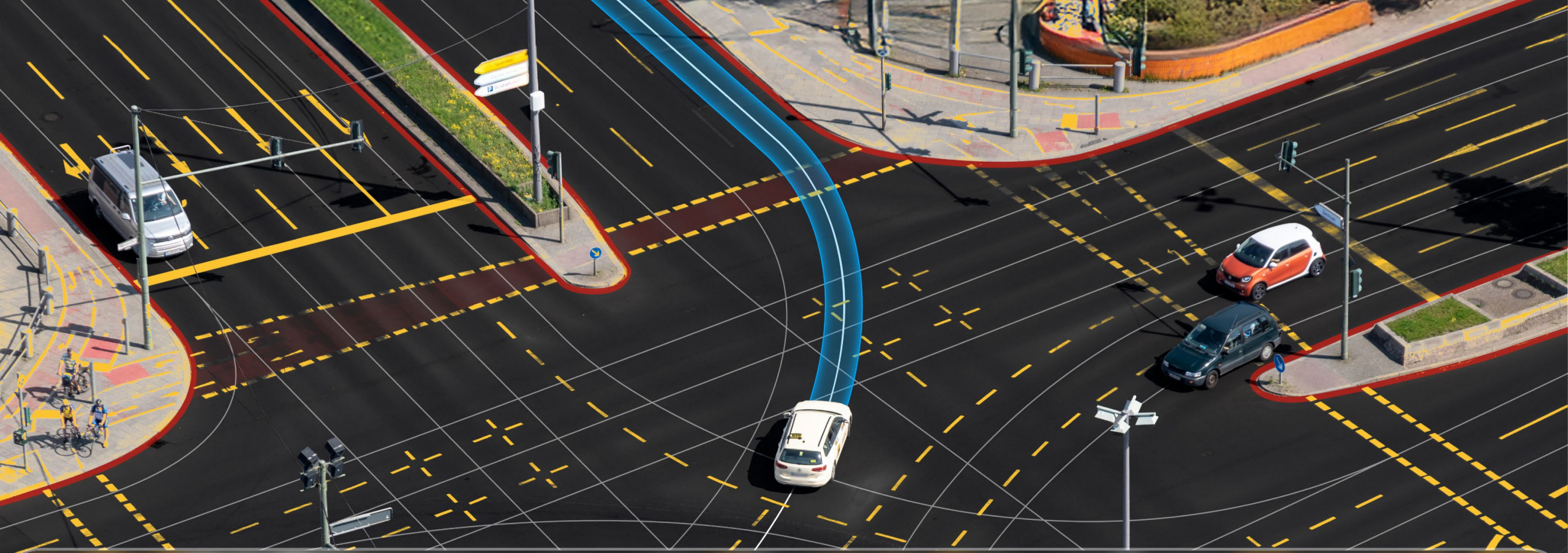


Live Layers in Practice

Hazards, Traffic and Variable Speed Limits for Automated Driving



Özlem Bellikan
Product Manager



Ozan Şengül
Engineering Manager



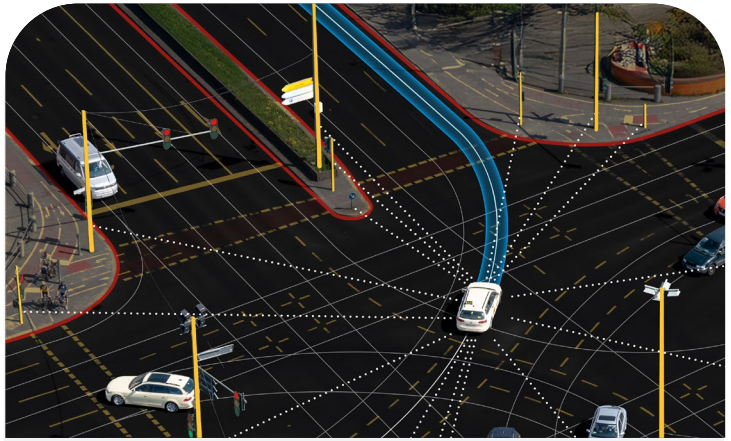
Jean-Christophe Duberga
Staff Engineer

NDS Annual Conference 2026 · Gothenburg · 15 October 2026

tomtom

TomTom live layers on NDS.Live

Three questions from Sam's morning



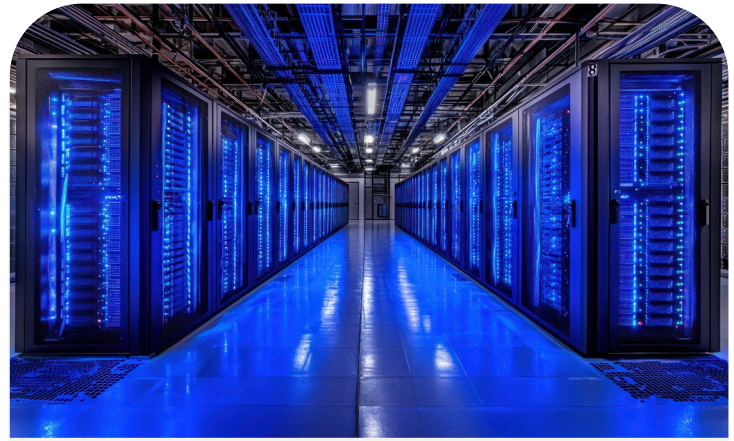
1 Heritage

Where do the ten events come from?



2 How it works

How do they reach the car without filling its memory?



3 Evidence

Does it work outside a video?

