ZED-F9K

Lane Accurate Positioning Module

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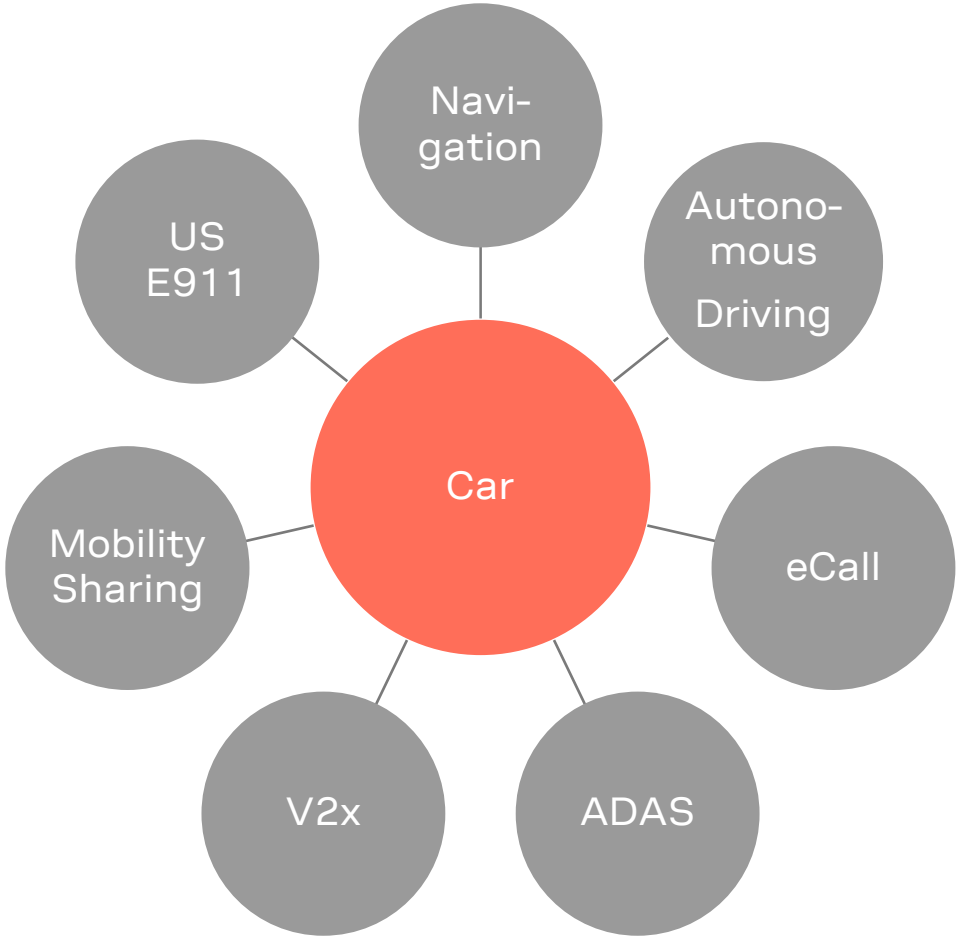
Challenges for vehicle positioning

Demand for decimeter level accuracy

- Growing number of applications require position information
- Higher accuracy in wide range of scenarios, including cities and tunnels
- Autonomous driving & ADAS have the most demanding accuracy requirements
- Applications require:
  - Real-time positioning
  - Lane Identification
  - Common time and position reference



Target applications for ZED-F9K

Lane accurate positioning for demanding applications

In-car navigation

- Superior navigation performance
- High position update rates
- Lag-free head up display

Vehicular Comm.

