



Intelligent Speed Assistance (ISA) Reducing Data Consumption with NDS.Live

an NDS Association webinar
March 11, 2021

NDS.Live webinars

Watch online:

1. The advantages of using NDS.Live for Intelligent Speed Assistance (ISA)

- Recording of the webinar held on February 4, 2021
→ <https://nds-association.org/nds-live-isa-webinar/>

2. What is NDS.Live?

- Recording of the webinar held on February 25, 2021
→ <https://nds-association.org/nds-live-webinar-2-recap/>

Today:

3. Reducing Data Consumption with NDS.Live

Recording on YouTube soon. Link to video will be posted on LinkedIn and the NDS Association website.

Upcoming webinars

4. NDS.Live: Deliver data layers the smart way → Mar 25, 2021 09:00 AM

Your hosts and speakers today



Ottó Nyíró

Product Manager
NNG



Philip Hubertus

Senior Product Manager
Automotive Products
HERE Technologies



Agenda

- ISA regulation (15 mins)
 - What is it, timeline
 - Why does it need map data
 - Freshness – need for connected map
- NDS.Live (25 mins)
 - Basics
 - Using the modularity of NDS.Live data containers
 - NDS.Live – minimizing data consumption
- Live Q&A (20 mins) – be ready to be on camera 😊

**NDS is THE worldwide
standard for map data
in automotive eco-systems**

NDS is THE worldwide

worldwide coverage and global adoption

standard for map data

one specification with enough flexibility
for a customized user experience

data model (structure & semantics),
storage format, interfaces, protocols

in automotive eco-systems

in-vehicle applications, companion applications, cloud applications, vehicle related services,
supporting navigation, driver assistance and autonomous driving



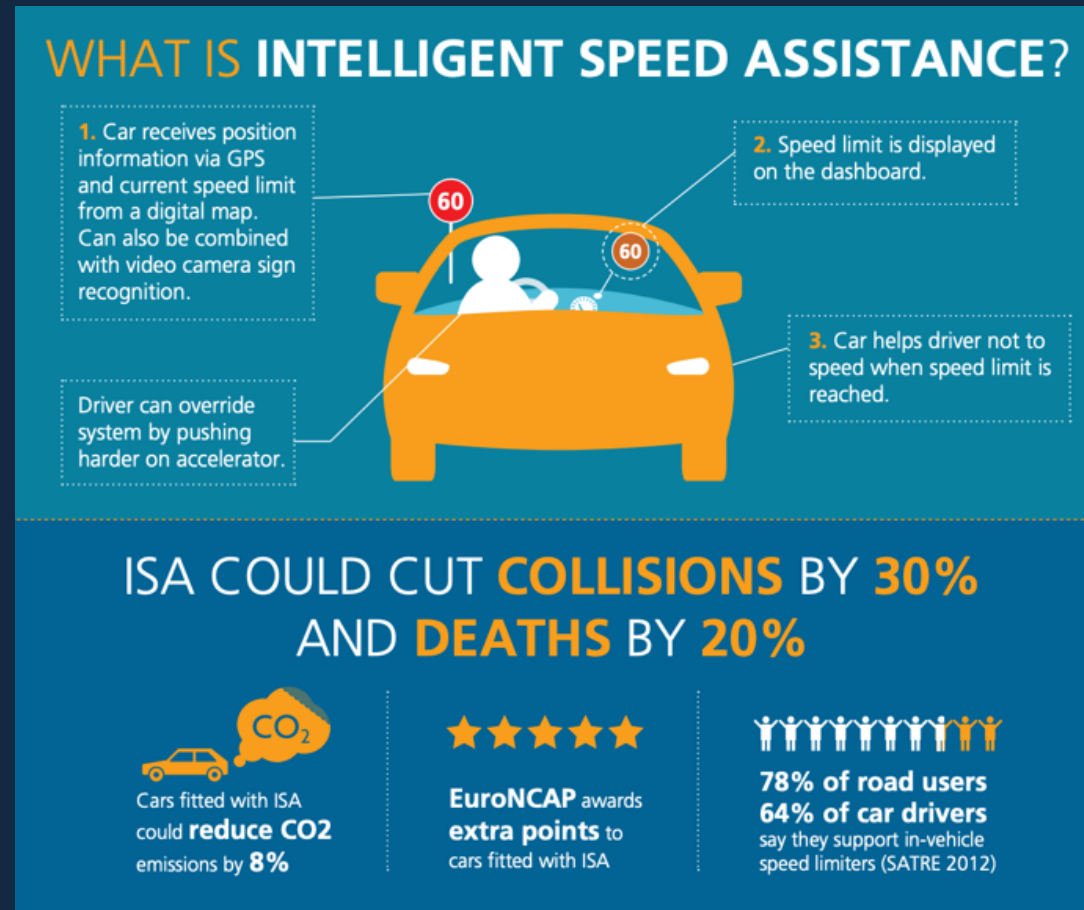
NDS Association members

The NDS format specification is defined by the members of the NDS association.
This includes world leading OEMs, system vendors, solution providers, and navigation data providers.

Navigation Data Standard



ISA – Intelligent Speed Assistance



Source: European Transport Safety Council

ISA – EU Regulation

ISA will be mandatory from 2022 onwards in-vehicle system that shall support drivers with complying with the speed limits on any road of all European Union countries.

- Mandatory for cars, vans, trucks, and busses.
- From Jul 2022 for new types, from Jul 2024 for all new registered vehicles
- ISA: Legal speed limit is always displayed to driver – may include audible alert or active limitation of speed → speed limit quality directly impacting user experience
- EU 27 countries + outmost regions (small islands) + Norway + Switzerland



ISA – EU regulation vehicle approval requirements

- Approval test needs to pass with at least 90% success rate or vehicles cannot be sold
- Approval testing will be executed based on a real-world test drives between 300 and 500 kilometers
- Testing on a mix of highways/motorways, non-urban, and urban roads – at least 25% each type and with at least 80% quality target reached for each
- Testing against 5 explicit sign types AND 5 implicit sign types (incl. variable speed signs)
- at least 15% of the roads need to be driven in darkness, the rest in daylight



Example of Speed Limit Assistance



When the speed limiter is active, the acceleration pedal is not accepting foot pressure to accelerate the vehicle over the speed limit. Pressing the accelerator significantly will disable the limiter and accelerate the vehicle. An icon in the cluster is blinking as a visual warning.

ISA – Why map data is required



ISA – Why map data is required

Explicit Speed Limit Signs



Implicit Speed Limit Signs

Home-/residential zone signs



Urban area signs



Motorway & Expressway signs

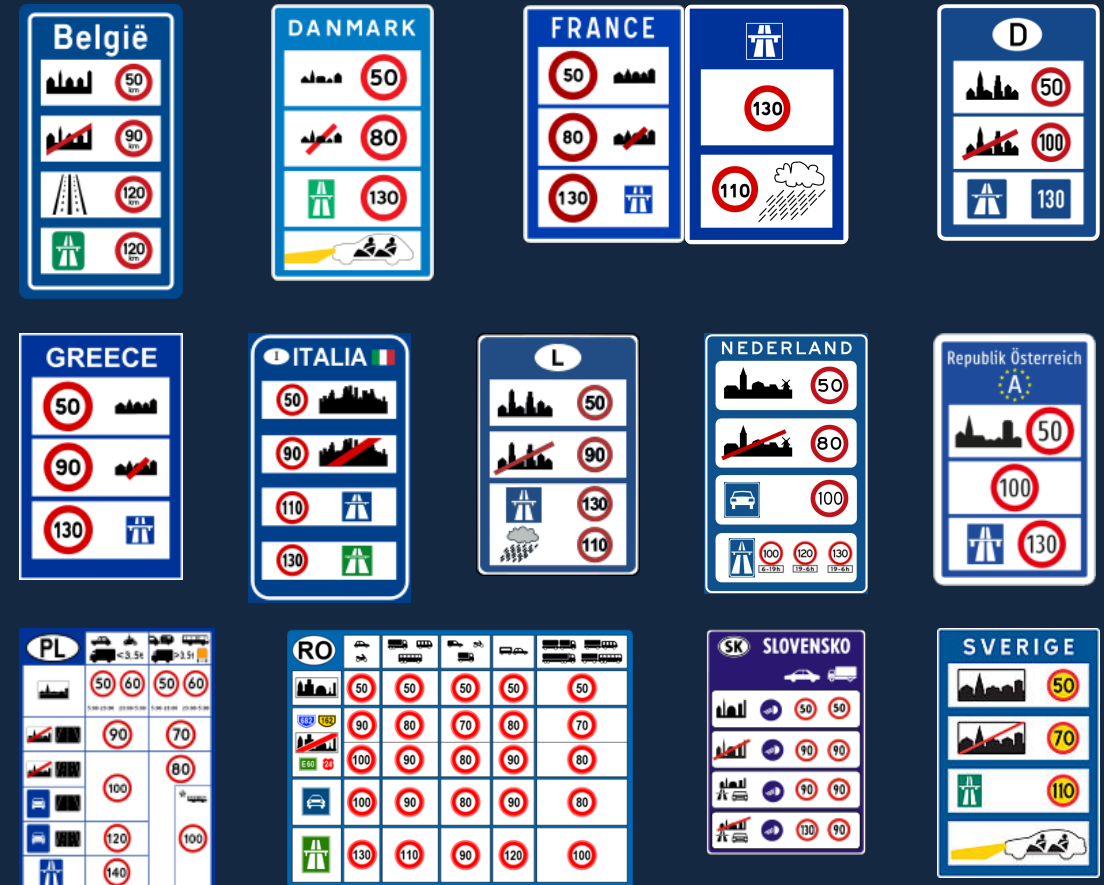
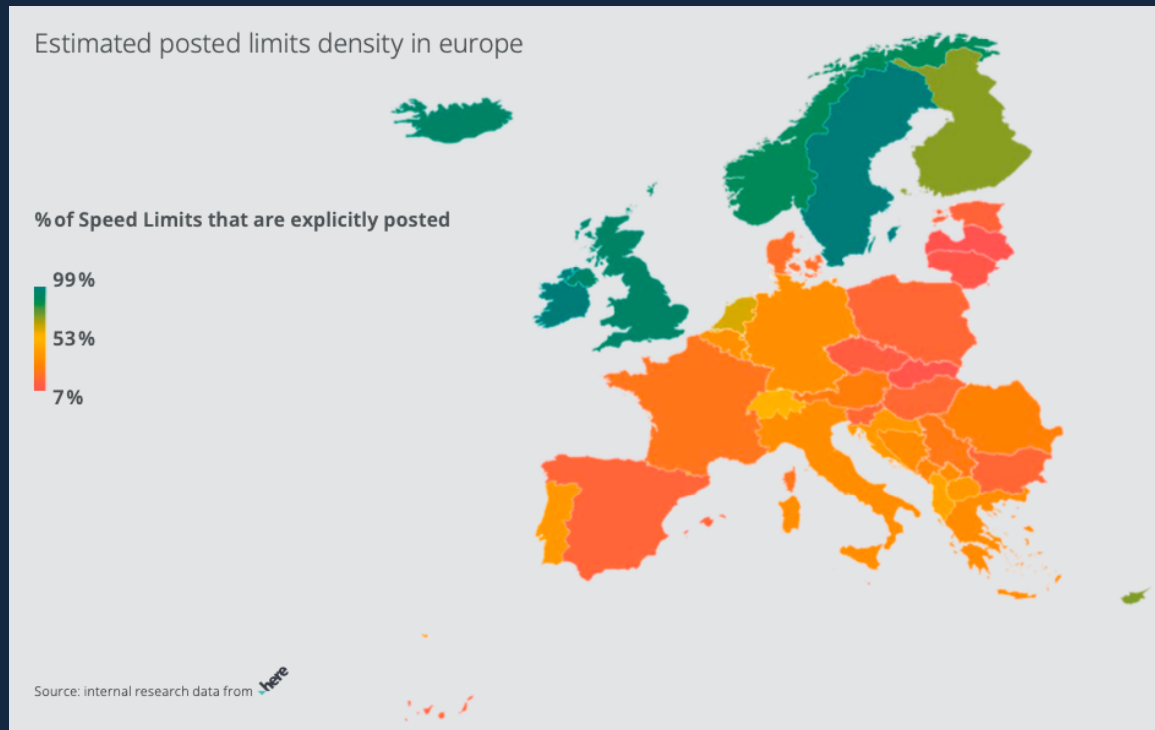