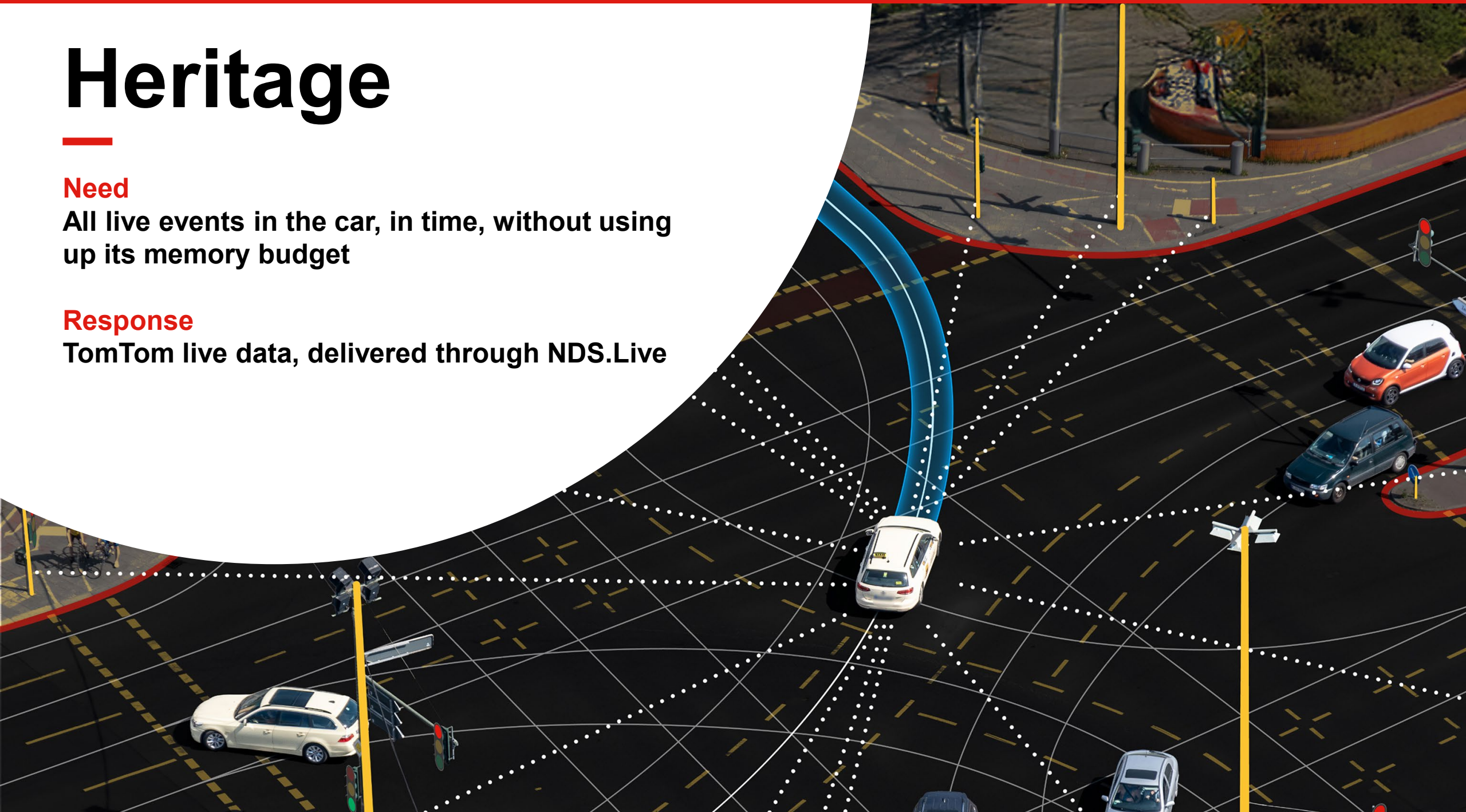
Heritage

Need

All live events in the car, in time, without using up its memory budget

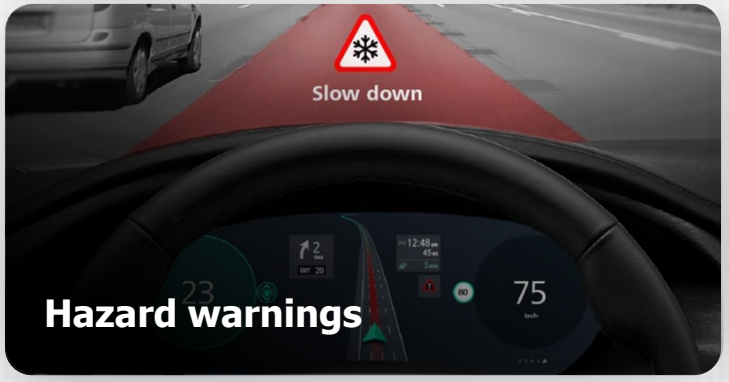
Response

TomTom live data, delivered through NDS.Live



Built on TomTom's live data heritage







70M+ km

driving data feed TomTom Traffic, refreshed every 30 s

~5 s

to push a detected hazard to the vehicle, across nine hazard types

97%

speed-limit accuracy, with dynamic limits live in under 30 s

How it works

Need

Simplify integration of live content
In navigation applications