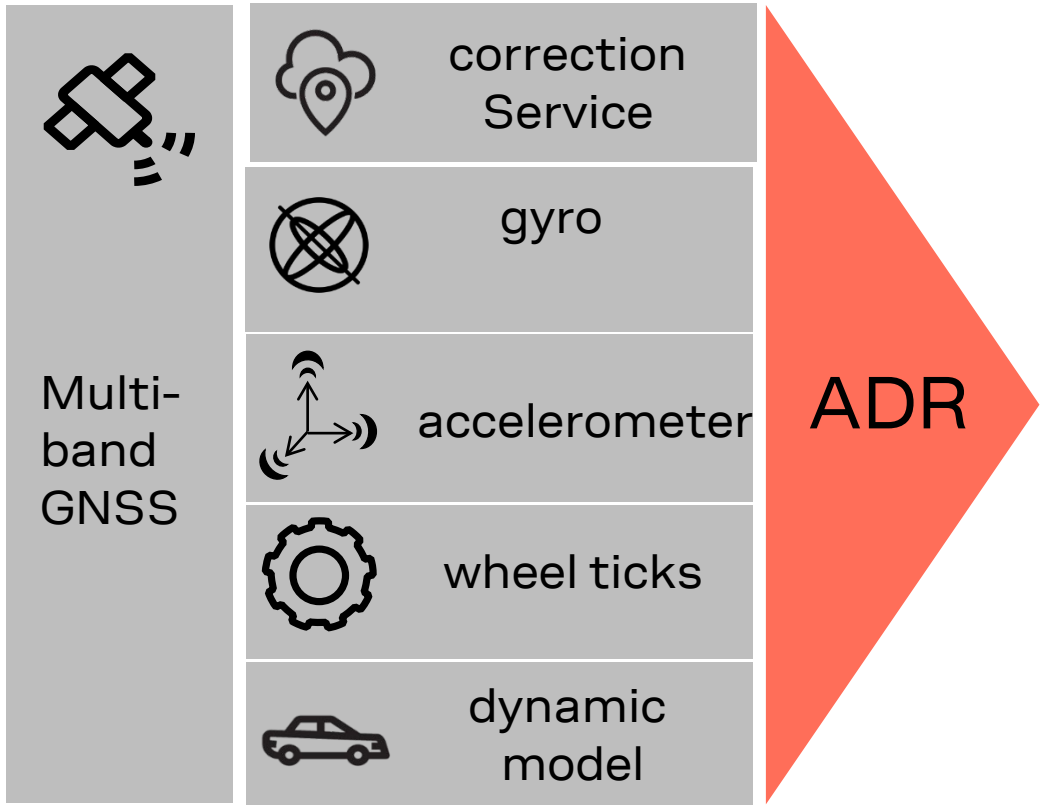
- Dependable V2X system even in urban conditions
- Real time positioning
- Exceeds SAE J2945/1 requirements

ADAS

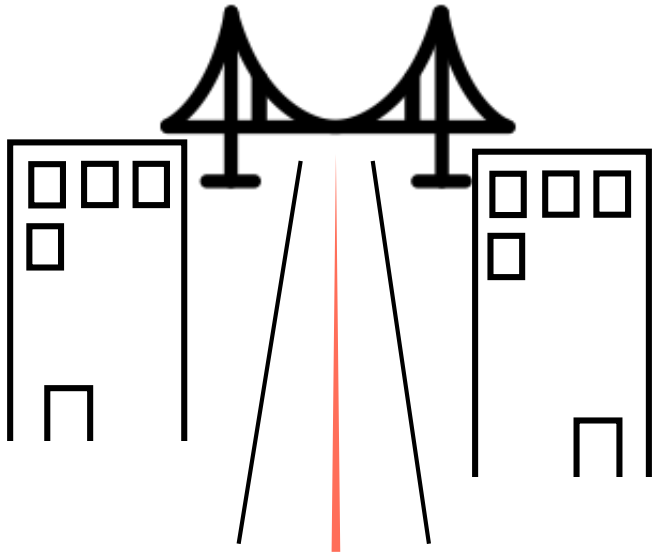
- Lane identification and Positioning
- High availability of accurate position
- High position update rates with low latency
- Enables real-time update of HD maps

High precision automotive dead reckoning

Down to decimeter-level accuracy under most challenging situations



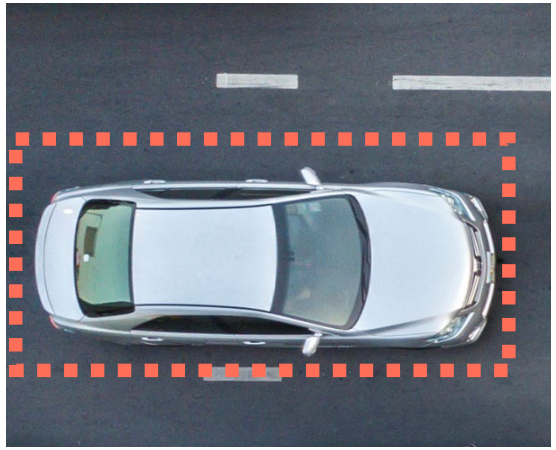
Reliable Position



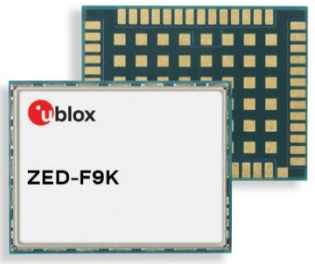
ZED-F9K highlights

The first lane accurate positioning module

- Continuous Lane Accurate Positioning under the most challenging conditions
  - Decimeter-level accuracy for automotive mass markets
  - Ideal for ADAS, V2x and Head Units
  - Turnkey multi-band, RTK solution with built-in inertial sensors
  - Low latency position update rate of up to 30 Hz



