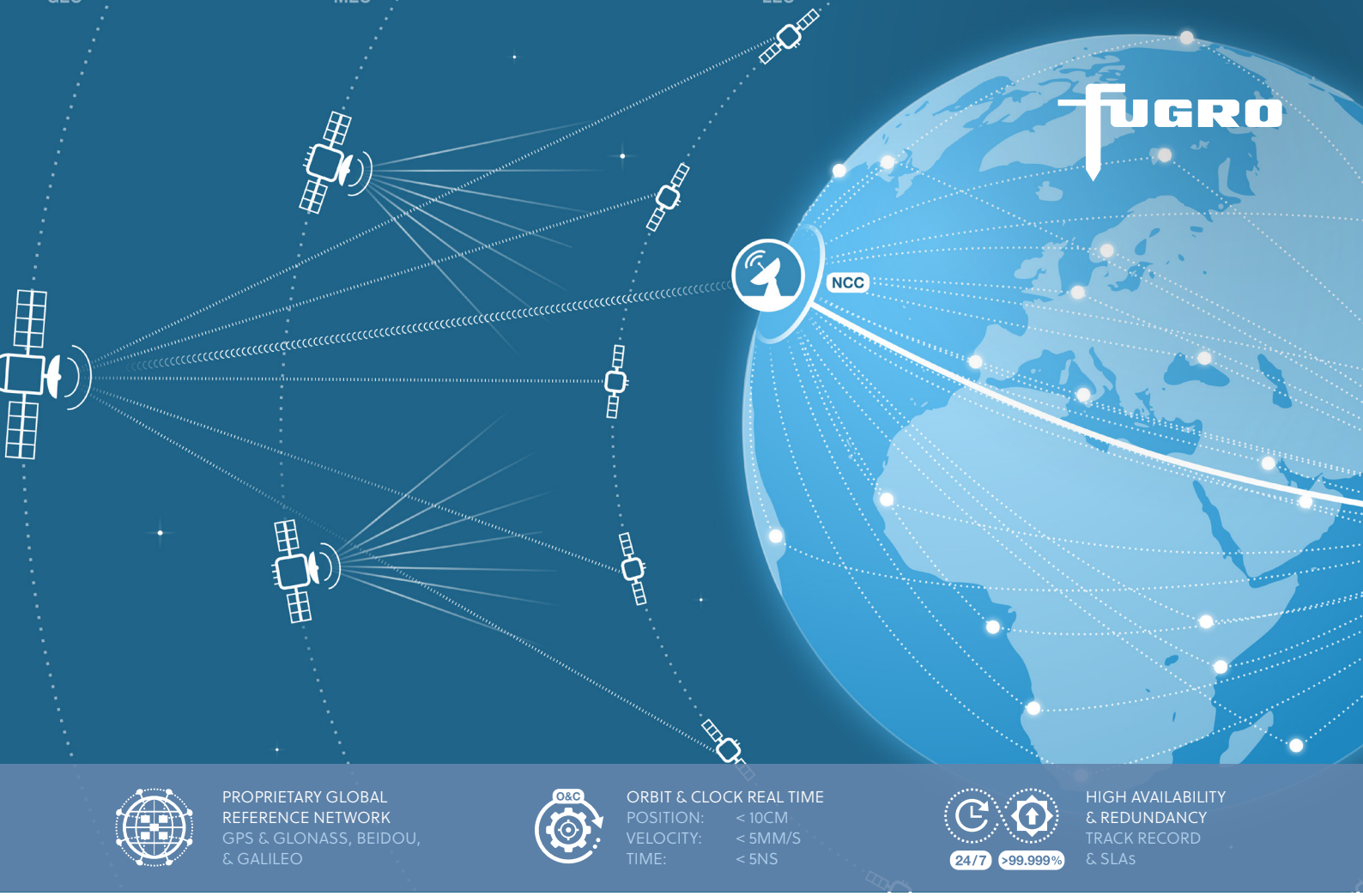
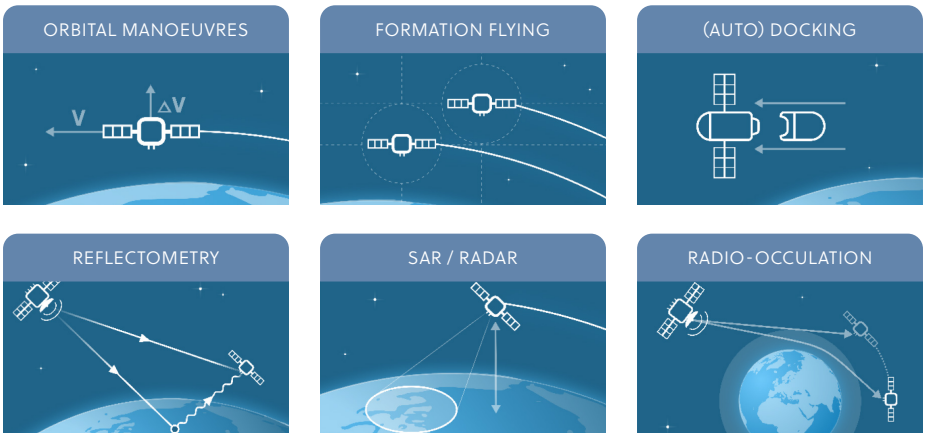