Place name signs



- Based on road rules and regulations
- Country and regional differences
- Road type, pavement, time, and weather depended

ISA – Why map data is required



ISA – Why fresh map data is required

- Up-to-date speed limits are required for ISA systems to reach a high reliability
- Speed limits are changing constantly
 - Variable speed signs
 - Temporary speed signs due to constructions
 - Country-wide implicit regulations are changing
- Consumers are not used to do manual map updates (nor will they be excited about it)





***Speed limits change
at a rate of
10 % per year***

ISA – Why ease of use through OTA Map updates is required



Data Needs: Uses Cases and Data Freshness



		Freshness 		
Use Cases / Shelf-life		Static Data that stays valid for long periods of time, with typically only small fractions changing over time. This is what classical versioned map data is about.	Dynamic Changing data with limited temporal validity (days/hours). Age checks must be used to determine if the dynamic information can be applied.	Live Transient data with momentary validity. For example, such data may be a vehicle's state/e-Horizon, a route, or a search result. Applications either use it right away or discard it.
 Universal Data that is generally relevant for a broad set of use cases or as a general reference for all other data		Roads or display data	Construction sites	Traffic light phase Variable Message Signs
	 Collective Data is relevant to a specific group of use cases. Examples for this are ISA, ADAS, navigation as well as vehicle types (cars vs. trucks), engine types (electric vs. fuel)	POI (OEM brand specific)	EV charging station avail.	Dynamic speed limits, Parking spot availability (automated valet parking)
	 Individual For specific use cases, data could be generated/bundled based on individual requests.	Indoor parking map	POI (sport event)	MPP, routing, search



*„NDS.Live is not a database,
it is a distributed map data system“*

NDS.Live - Design Considerations & Data Consumption

NDS.Live Design Considerations

- **Multiple Data Vendors and Sources**
Where is data stored (cloud, edge, vehicle) and who offers it?
- **Streaming and Dynamic Data**
As an addition to embedded map data, support continuous updates in high frequency (incl. real-time)
- **Embedded & Distributed Applications**
Provide a unified way to access online services that offers basic functionality, like search or routing
- **Modular Design**
Parts of the standard can be developed and used independently
- **Prepared for ADAS & Autonomous Driving**
Provide highly detailed data and keep functional safety in mind

NDS.Live Data Consumption

- **NDS.Live data is either organized as ...**
 - tiles
 - paths
 - objects
- **NDS.Live data services allow for**
 - downloading and storing of data
 - streaming and caching of data
 - requesting tiles, paths, or objects for immediate use
- **NDS.Live data services can be accessed by**
 - OEM or system vendor cloud-based clients (B2B) as a proxy for distribution to vehicles
 - Directly by connected vehicle clients (B2C)