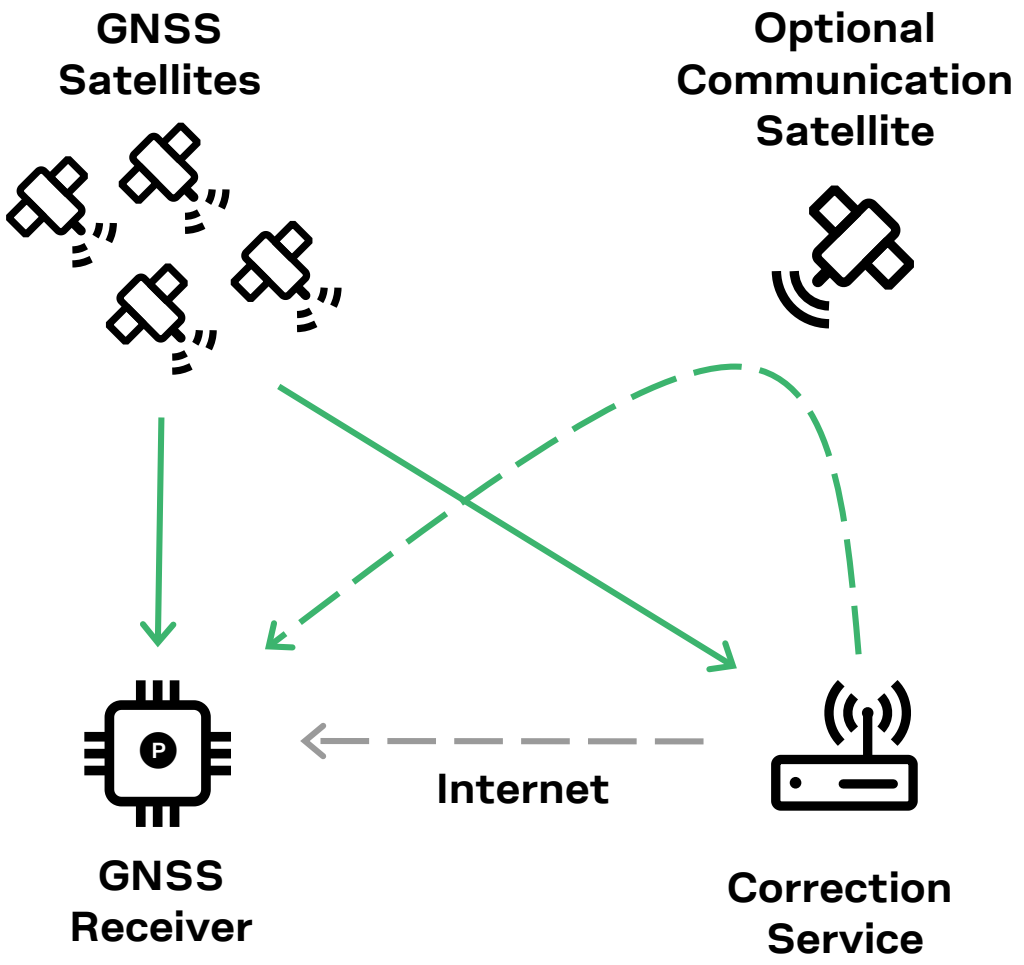
Decimeter accuracy



High precision GNSS system overview

Lane accuracy across the globe

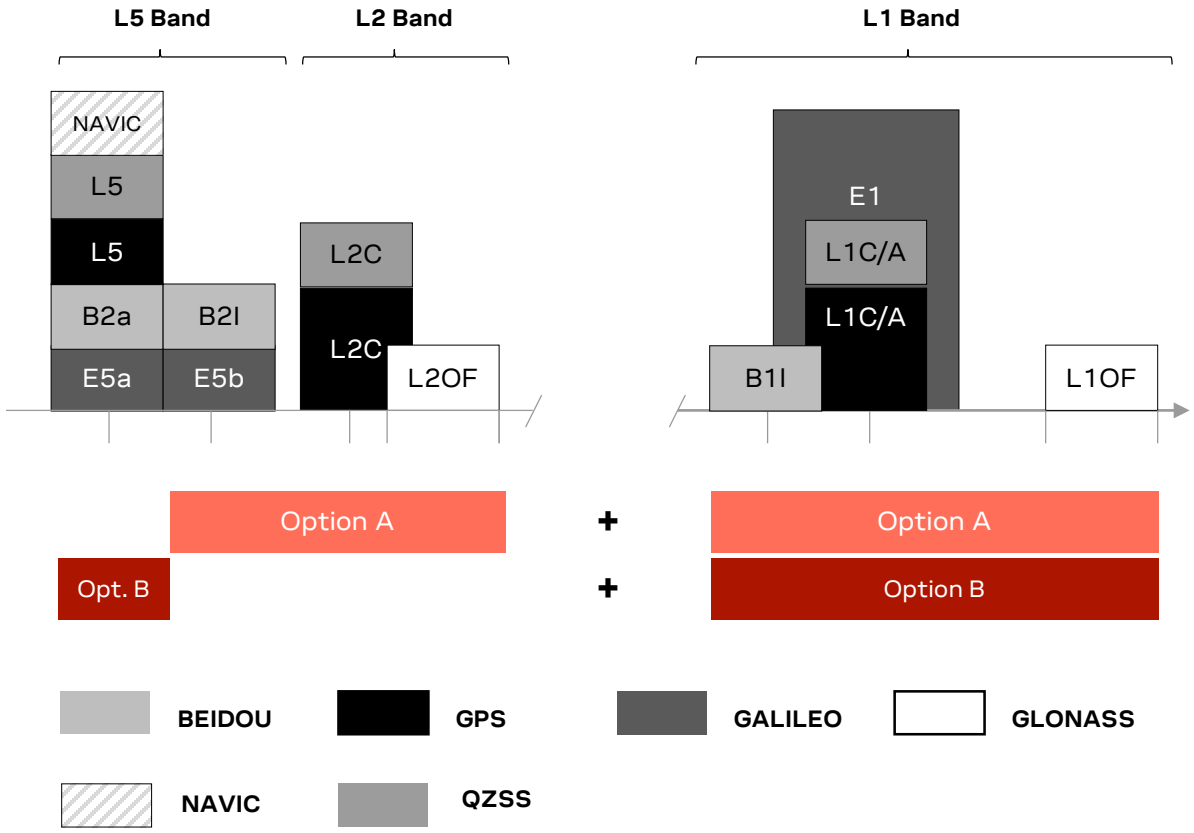
- High precision GNSS system consists of:
  - Multi-constellation GNSS receiver
  - Integrated high precision algorithms
  - GNSS correction service
  - Internet connection / L-band receiver
- Enables decimeter-level performance with a GNSS correction service
- Compatible with most commercially available services