FUGRO SPACESTAR®

SpaceStar® is next generation technology for the provision of high-accuracy, real-time navigation services in low Earth orbit (LEO), leveraging our extensive expertise in delivering Global Navigation Satellite Systems (GNSS) augmentation services for professional applications. SpaceStar® provides sub-decimetre absolute positioning and nanosecond-level timing onboard LEO satellites in real-time. SpaceStar® is based upon our proven Precise Point Positioning (PPP) technique, using multi-constellation and multi-frequency GNSS technology with real-time GNSS orbit and clock corrections delivered via L-band signal from geostationary (GEO) satellites.



BENEFITS

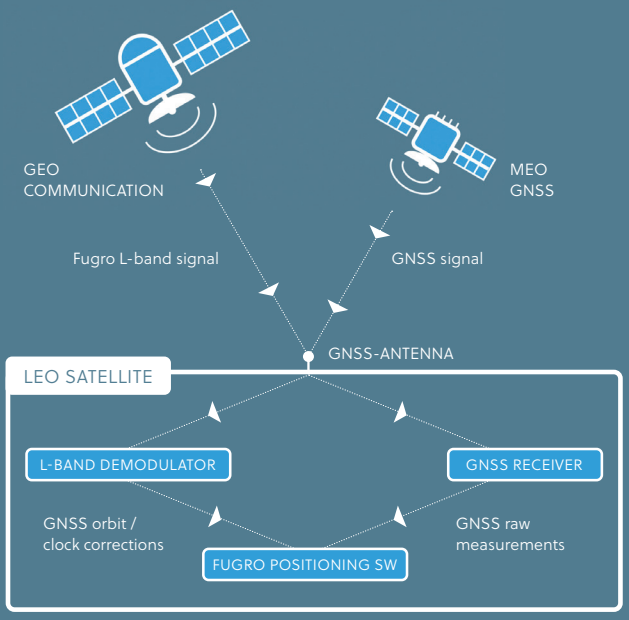
- Enhanced knowledge of onboard real-time position and velocity to improve the safety of in-orbit manoeuvres, enhance collision avoidance, and optimise fuel consumption leading to extended mission life
- SpaceStar® is a software-based technology which can supplement or replace other technologies improving performance and reducing overall costs
- The onboard positioning software can be upgraded while the LEO satellite is in orbit, allowing access to the latest state-of-the-art positioning technology even after launch
- Fugro's software solution works with standard off-the-shelf components, so no additional payload is required
- Unprecedented onboard position, velocity and time (PVT) accuracy in real-time can facilitate autonomous operations and onboard processing which can reduce the need for post-processing on the ground, reducing latency and cost

SPACESTAR

A software-based navigation solution delivering enhanced GNSS performance to satellites in LEO.

Main features:

- GNSS receiver agnostic
- High-accuracy real-time GNSS corrections delivered via GEO satellites to LEO
- Unprecedented on-board, real-time positioning accuracy (better than 10 cm RMS 3D)
- With space heritage, demonstrated in LEO



Onboard architecture

SATELLITE SERVICES

Fugro provides GNSS software solutions to support best-in-class high-accuracy positioning by using high quality raw-data, proprietary technology, and services based on Fugro's own proprietary global GNSS reference receiver network. Fugro's ground infrastructure has been designed to meet the requirements of the most demanding applications in terms of performance, accuracy, and availability.

PROPRIETARY GNSS GLOBAL REFERENCE NETWORK

Fugro operates a proprietary reference station network receiving real-time raw data from all GNSS, including GPS, GLONASS, BeiDou, Galileo, and QZSS. The network is composed of over 100 geodetic receivers distributed globally, and dual network nontrol centers (NCCs) which guarantee the highest levels of quality and resilience.

ORBIT & CLOCK REAL TIME

SpaceStar® computes precise orbit, clock, and hardware errors in real-time for all GNSS satellites and delivers them to LEO users via 7 GEO satellites with global coverage. With these precise corrections and Fugro's onboard software, SpaceStar® delivers position and timing accuracy for LEO satellites, with the following nominal perfomance in real time: - Position: better than 10 cm RMS 3D - Velocity: better than 5 mm/s - Time: better than 5 ns.

HIGH AVAILABILITY & REDUNDANCY

With dual primary network and shadow control centres, interconnected via trunk lines, Fugro has proven uptime of over 99.999% to ensure clients have continuous operation.

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