NDS.Live - Design Considerations & Data Consumption

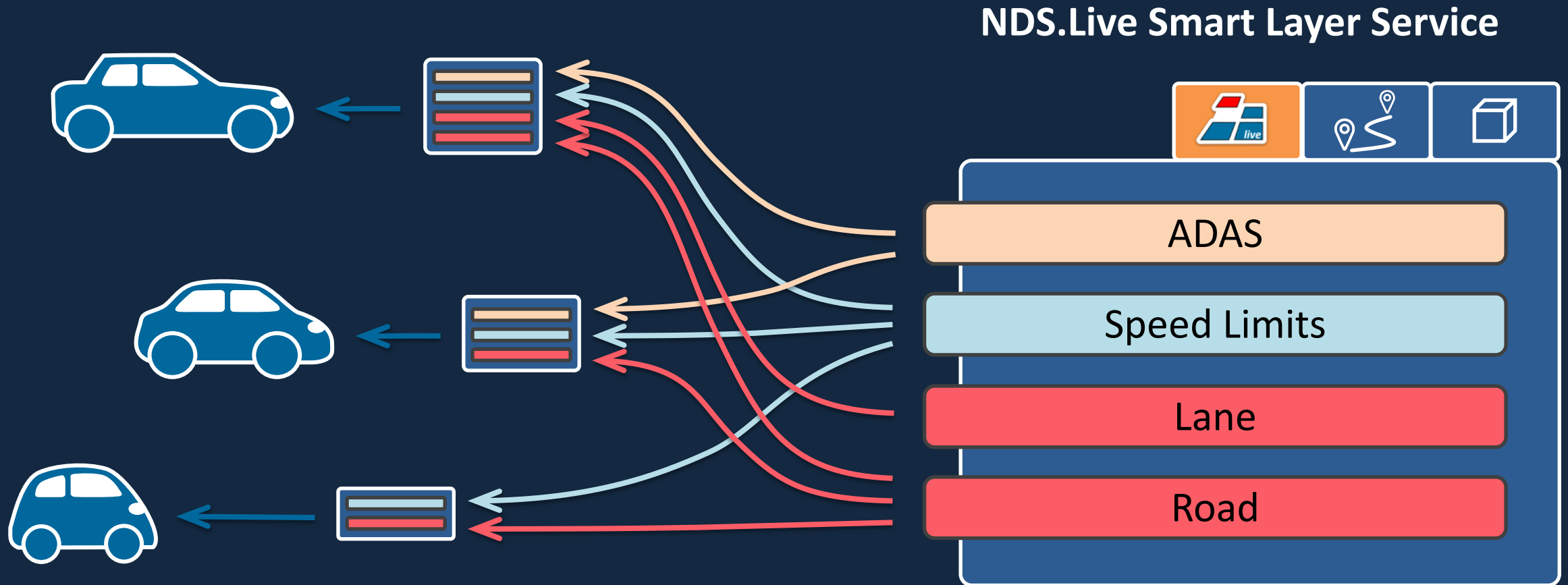
NDS.Live Design Considerations

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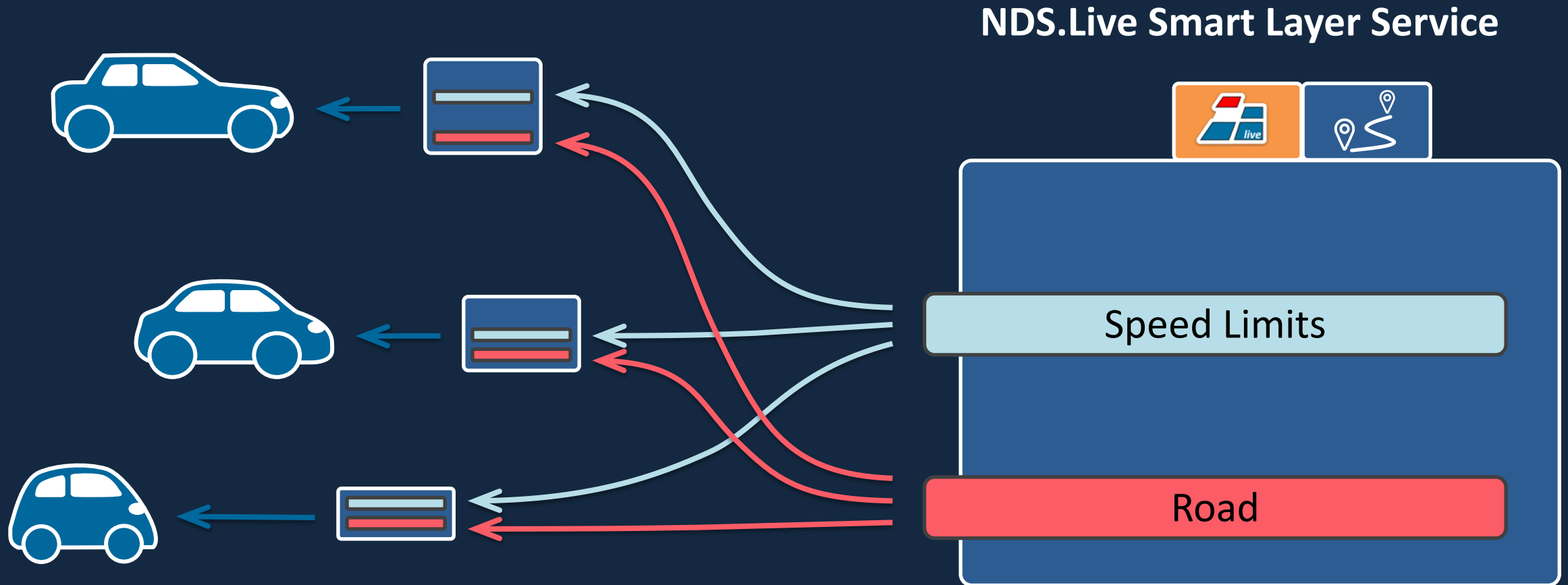
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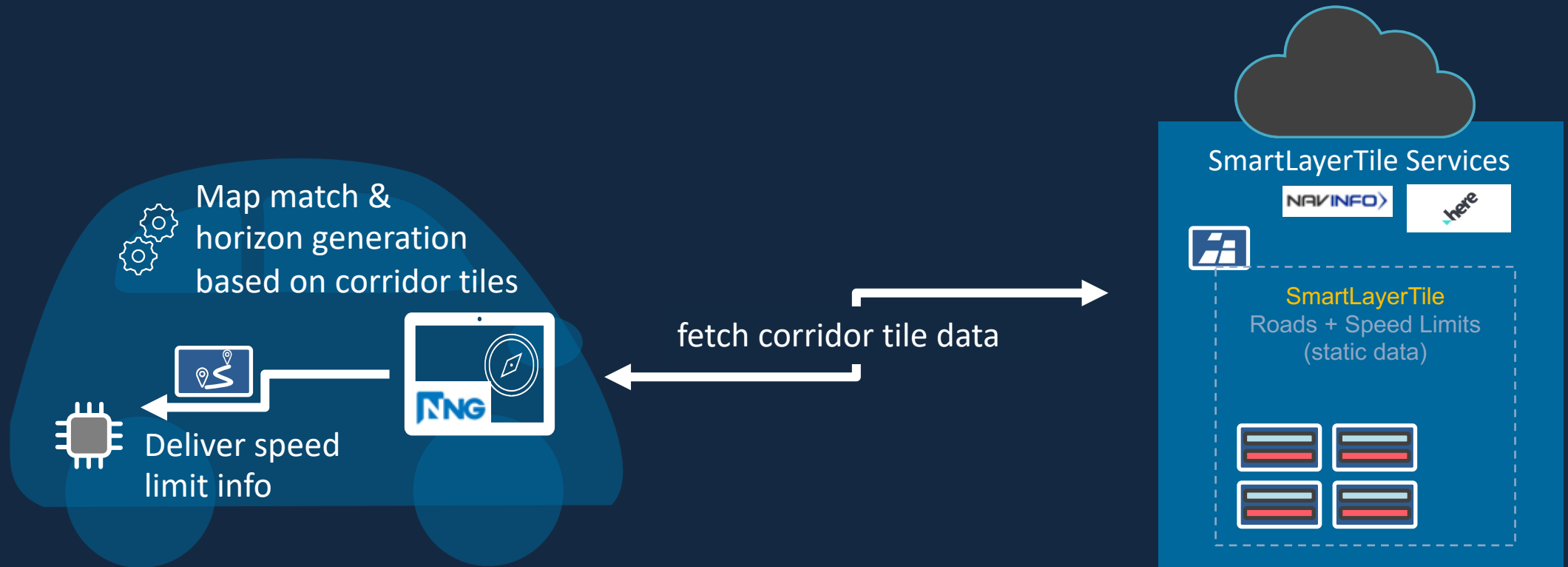
NDS.Live SmartLayer – Configuration flexibility



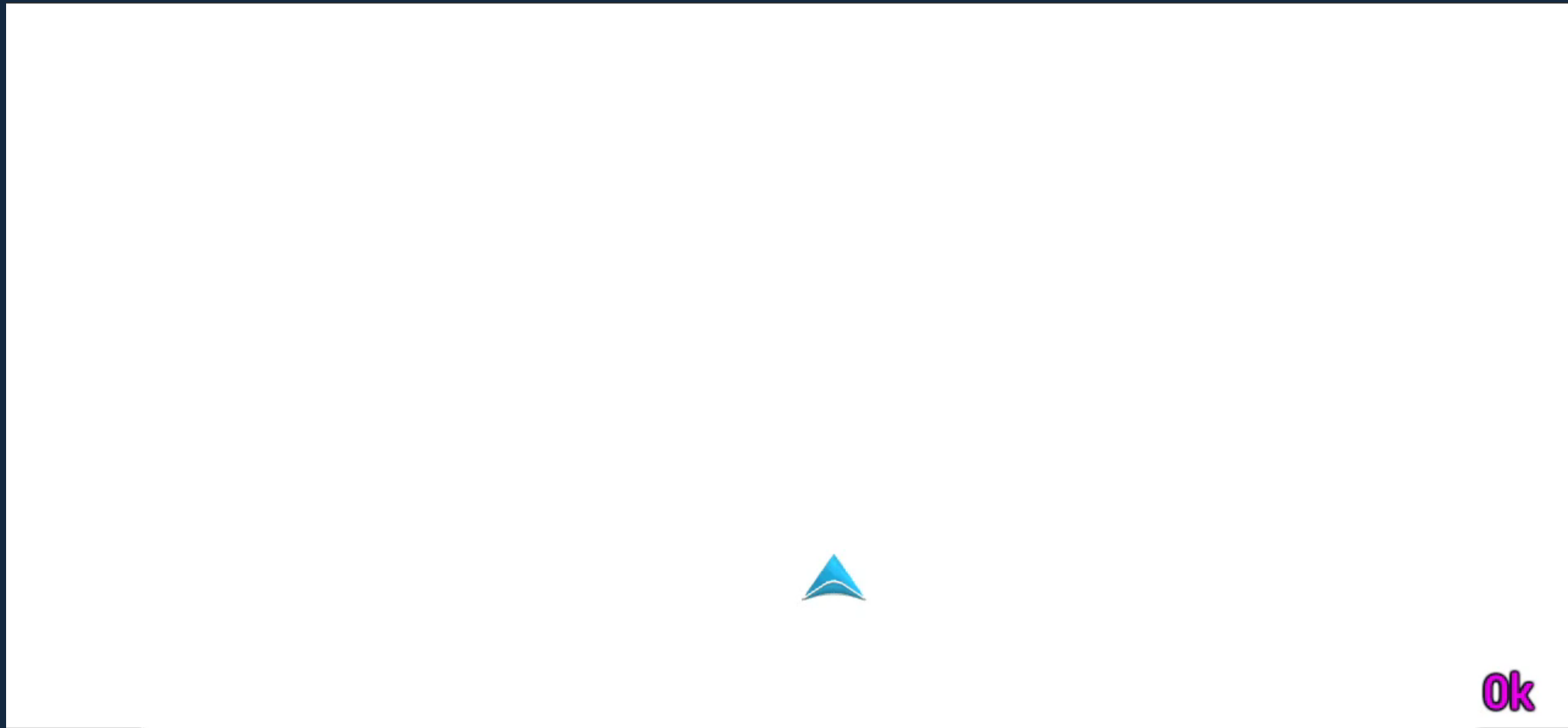
NDS.Live SmartLayer – ISA use case



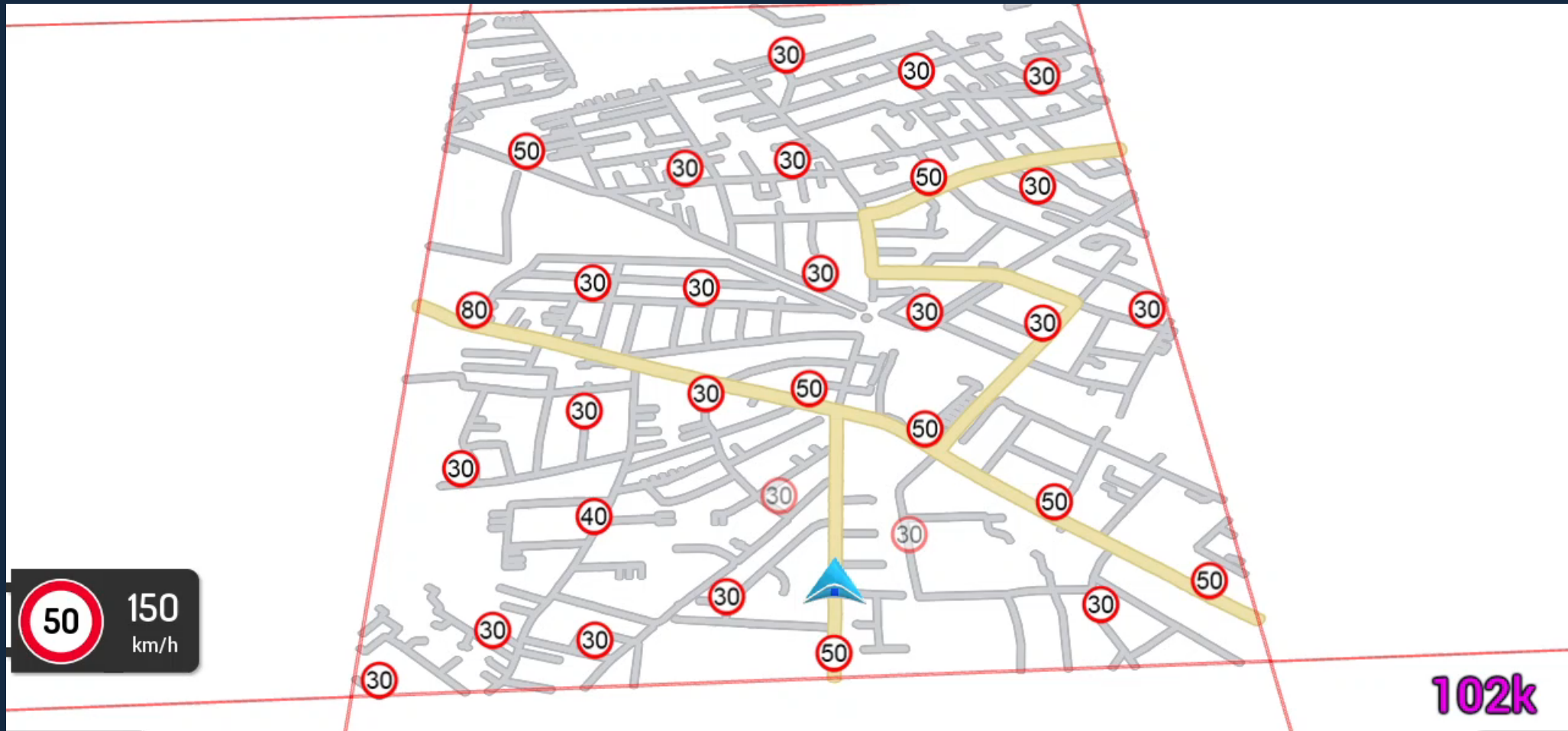
Delivering NDS.Live SmartLayerTiles for ISA