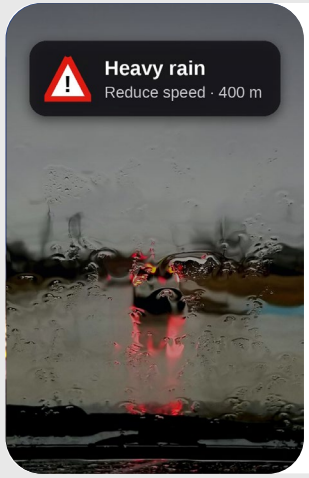
Response

All TomTom live content available
via a single API: NDS.Live



Six live layers, one Smart Layer Service

All TomTom live content served as NDS.Live smart layers



Hazards

Dangerous jam tails, Reduced visibility, Slippery roads...



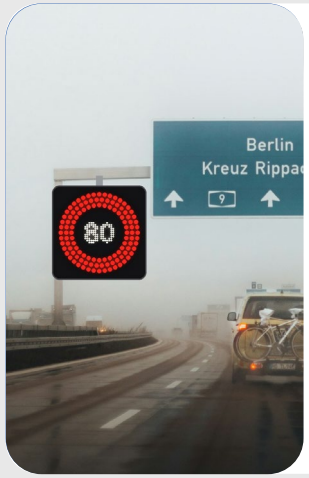
Traffic Events

Congestion, temporary closures, roadworks... with TomTom Traffic freshness



Traffic Flow

Current speed and level of service, including free flow



Dynamic speed limits

Temporary, roadwork and speed limits governed by electronic road signs



ISA Live!

