

QED-C® Report Addresses the Use of Quantum Sensors to Mitigate Shortcomings of GPS and other PNT Devices

QED-C members encourage adoption of quantum sensors in support of military, space, emergency response, and other operations that require security and precision

ARLINGTON, VA, UNITED STATES, October 28, 2024 /EINPresswire.com/ -- A new report from the Quantum Economic Development Consortium ([QED-C](#)) found that using quantum sensors could improve the accuracy and reliability of position, navigation, and timing (PNT) devices which offer critical insights on location, orientation, altitude, tilt, directional movement, acceleration, and timing for nearly every industry. PNT tools are especially prevalent in defense, transportation, communications, energy, finance, and healthcare.

The report found that quantum sensors, such as clocks, magnetometers, gravimeters, and inertial sensors, will improve PNT capabilities by offering levels of precision not possible with traditional methods. Such capabilities enable navigation when GPS is unavailable and/or unreliable due to poor signal, natural events such as space weather affecting satellites, and man-made events such as jamming and spoofing attacks.

"Quantum sensors have the potential to greatly enhance PNT capabilities by allowing them to function even when satellite-based systems like GPS are disrupted or unavailable. This will play a vital role in a range of situations," said QED-C Executive Director Celia Merzbacher. "For example, quantum sensor-enhanced PNT can support underground operations such as mining and tunneling, warfighters in regions where signals are being jammed, or navigation in urban settings where buildings create GPS 'dead zones'."

Use cases include:

- Magnetic navigation for resilient, unjammable PNT
- Precision timing for space-based networks
- Small satellite orientation and alignment
- Battery optimization
- Biomarker detection
- Earthquake detection and prediction
- Undersea maintenance and protection
- Climate monitoring

- Tracking trains in tunnels

On the timing front, quantum clocks offer extraordinary timekeeping precision, which is crucial for synchronizing networks and systems in applications such as telecommunications, financial transactions, and energy grid management.

The report presents four recommendations for accelerating development of quantum sensors and increasing adoption for PNT applications.

The full report is available [here](#).

About QED-C:

The Quantum Economic Development Consortium (QED-C) is a consortium of stakeholders that aims to enable and grow the quantum industry. QED-C was established with support from the National Institute of Standards and Technology (NIST) as part of the Federal strategy for advancing quantum information science and as called for by the National Quantum Initiative Act. Today, QED-C members are working together to identify and address gaps in technology, standards, and workforce. QED-C is managed by SRI.

More information: <https://quantumconsortium.org/>.

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