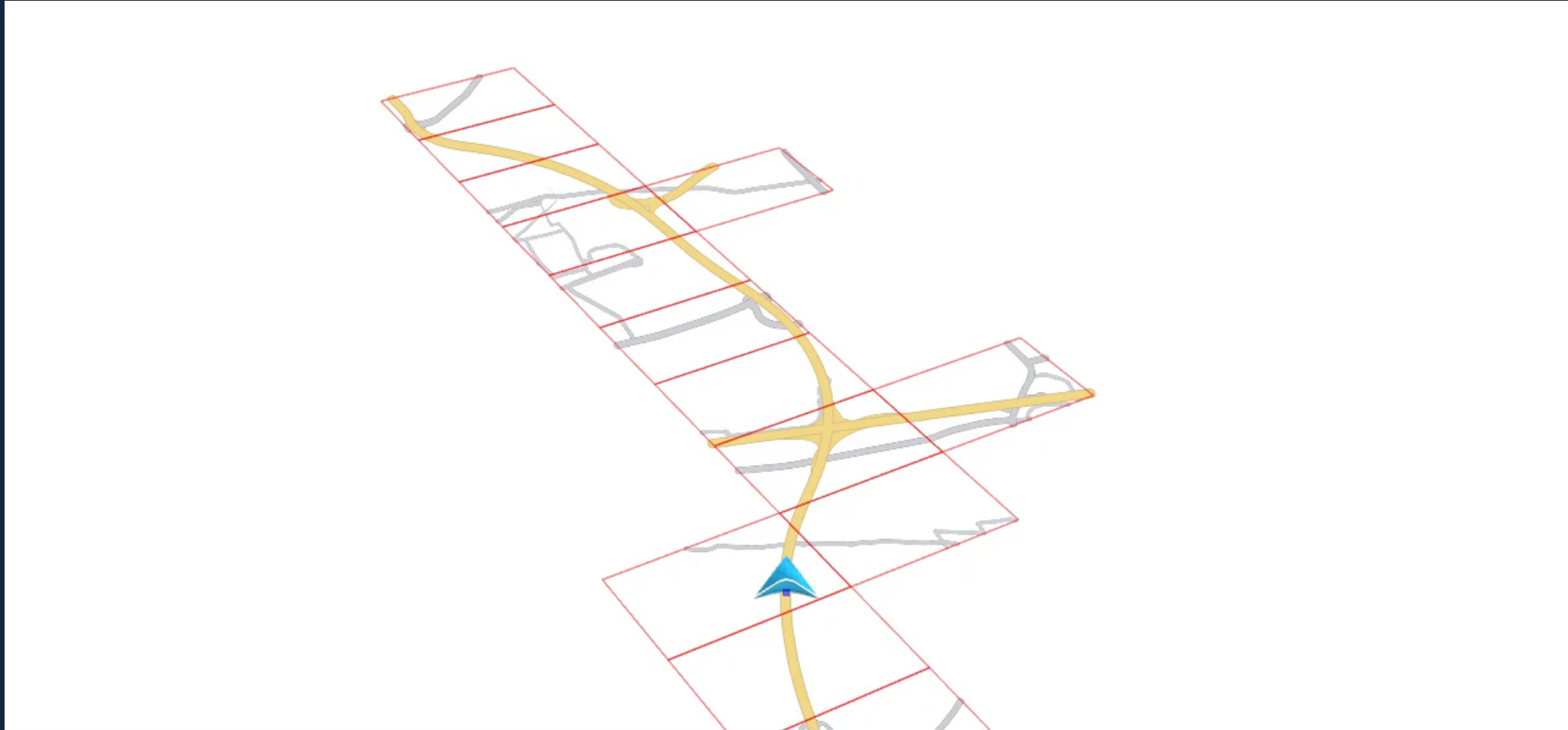
Streaming initial SmartLayerTile for map matching



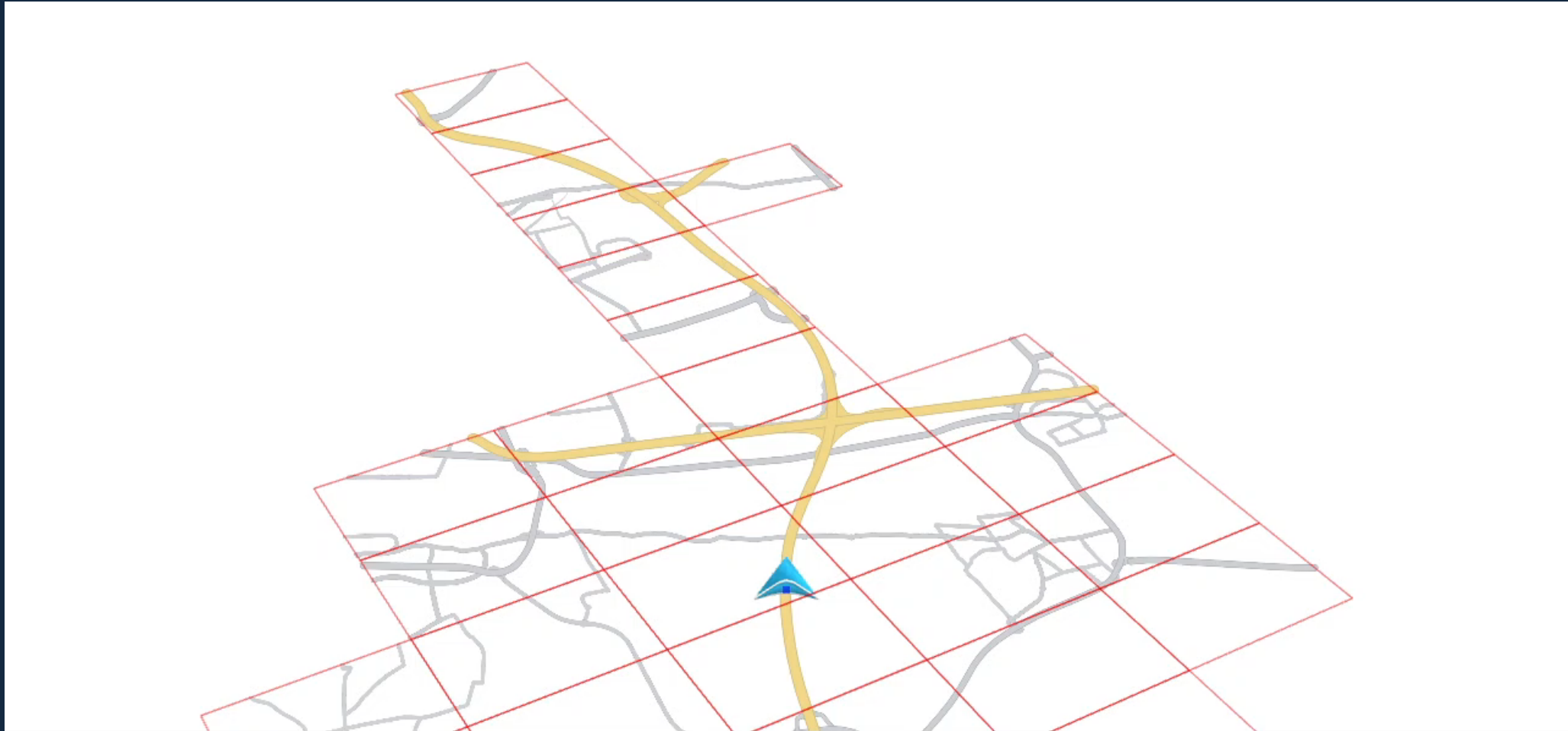
Streaming SmartLayerTiles for the Horizon



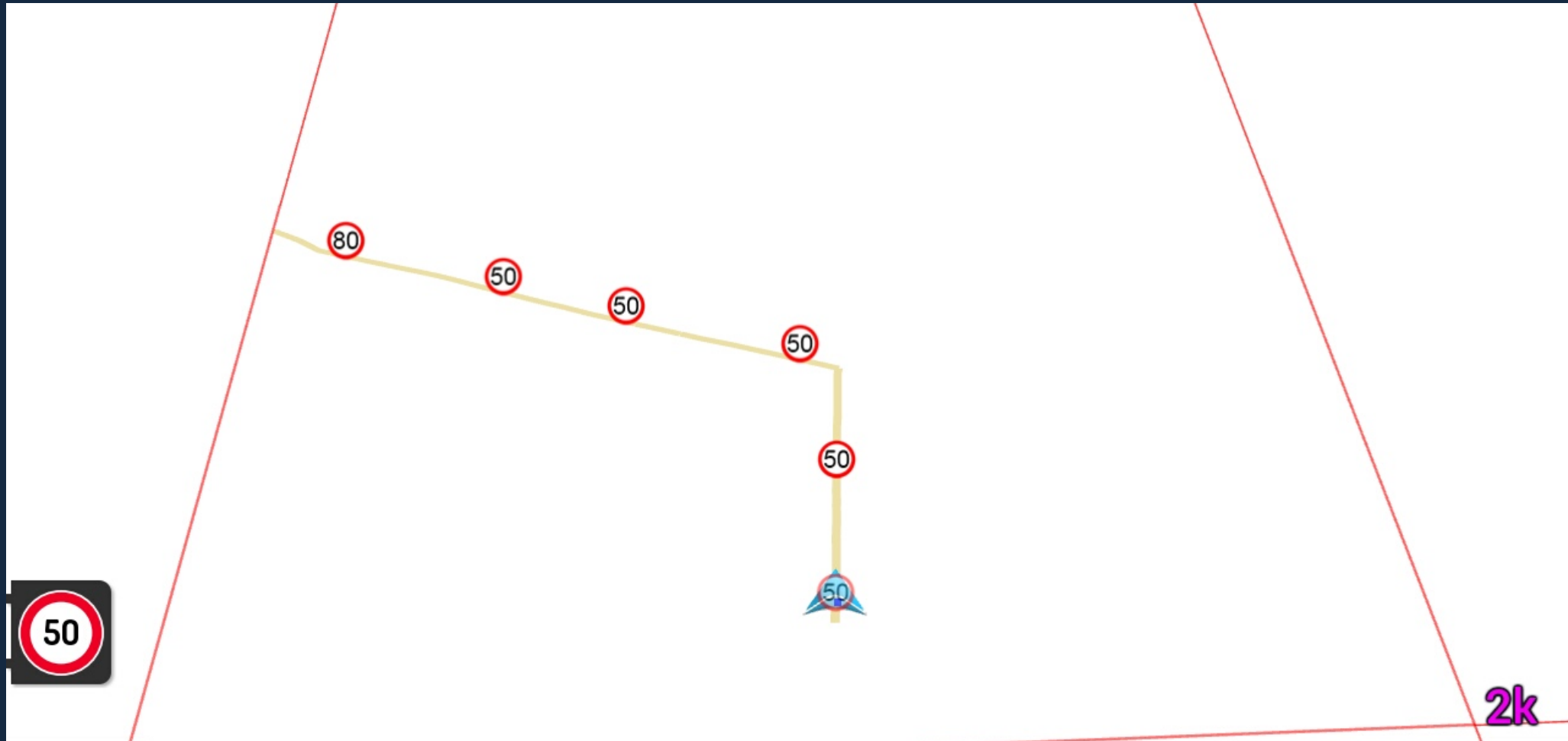
Pre-caching SmartLayerTiles for Long Horizon