ZED-F9K has two band options

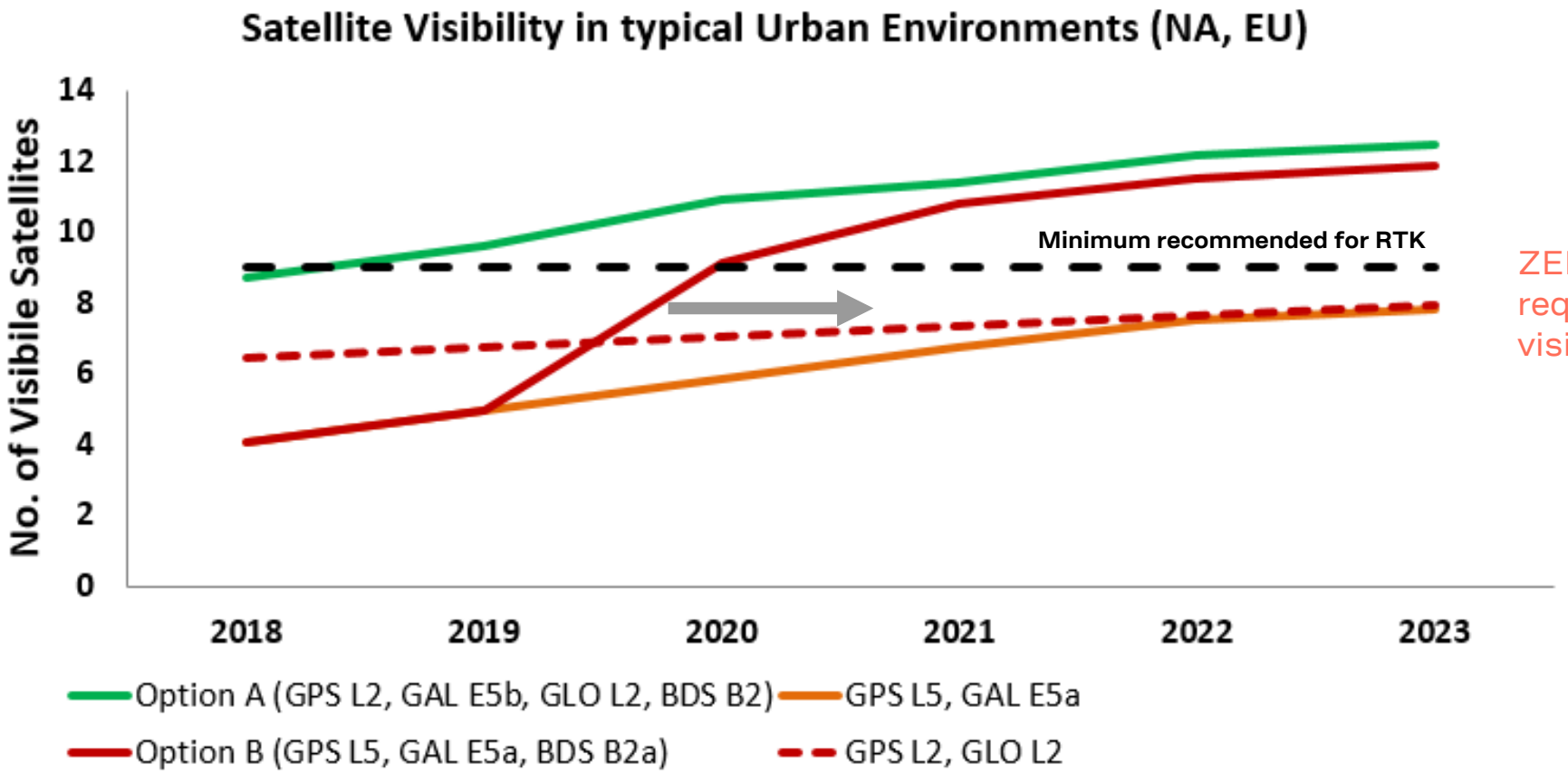
Multi-band, multi-constellation

- Multi-bands for fast convergence
- Wide bandwidth receives L1/L2/L5 signals simultaneously
- Option A available now



