detections, frames, and basic safety messages (BSM) based on level of vision & sensory and level of onboard AI compute ability:

- Shared Vision, multiple perspectives compiled by H3 EID Edge Objects
- Anonymity, security, avoids direct communication when ever possible
- Themes (s,g) for interoperability, feature-velocity, market segmentation
- Flexibility for types of geo-pub-sub client types of AI network functions

Interoperable





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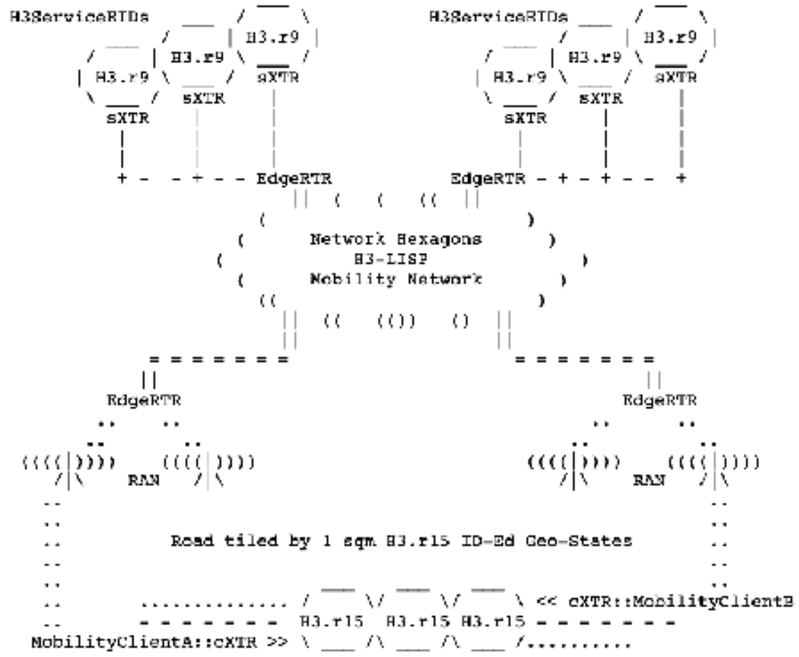
	Intended RFC status	(None)
	Formats	plain text · pdf · htmlized (tools) · htmlized · bibtex
Stream	**WG state**	WG Document
	Document shepherd	No shepherd assigned