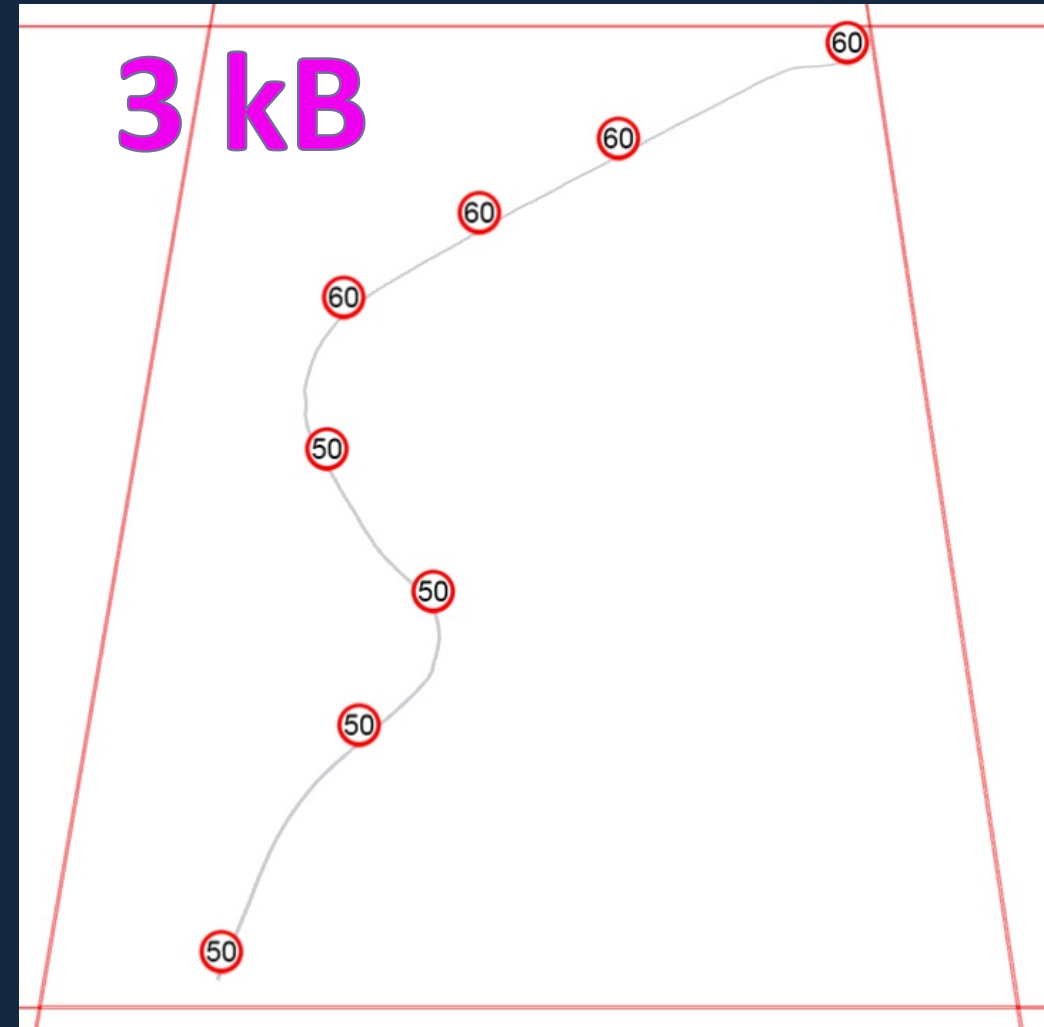
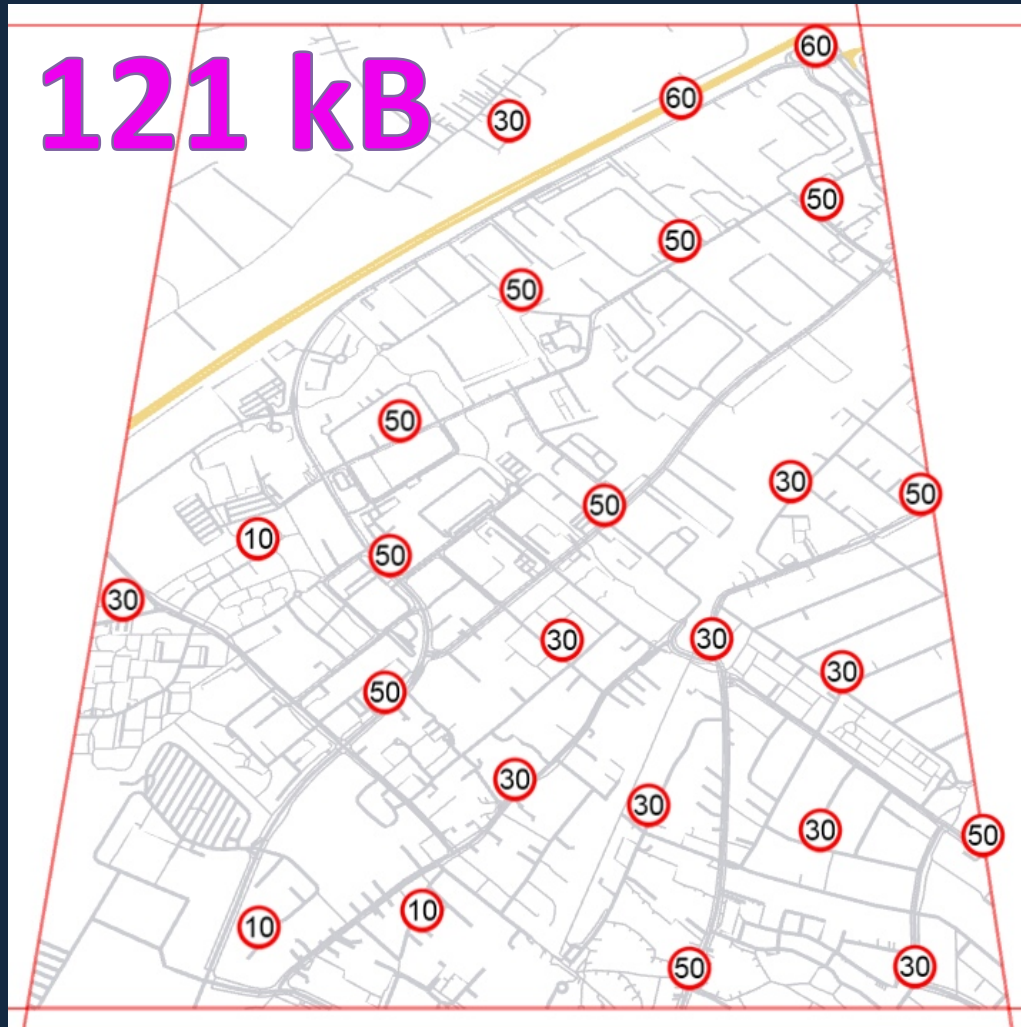
Pre-caching SmartLayerTiles for Long Horizon and Wide Corridor