Number of satellites by band option in cities

Only ZED-F9K is suitable for RTK today

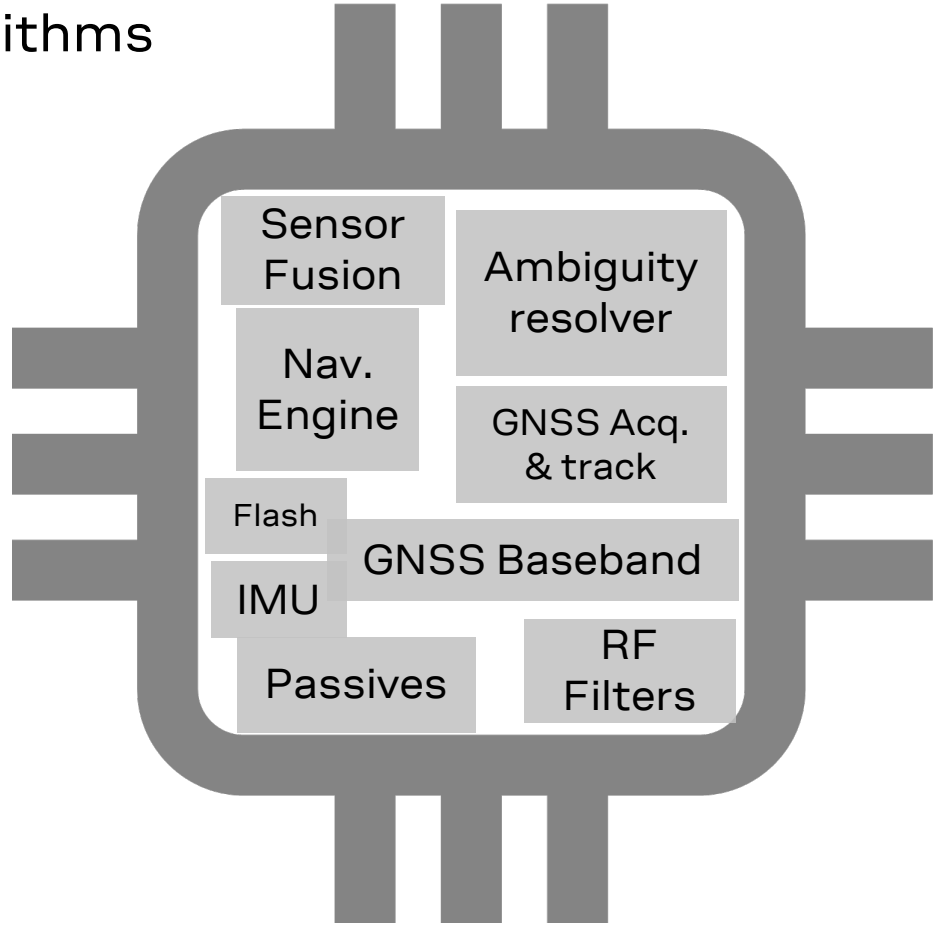


ZED-F9K delivers required satellite visibility today

Turnkey solution

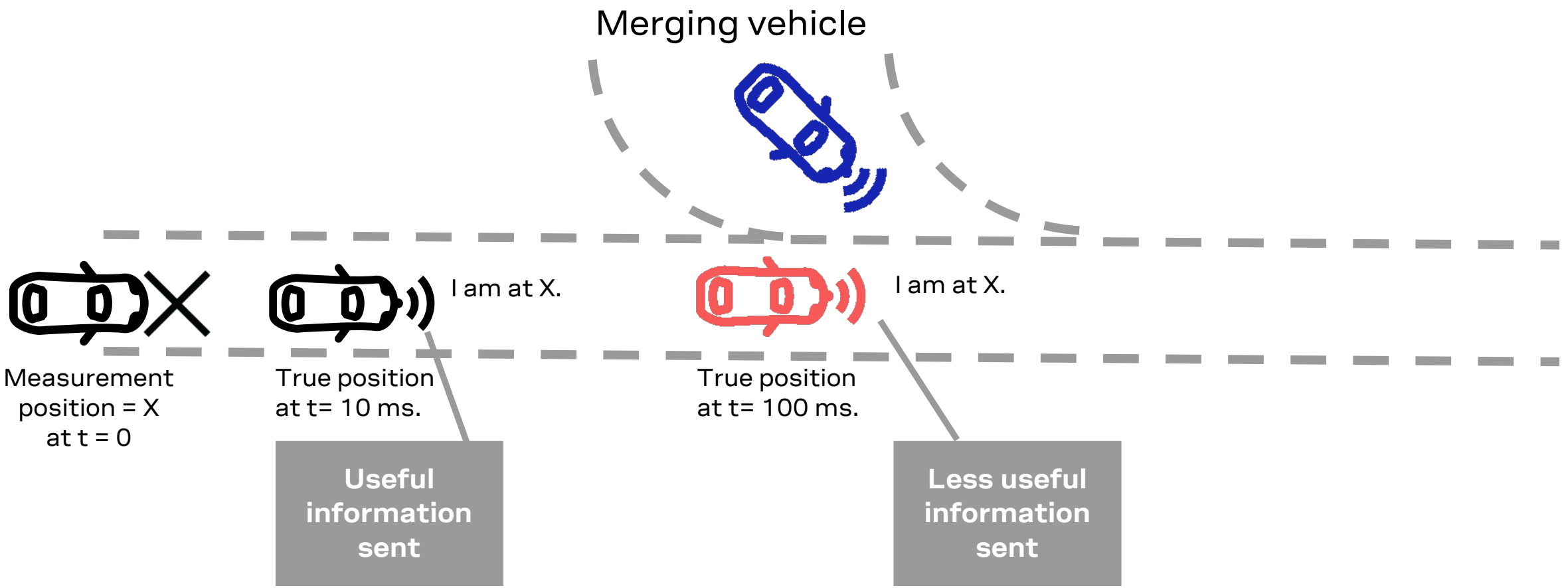
Complete multi-band GNSS receiver with RTK and IMU