Bundle of permanent, temporary, variable speed restrictions on top of basic road geometries



Safety cameras

Fixed and mobile cameras

Next: Dynamic Road Conditions (third-party road-weather data)

From change detection through NDS.Live

Freshness by design

1

Detect

Change detected upon reported observations from different sources

2

Compile

Compile internal model into NDS.Live standard and package it into layer / tiles

Store

3

Layers and Tiles repository

Stream

Changed tiles are published to respective topics

4

5

Serve (Production)

Smart Layer Service exposes every layer via standard NDS.Live interfaces and the registry

6

Notify (Prospect)

Clients are informed about the changed tiles without polling

7

Stream (Prospect)

Clients receive new tiles as they change

ISA tile update rate



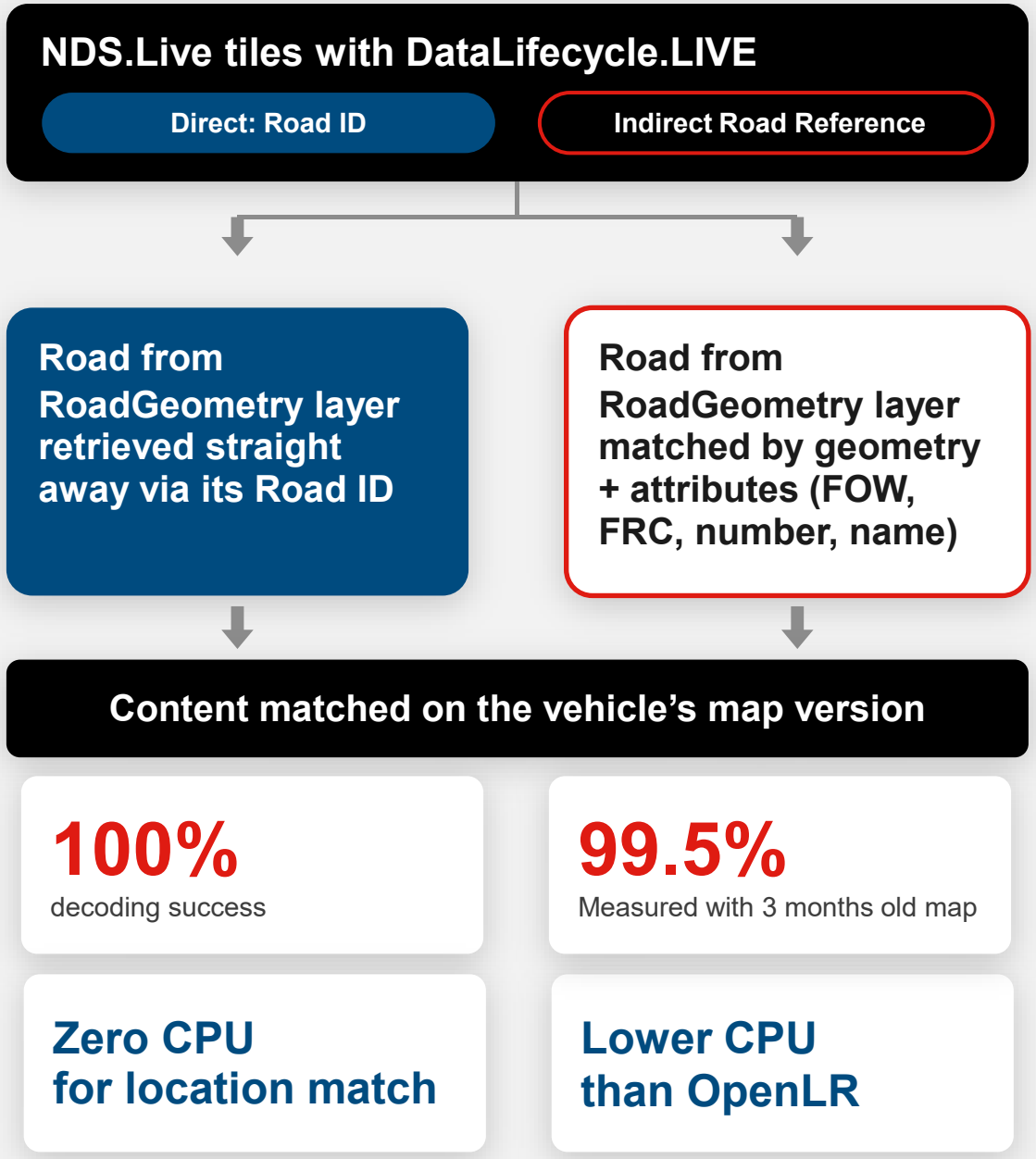
Smarter referencing

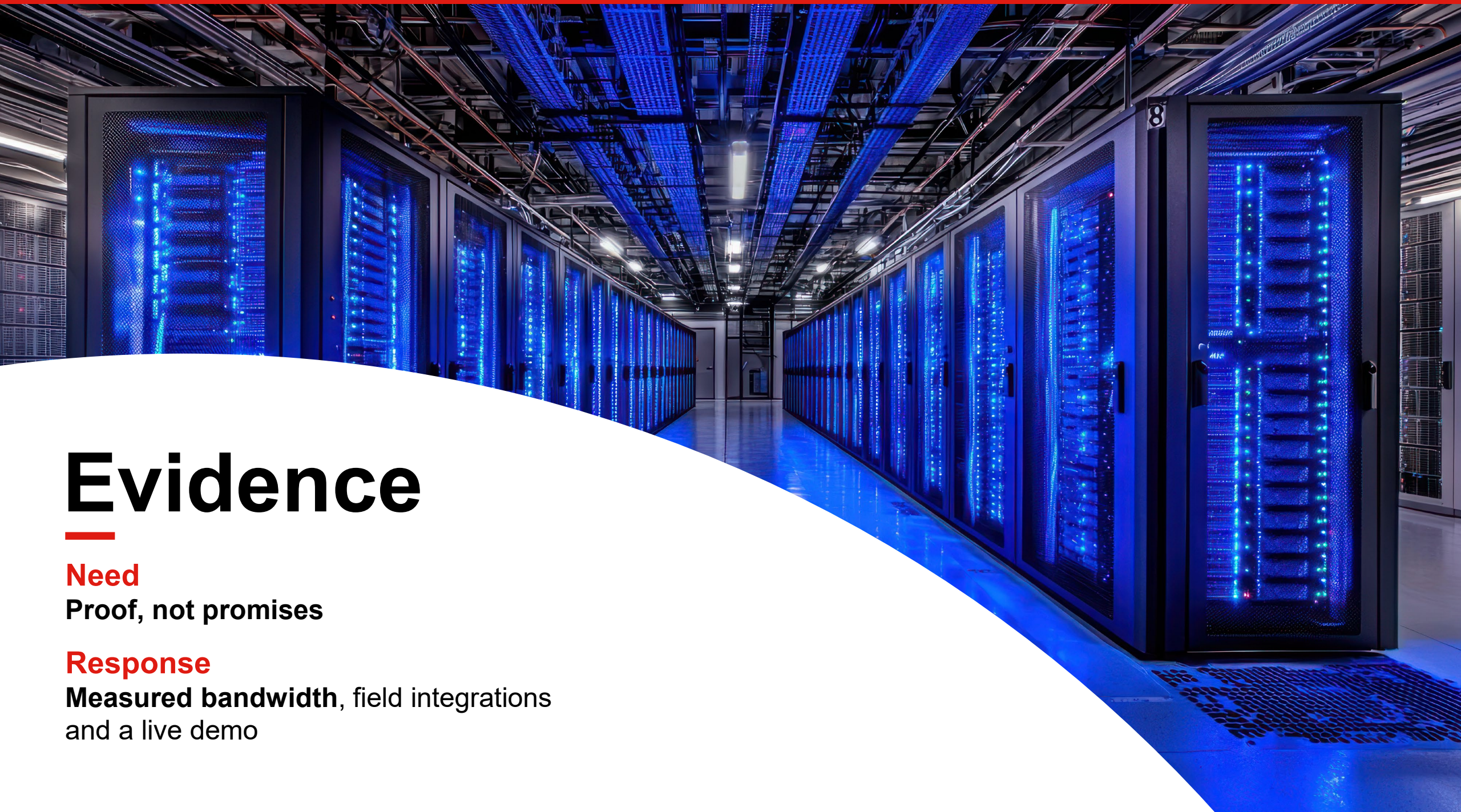
Two references: direct and indirect

- Direct referencing (road ID) is the easiest and most efficient but require base map synchronization
- Indirect referencing allows decoupled base map and live content
- Indirect references similar and superior to OpenLR
- Indirect references have more attributes than OpenLR and decoding is local to a tile
- Indirect references decoding success rate > 99.5%*
- Native support for lane and maneuvers referencing (useful for turn-dependent jam)