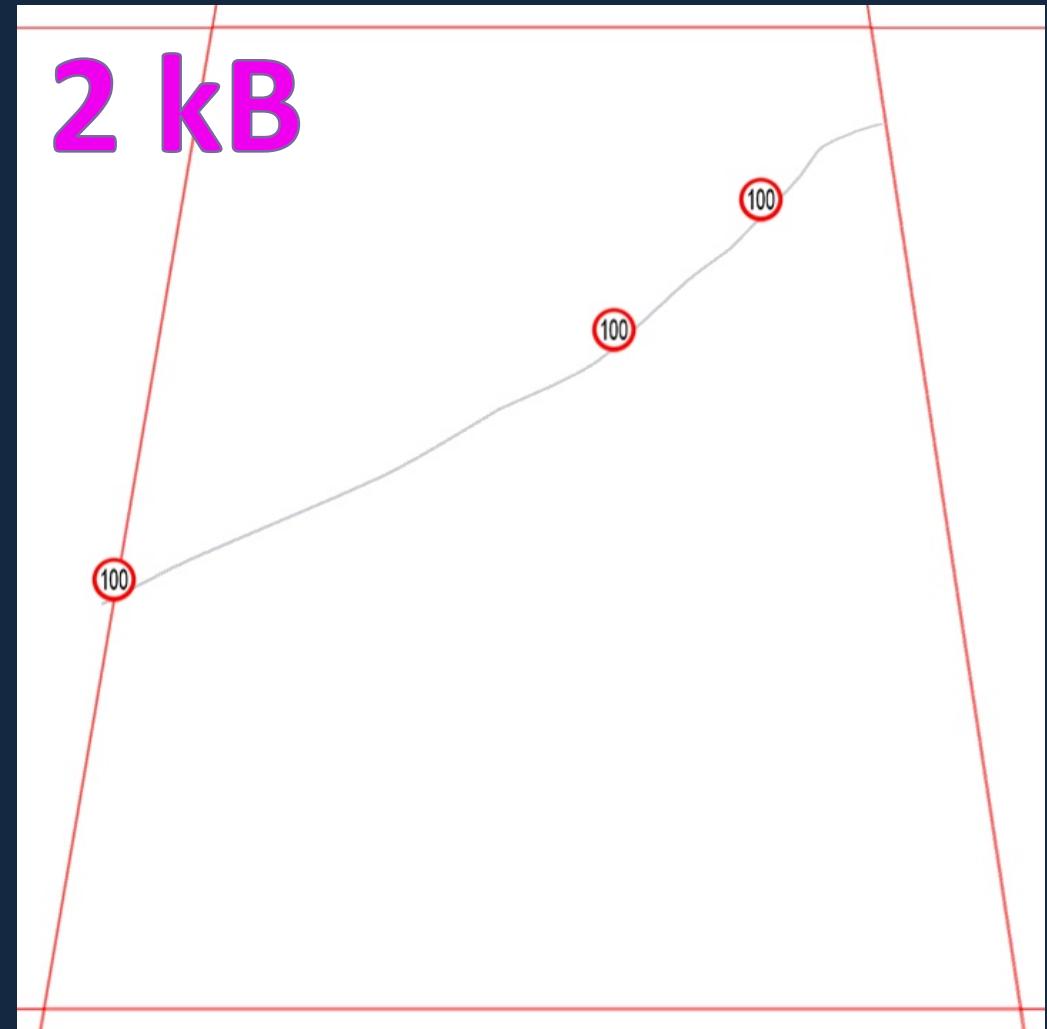
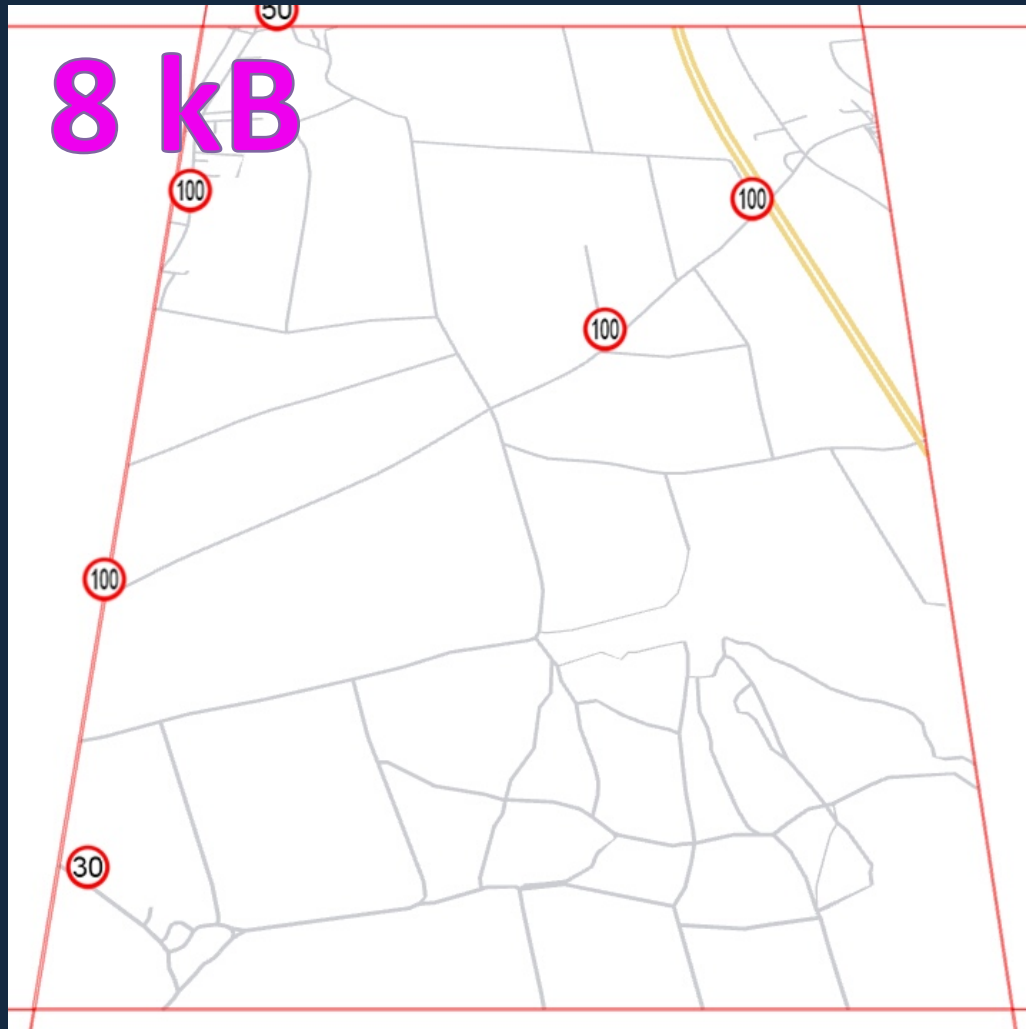
Introducing NDS.Live SmartLayerPath



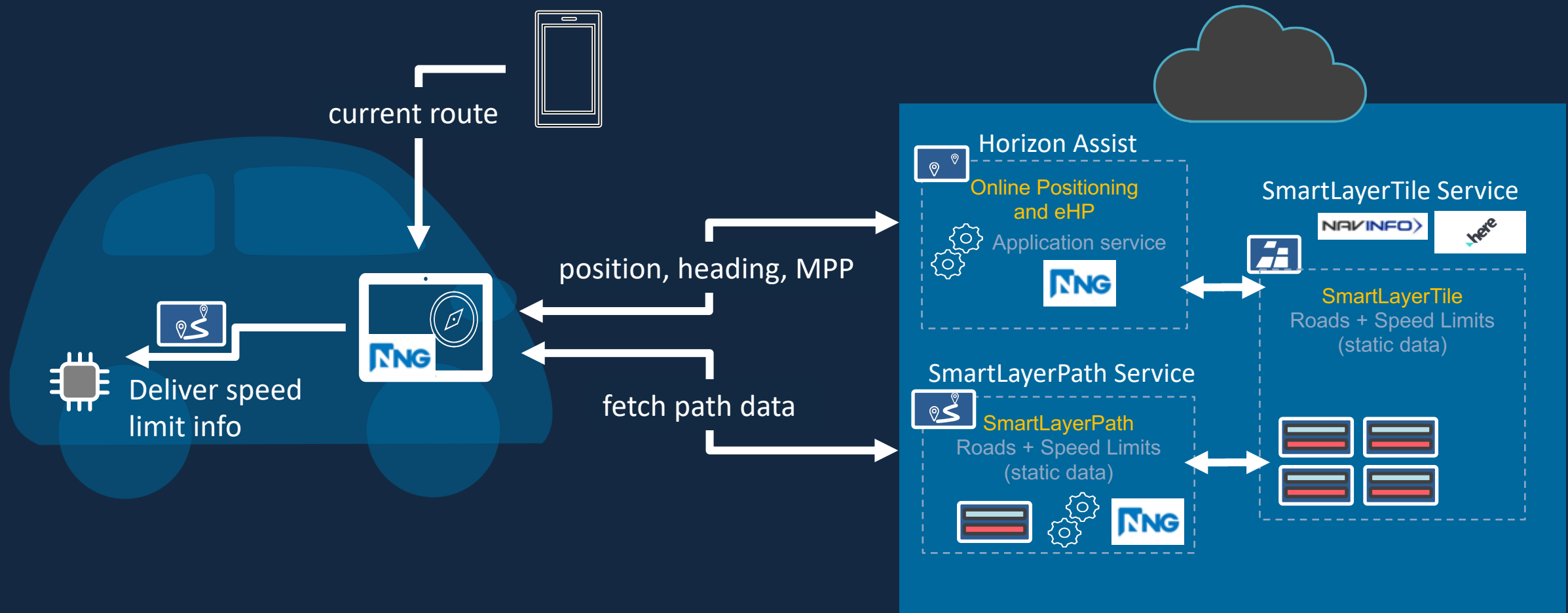
SmartLayerTile vs. SmartLayerPath in Urban Areas



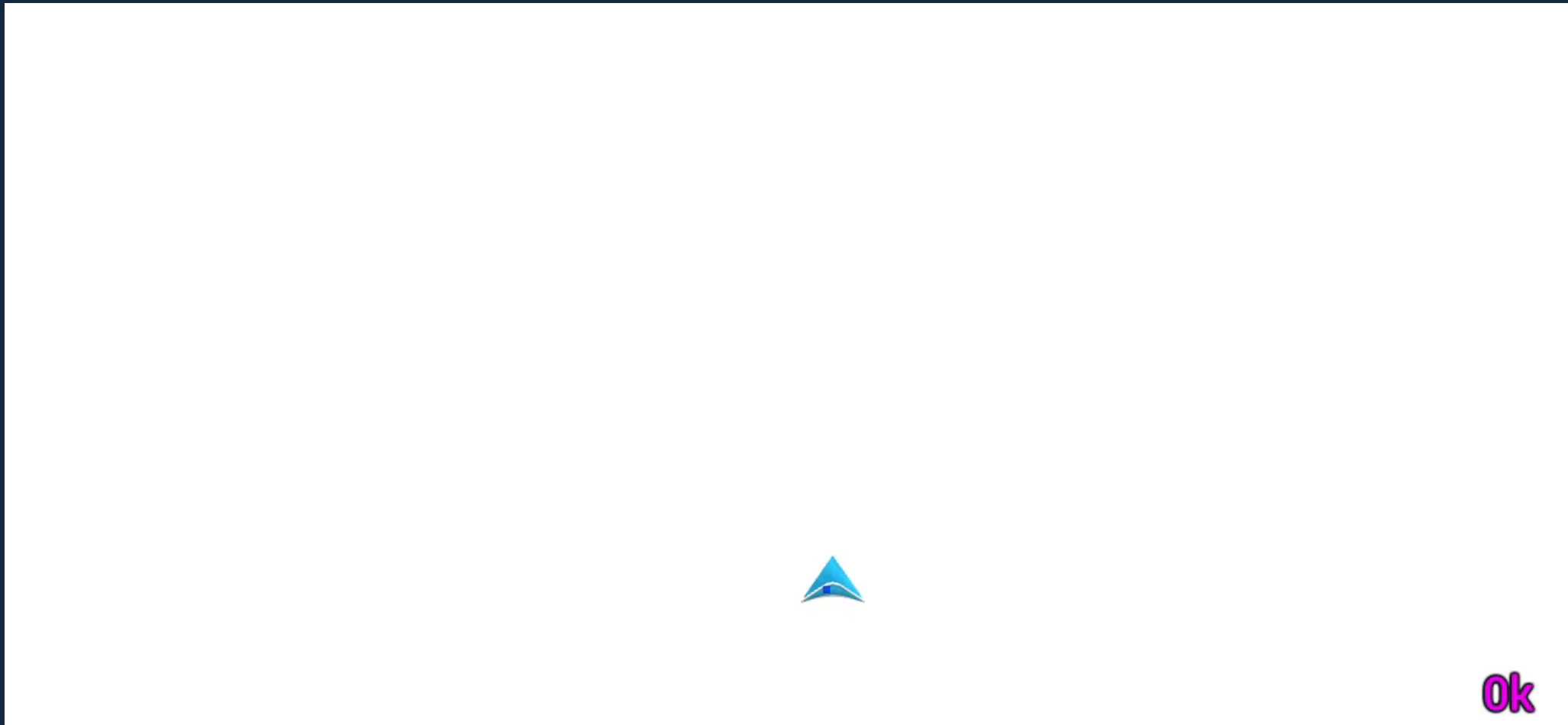
SmartLayerTile vs. SmartLayerPath in Rural Areas



