# Geo++ GNSMART
# GNSS Network Software for High-Precision Positioning Services

## KEY PRODUCT FEATURES

Geo++ GNSMART (GNSS State Monitoring And Representation Technique) is a highly modular and scalable software solution designed to compute and distribute real-time GNSS correction data. Supporting both OSR and SSR corrections, it delivers precise positioning for a wide range of applications including geodetic services, navigation, and real-time kinematics (RTK). Through advanced modeling and robust processing, GNSMART forms the core of modern GNSS augmentation systems.

- Precise GNSS corrections: fast and reliable
- Future-proofed Output: ready for multiple broadcast channels with open formats
- Scalable & modular architecture: from single-station to large networks
- Centralized monitoring & alerting: live visualization and automated alerts
- Open integration & interfaces: supports major receiver brands and standards
- Hardware independence & flexibility: runs on standalone servers and on all major clouds
- Broad applications: suitable for surveying, precision farming, infrastructure monitoring and many more

## SELECTION OF REFERENCES

**SAPOS | GEPOS - Joint Official PPP-RTK Positioning Service of the Federal and State Authorities of Germany**
Nationwide GNSS correction service with centimeter-level accuracy using Geo++ GNSMART. Real-time corrections via DAB+ and internet, enabling reliable surveying for government authorities and beyond.

**CNH Industrial - Smart Farming with GNSS Corrections**
Geo++ GNSMART delivers precise GNSS correction services to CNH Industrial for autonomous and efficient agricultural machinery. By enabling real-time positioning with centimeter-level accuracy, Geo++ supports smart farming solutions that increase productivity and sustainability worldwide.

**GNSS Correction Data in Japan Implementation of GNSMART for QZSS L6 CLAS**
Nationwide GNSS correction service with 300 reference stations and cascaded sub-networks powered by Geo++ GNSMART. Provides high-precision positioning with 12 SSR datasets updated every 5 seconds, enabling reliable geospatial and mobility applications across Japan.

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## GNSS COMPATIBILITY, CORRECTION FORMATS & FEATURES

| | |
|---|---|
| Constellations | GPS, GLONASS, Galileo, BeiDou, QZSS, NavIC |
| Network RTK concepts | SSR, VRS/PRS, FKP, MAC |
| Formats (OSR) | RTCM 3.x |
| Formats (SSR) | RTCM-SSR, IGS-SSR, SSRG, 3GPP-LPP, SPARTN, SSRZ |
| Update rate | 1 Hz (RTK and SSR), bandwith optimized timing for broadcast services |
| Protocols | NTRIP (caster/client), TCP/IP, UDP, FTP, HTTPS, WebSocket |
| Quality metrics | Real-time bias monitoring, ambiguity status, solution quality indicators, atmosphere parameters |
| Additional features | RINEX download server, post-Processing web service, RTCM transformation parameters and residual information |
| Monitoring & alarming | Live visualization of station and rover status, email alarming |
| Native support for leading GNSS receiver brands | Javad, Septentrio, Trimble, Leica, Topcon, u-blox, NovAtel, Hemisphere and many more |
| OS | All current/supported Windows Server, Windows 10, Windows 11 |
| Hardware | VM & Cloud supported, dedicated servers recommended |
| Reference station quantity | Minimum 5 stations, Maximum >1000 when using customized sub-networks |

**Geo++ GmbH**
Steinriede 8
30827 Garbsen, Germany
www.geopp.de
sales@geopp.de
Tel: +49 5131 4689 0

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