- Flexible fully-integrated GNSS with advanced algorithms
  - Complete documentation & technical support
- Known performance on day one
- Single vendor software and hardware
  - No issues falling between vendors
- Complete isolation from host system
  - RF isolation from cellular modems
  - Independent evolution from system
  - Independent of cellular activity
  - Independent low power modes & uptime
  - Independent scaling of host capabilities



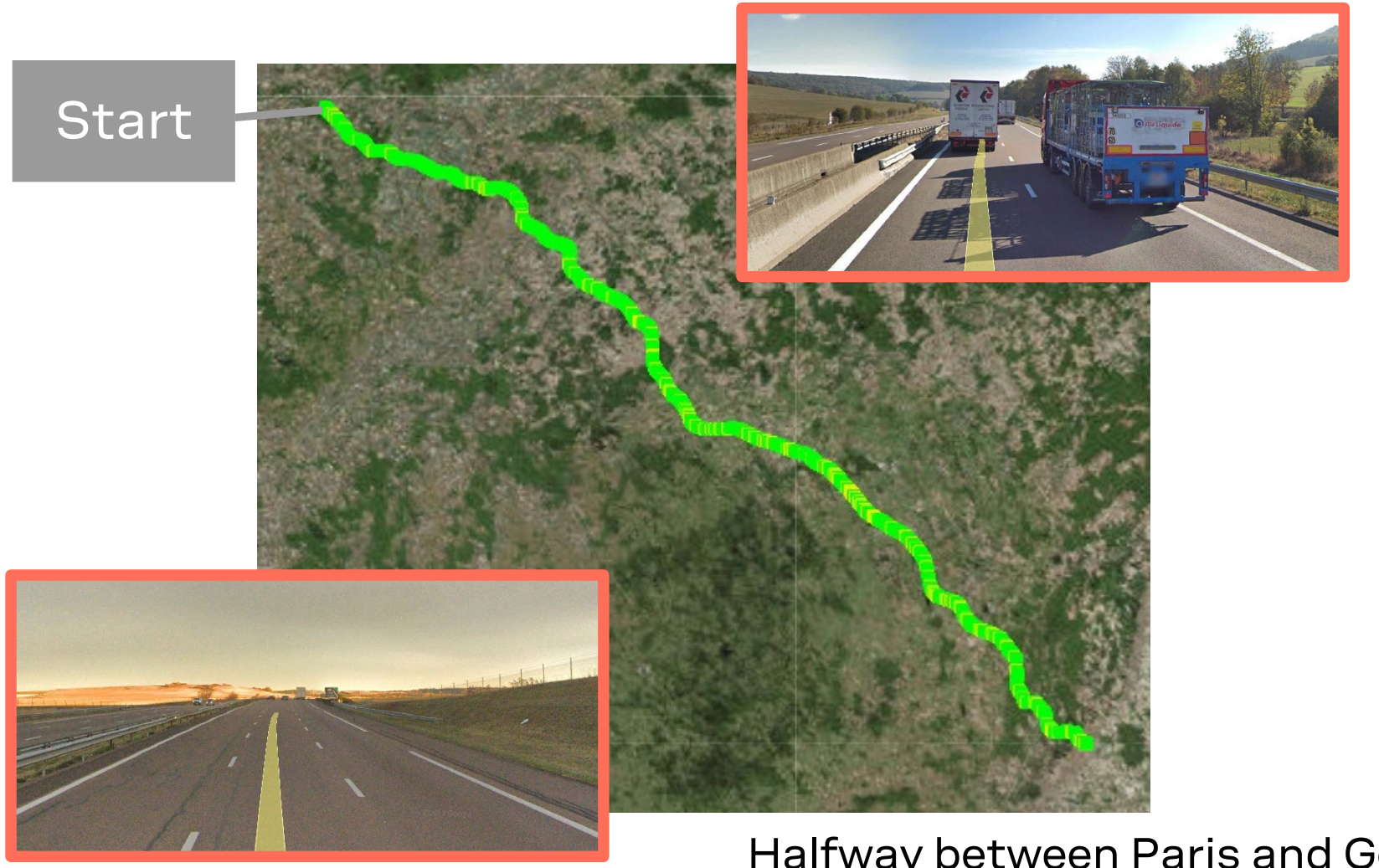
Low latency improves user experience

Real life V2X requires low latency



Performance data in highway scenario

> 10 times improvement over existing technology

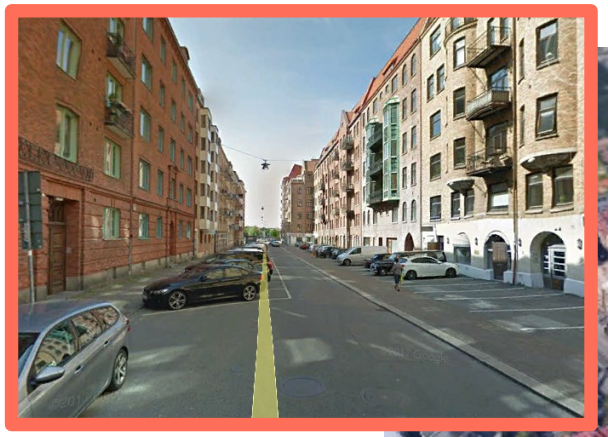


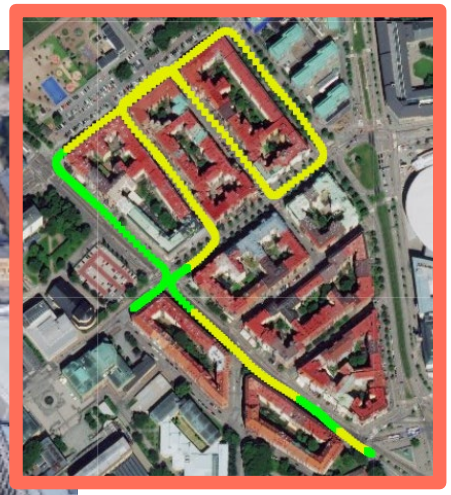
2D	Accuracy Value
CEP	0.058 m

Halfway between Paris and Geneva