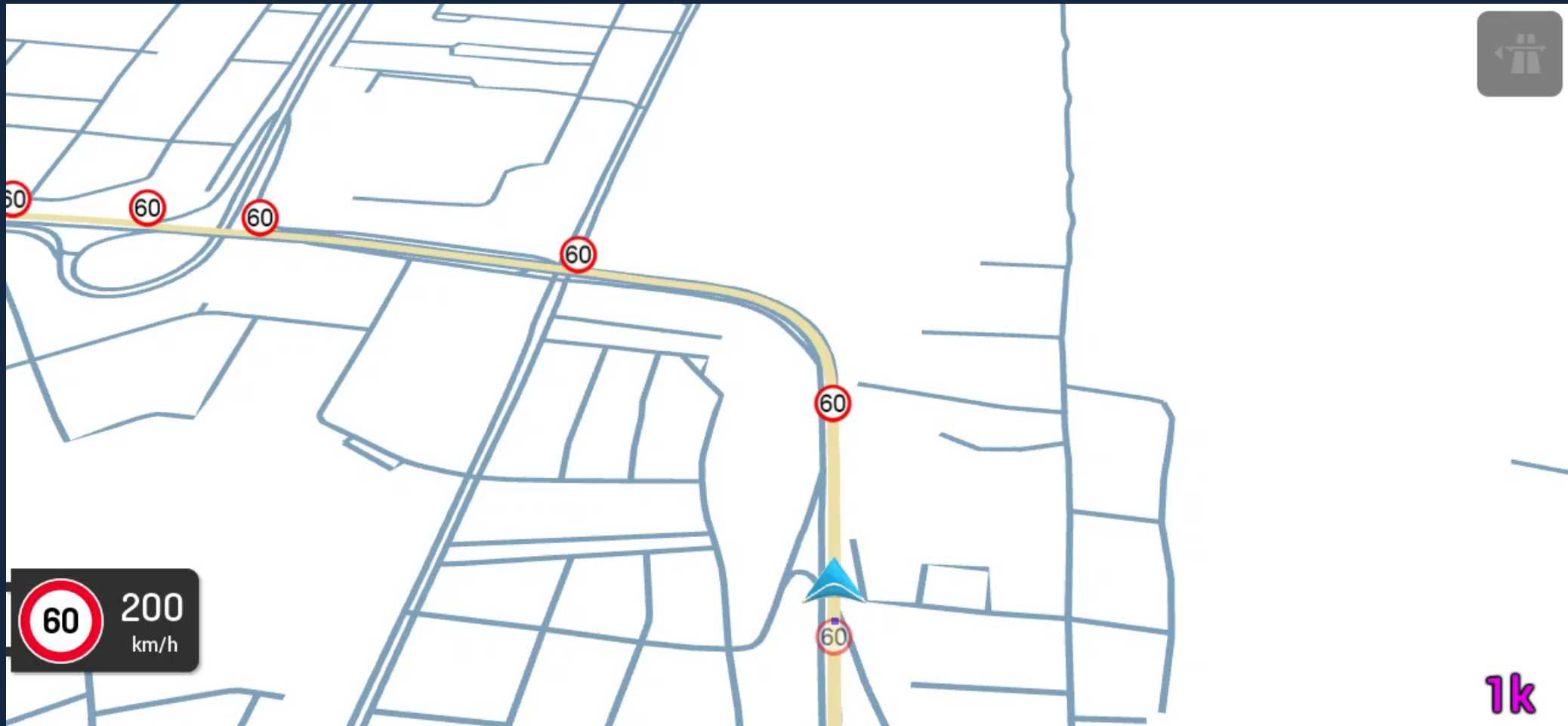
Delivering NDS.Live SmartLayerPath for ISA



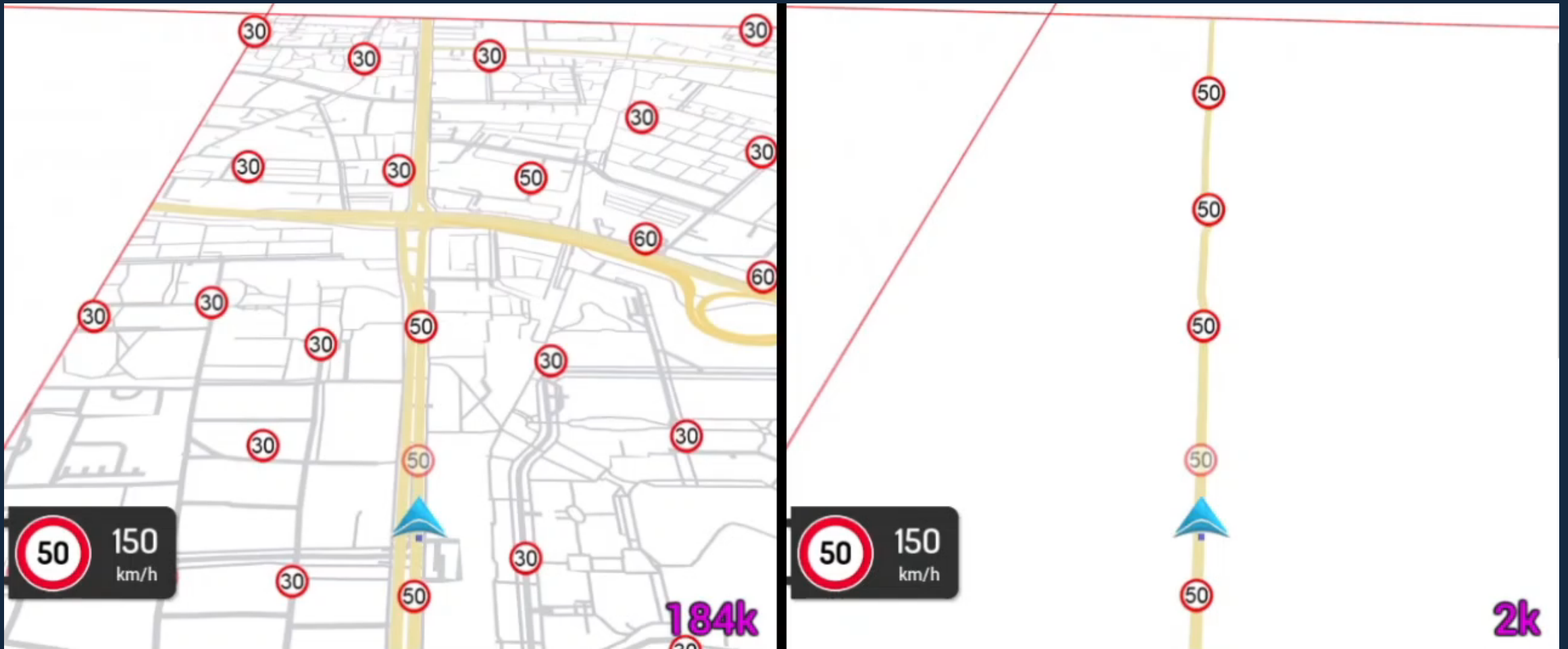
Streaming SmartLayerPath for the Horizon