*Internal measurement of our SDK stack

HOW THE NAVIGATION APPLICATION PLACES A LIVE CONTENT ON THE MAP





Evidence

Need

Proof, not promises

Response

Measured bandwidth, field integrations and a live demo

Competitive Performance & Bandwidth Profile

Data Volume

Assuming every 60 seconds client polls for speed limits

~200 KiB / hour

Bandwidth

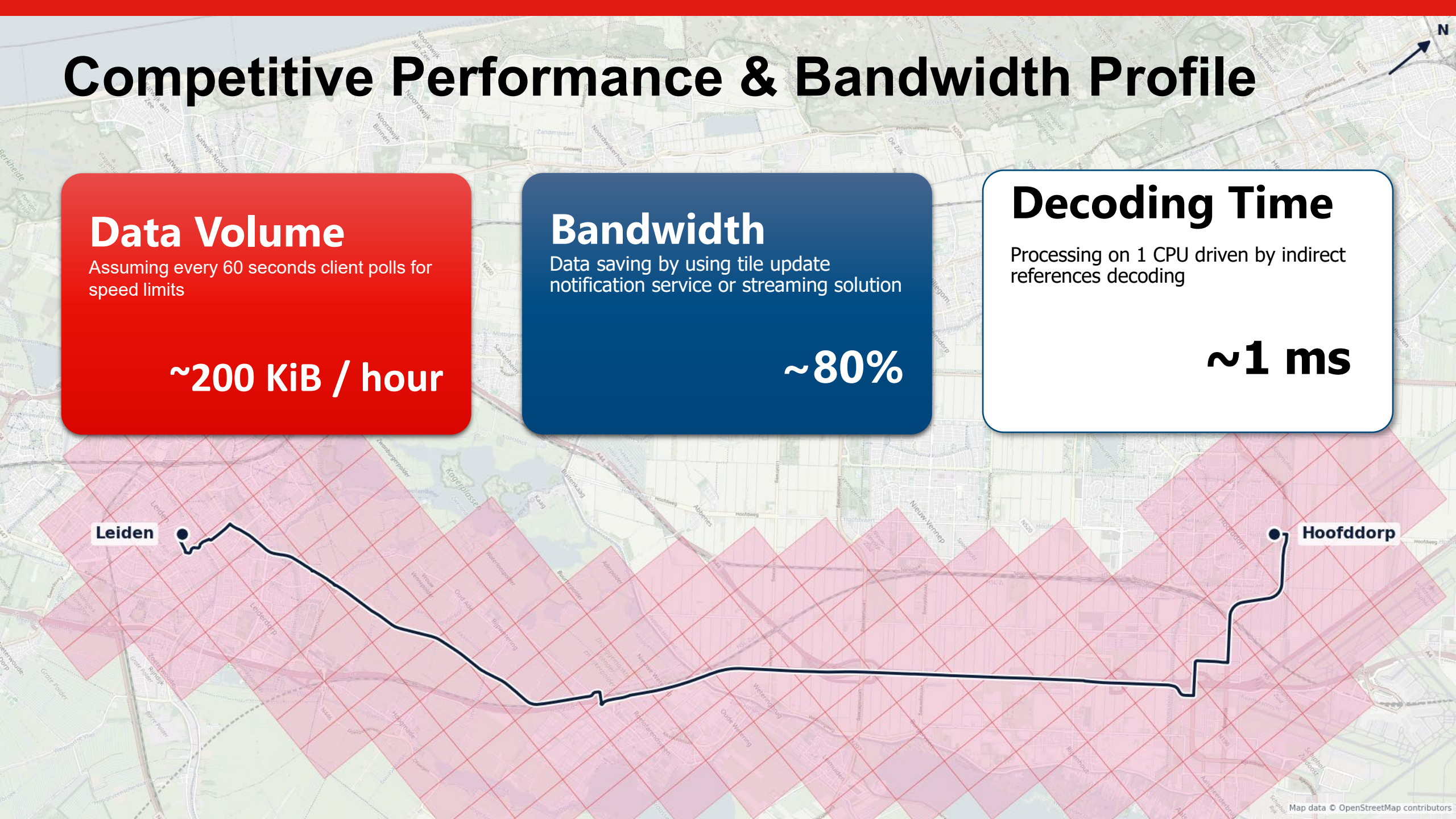
Data saving by using tile update notification service or streaming solution