Performance data in dense urban scenario

dm-level accuracy despite 60° sky obstruction

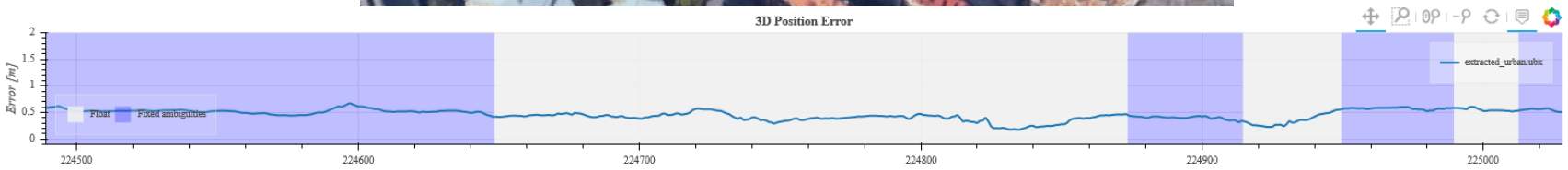




Fixed Ambiguities

Float Ambiguities

Dead Reckoning



Gothenburg, Sweden

2D	Accuracy Value
CEP	0.388 m

RTK solutions available all the time thanks to high number of visible satellites

Portfolio roadmap

Automotive & professional modules available

Modules	Configuration	Correction service	Accuracy (CEP)
ZED-F9K - industrial & automotive	RTK with ADR	OSR/RTCM 3.x / SSR/SBAS	< 0.20 m
ZED-F9P – industrial	RTK	OSR/RTCM3.x/ SSR/SBAS	< 0.01 m
NEO-M8L - industrial & automotive	Standard precision GNSS w/DR	SBAS	< 1.5 m

ZED-F9K highlights

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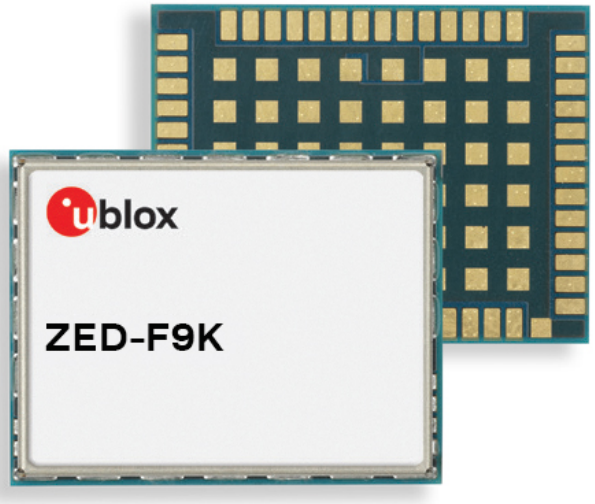

Thank you
for your attention