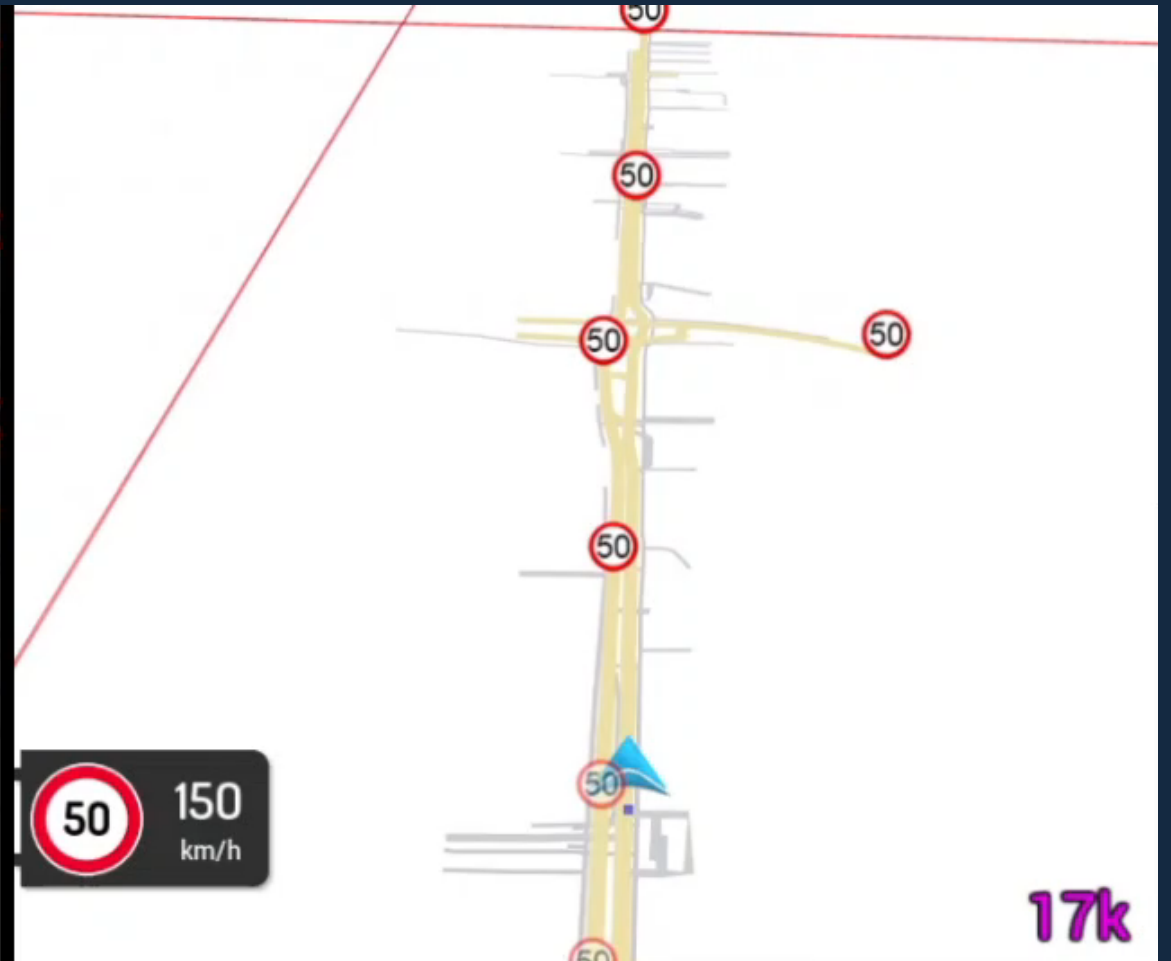
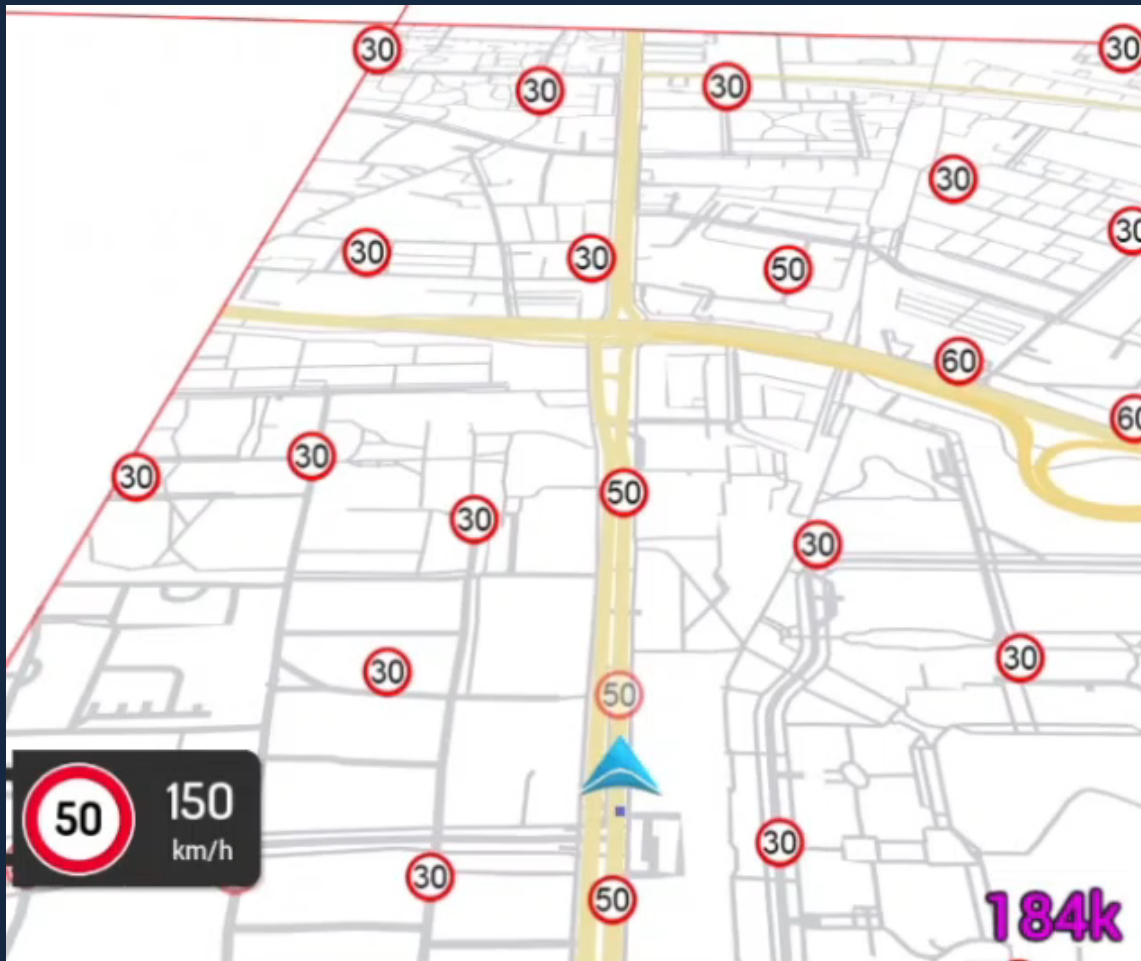
Streaming Dynamic Speed Limit as SmartLayerPath



SmartLayerTiles vs. SmartLayerPath



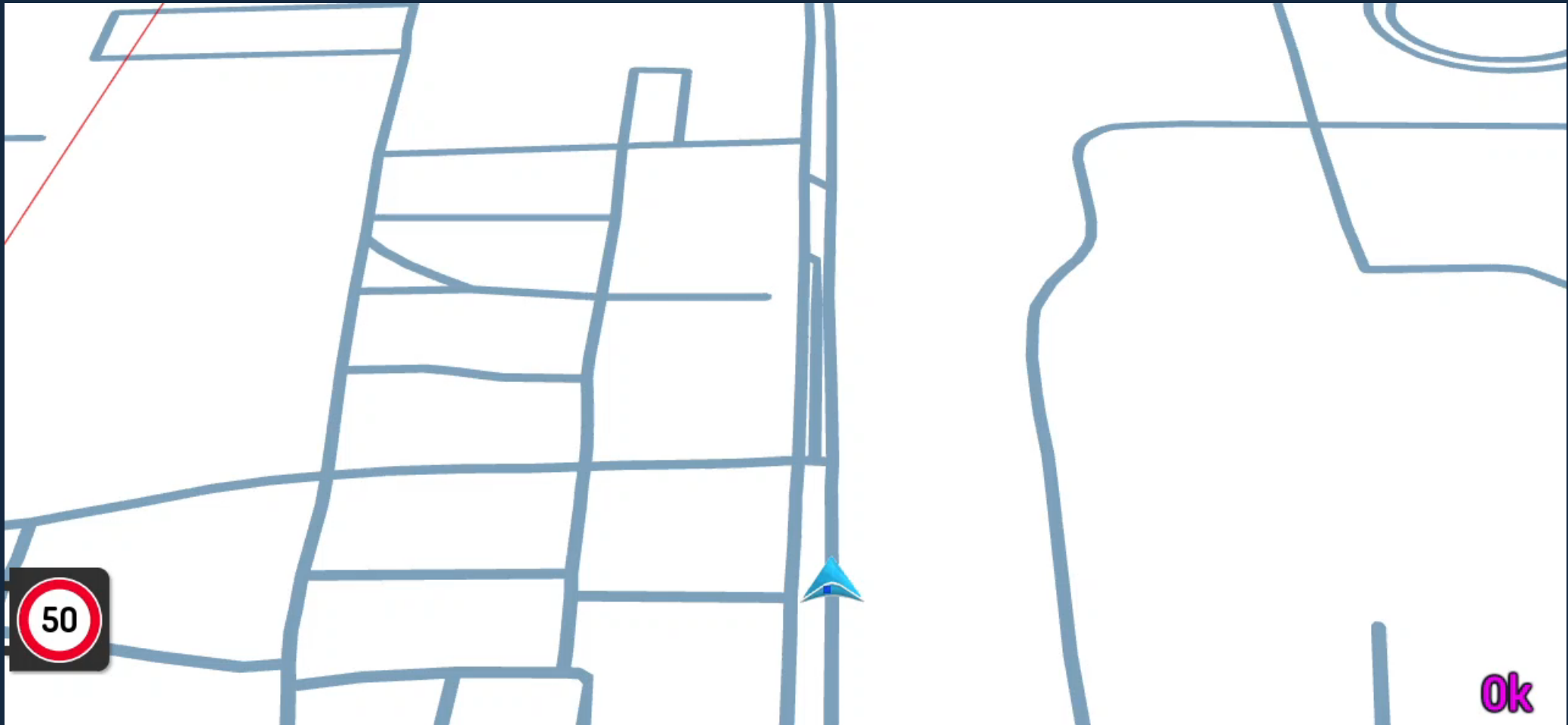
Adding Stubs for SmartLayerPath



SmartLayerPath as Fallback when bandwidth drops



Pre-installed NDS.Classic data with NDS.Live SmartLayerPath service



NDS.Live is ready now!

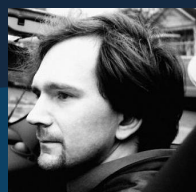
*NDS.Live Joint Development Team
is working on first SD & HD map
ADAS services and clients!*



Q&A Panel



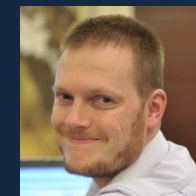
Ottó Nyírő
Product Manager
NNG



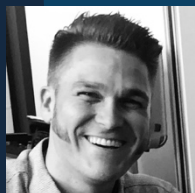
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Vice Chairman NDS Association



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Philip Hubertus
Senior Product Manager, Automotive
HERE Technologies

NDS.Live Evaluation

Request an evaluation license for the NDS.Live spec from:

Markus Junker

NDS Association Administration

markus.junker@nds-association.org

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Contact the NDS Association

www.nds-association.org