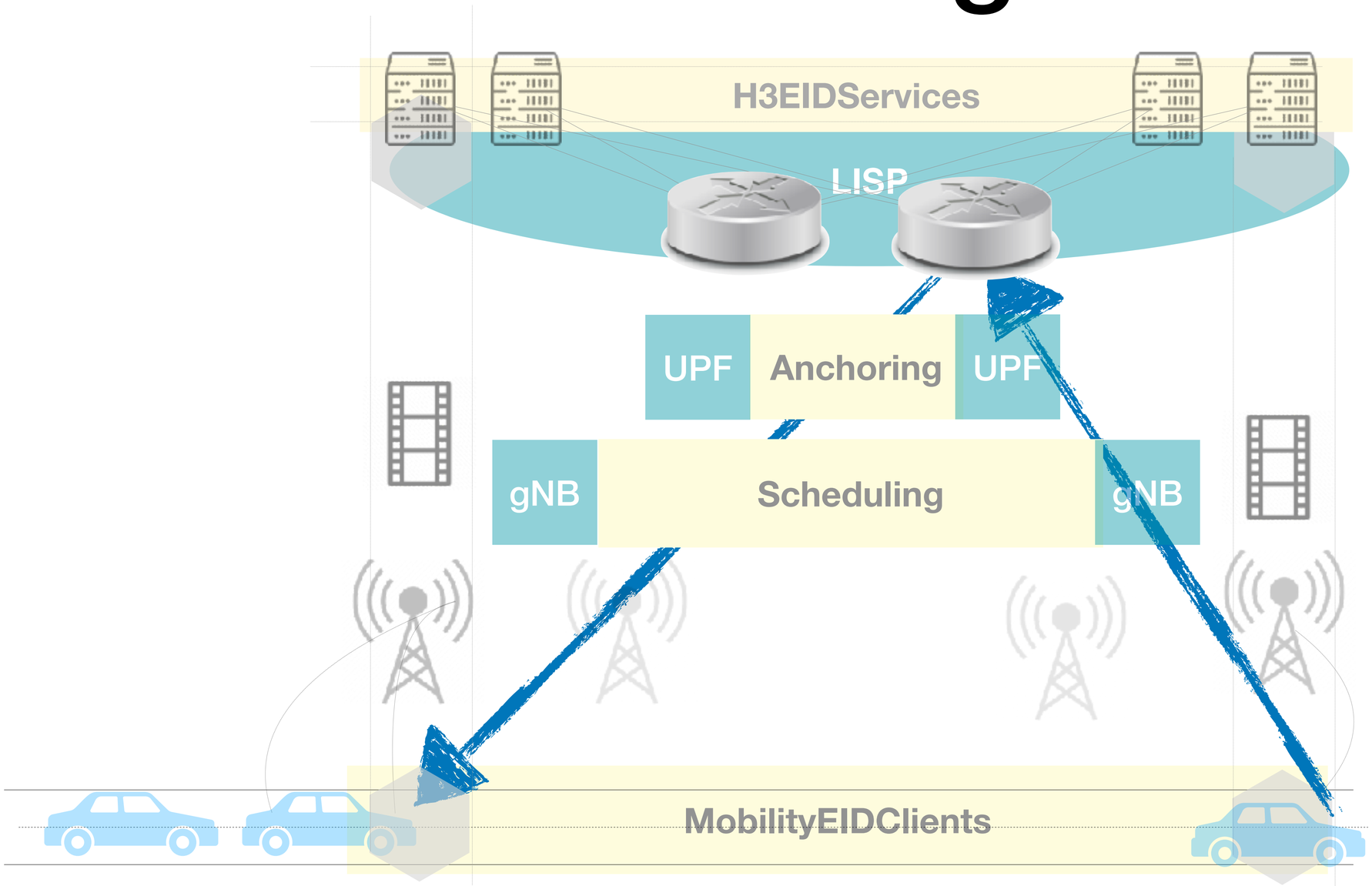


Line Interfaces
Open-Source Stacks

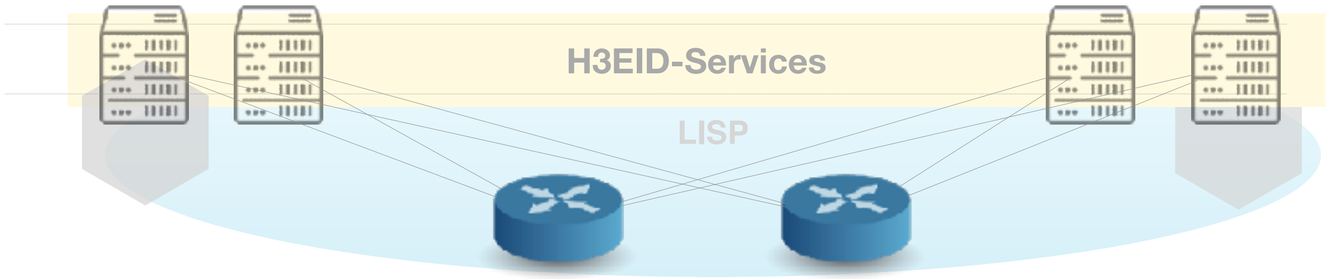
Application Specific Edge Network
LISP Overlay

XTR Routing => Deployment Scaling
Balancing, H/A, Protections

Mobile Edge

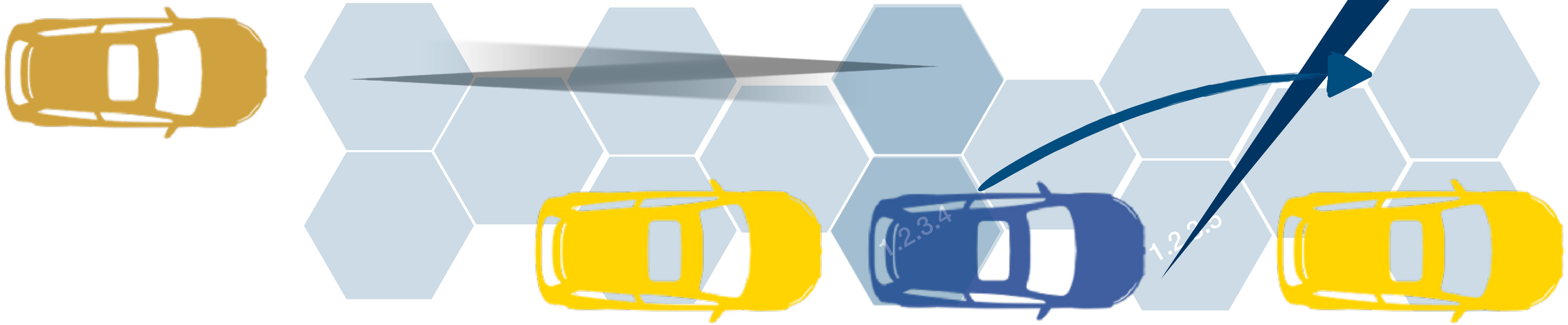

H3EIDServices
LISP
UPF
Anchoring
UPF
gNB
Scheduling
gNB
MobilityEIDClients

Examples



What - Where 1.2.3.5::Parking	What - Where 1.2.3.4::Parking	Nexagon Enum Tuples Header	Mobility Client EID (ephemeral)	H3 Service EID (R9)	SIM-Cam RLOC	Edge RTR RLOC

AV Remote OSS
Free Parking
Blockage
Slowdown
Hard-stop
Traffic Signs
T-Lights timing
IMA, VRU
Platoons
Street Vibe
Store Fronts..



Move from Adoption to RFC

https://tools.ietf.org/html/draft-ietf-lisp-nexagon-04

1. Start working on extension porting DSRC to LISP-Nexagon channels as another medium for Basic Safety Messages (BSM) such as HardStop. SharpTurn to be associated with the tile location

2. Start working on specific extensions in the area of Autonomous Vehicles Support Systems (AV-OSS), enabling fleets to steer clear of conditions confusing the AVs, and to assemble ad-hoc platoons

3. Continue to develop StreetFeed consortiums based on IETF LISP-Nexagon model and interfaces in the areas of smart-cities, public-safety, automotive, mapping and local feeds, and asset-management