~80%

Decoding Time

Processing on 1 CPU driven by indirect references decoding

~1 ms



Live Demo

NDS.Live layers updating in real time


545352178
545352220
545352387
545352799
545352886
545352934
545352960
545353293
545353305

Live layers in the field

From proof of concept to OEM programmes

Unified Delivery of Live and Static Map Layers

Live layers and static map layers are consumable by automotive customers together via a single API, cloud to vehicle, cloud to cloud

Active testing

TomTom ADAS SDK

Lightweight SDK that delivers predictive map data, including live hazards and speed limits, straight to ADAS. Works with or without a navigation provider.

Prospect evaluation

Bring your own dynamic data

TomTom BYOD integrates customers' own data into the map they license via an isolated pipeline

Active testing

2024
NDS.Live traffic proof of concept

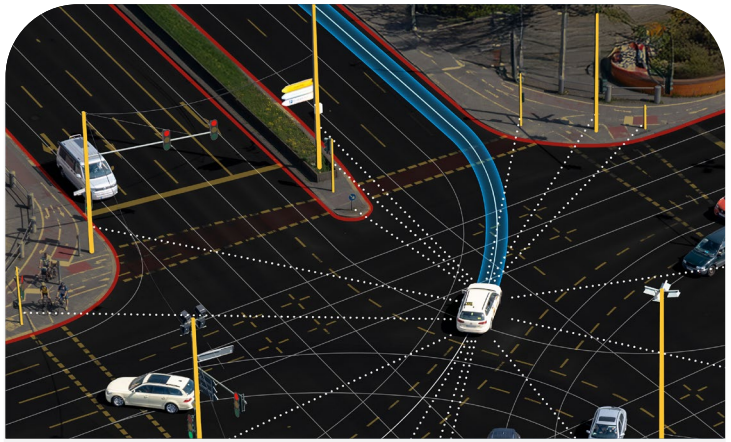
2025
Production-grade, cloud-native deployment

2026
Six live layers, OEM programs testing

Autumn 2027
Real cars connected

Try it: live layers on NDS.Live

What you can do after today



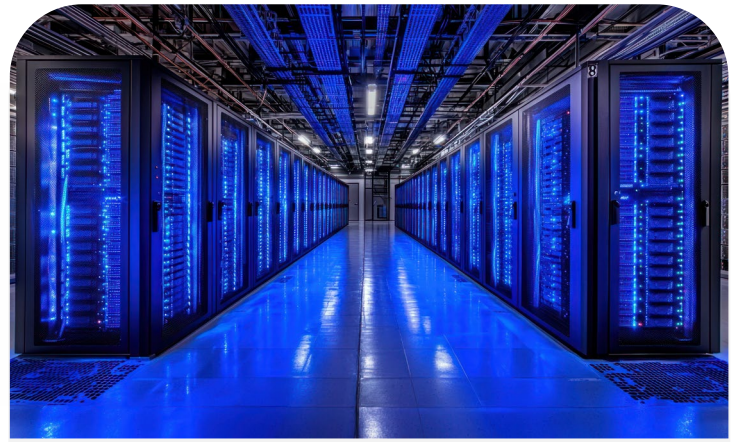
Evaluate

Get access to hazards, traffic and speed-limit layers on the TomTom NDS.Live service



Bring your data

Stream your own dynamic data through the same pipeline and receive it as NDS.Live layers



Shape the standard

Work with us on lane-level referencing, notifications and BYOD intake

Request access

Talk to us

Thank you

Questions? · NDS.Live Conference 2026



tomtom