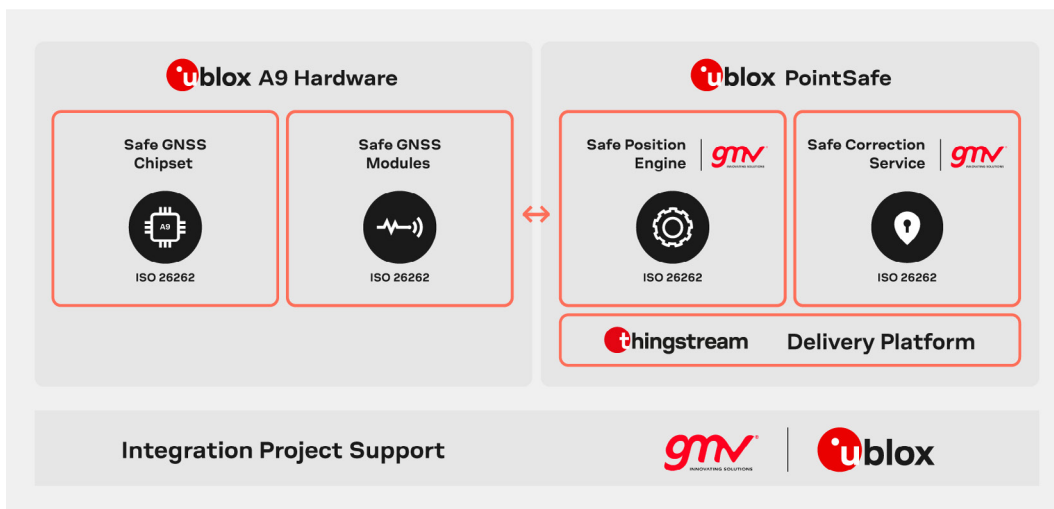


# u-safe

## End-to-end safe positioning solution

### Proven market-leading components offered as comprehensive solution for safe vehicle navigation

- ASIL-B (ISO 26262) pre-certified solution components tested and in use on millions of kms of public roads
- Best-in-class performance through optimization of the complementing solution component functionalities
- Minimized time-to-market via efficient integration through proven processes and track record
- Optimized cost enabled by combination of hardware, software, services, and integration project support
- Ideally suited for ADAS L3+ autonomous driving applications



### u-safe Advanced Driving overview and key benefits

u-safe is a pre-certified ISO 26262 ASIL-B end-to-end positioning solution designed to accelerate the adoption of autonomous vehicles. It includes the PointSafe safe correction service and safe on-board positioning engine that are already on the road today, delivering high performance and trusted lane location for automotive OEM's and Tier 1's.

Together with our industry-leading A9 functional safe chipset and modules and custom integration expertise, u-safe is a flexible end-to-end solution offered directly to automotive customers for Advanced Driver Assistance Systems. Minimize your time-to-market via easy and fast integration through our proven processes and automotive track record. Optimize cost using a proven combination of hardware, software, services, and product integration support.

u-blox and GMV have joined forces to deliver a solution designed to transform advanced driving by merging safety and automation with affordability.

### Features / details

Technology	High-accuracy SSR corrections
Horizontal accuracy	< 10 cm RMS
Target integrity risk (TIR)	Up to $10^{-7}$ per hour
Convergence time (cold start)	< 30 s (reconvergence within seconds)
Protection level	2 to 5 m
Service availability	> 99.9 %
Time to alert (TTA)	< 5 s
Position, velocity, heading	up to 10 Hz
Coverage	Europe, contiguous United States, Canada, and other planned regions
Delivery	Direct-to-Vehicle or Service-to-Service via OEM backend
Communication	SSR corrections encapsulated in binary large objects (BLOBs) and published via internet using MQTT protocol
GNSS signal support	GPS: ASIL-B Galileo: ASIL-B BeiDou: 1Q24

RMS = root mean square

**u-safe Advanced Driving**

u-safe is a unique combination of pre-certified market-leading components offered as an end-to-end solution for safe vehicle positioning and is comprised of the below components. Our holistic approach includes not only the hardware and service components, but also the integration project support, solution delivery, service, and maintenance during the production phase, with the potential to adopt changing architecture over time.



**u-blox A9 functional safe GNSS chip**

- ASIL-B (ISO 26262) measurement engine for GNSS localization
- Designed to support ADAS L2+, L3 (and above) autonomous driving applications
- dm-level accuracy with assured safety and integrity metrics
- ISO-21434 cyber security compliance upcoming in 2024
- Multi-band (L1/L2 or L1/L5) support with three concurrent constellations
- ASIL-B (ISO 26262) raw data output
- Native support of PointSafe
- In-use on public roads



**Custom integration project support**

- Engineering and development support for the integration of the chosen positioning solution into the targeted application
- Support through all stages of the integration project: feasibility study, requirements engineering, hardware and software integration support per u-blox safety manual during FuSa integration project, FuSa project management
- Global presence and long-term experience serving customers worldwide



**PointSafe safe positioning service**

**Safe position engine**

- Sensor fusion (IMU, wheel ticks, etc.)
- Correction service integration
- PVT + Protection Level calculation
- Integrated on host processor or on u-blox module
- ASIL-B output available (ISO 26262)
- Integrity layer (ISO 21448 – SOTIF)
- Cybersecurity mechanisms

**Safe correction service**

- Field-proven SSR / PPP-RTK technology
- Multi-constellation and multi-frequency
- Integrity data processing through SSR
- ISO 26262
- Fast convergence
- Coverage including Europe, contiguous United States, and Canada; other regions planned



**thingstream IoT service delivery platform**

- Cloud-based delivery platform and administration interface for enterprise IoT services
- Pressure tested and proven to support the delivery of billions of messages
- Intuitive interface provides a self-serve environment from which users manage IoT device fleets
- Delivery as direct-to-vehicle or service-to-service via OEM backend

**Key benefits of u-safe Advanced Driving**



**Proven technology**

Pre-certified solution components, tested on millions of kms, and already part of safe solutions on public roads



**Highly flexible**

Dynamic integration options for different target E/E architectures, sensor inputs and highly portable software



**Holistic approach**

Solution plus customization, integration, and certification service and support via global presence



**One-stop-shop solution**

Hardware (down to chipset level), software, and services from one source



**Minimized time to market**

Easy and fast integration through proven processes and automotive track record



**Best-in-class performance**

Through optimization of the complementing solution component functionalities



**Optimized cost**

Combination of hardware, software, and services enables an optimized cost

**Further information**

For contact information, see [www.u-blox.com/contact-u-blox](http://www.u-blox.com/contact-u-blox).  
For more product details, see [www.u-blox.com/en/usafe](http://www.u-blox.com/en/usafe).

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