DARPA from their website: http://www.darpa.mil/Our_Work/MTO/Programs/Micro-Technology_for_Positioning,_Navigation_and_Timing_(Micro-PNT).aspx

MICRO-TECHNOLOGY FOR POSITIONING, NAVIGATION AND TIMING (MICRO-PNT)

For decades, Global Positioning System (GPS) technology has been incorporated into munitions to meet rigid requirements for guidance and navigation. As a result, a substantial number of DoD weapons systems are dependent on GPS data to provide accurate position, direction of motion, and time information while in flight. This dependency creates a critical vulnerability for many U.S. munitions systems in engagements where the intended targets are either equipped with high-power jammers or the GPS constellation is compromised.

The goal of the Micro-Technology for Positioning, Navigation and Timing (Micro-PNT) program is to develop technology for self-contained, chip-scale inertial navigation and precision guidance. Size, weight, and power are key concerns in the overall system design of guided munitions. Breakthroughs in microfabrication techniques may allow for the development of a single package containing all the necessary devices (clocks, accelerometers, gyroscopes and calibration stages) incorporated into a small (8 mm^3) and low-power (1 W) timing and inertial measurement unit. On-chip calibration should allow for constant internal error correction to reduce drift and thereby enable more accurate devices. Trending away from ultra-low drift sensors to a self-calibration approach will allow revolutionary breakthroughs in technology for positioning, navigation, and timing.

In January 2010, DARPA launched a coordinated effort focused on the development of microtechnology specifically addressing the challenges associated with miniaturization of high-precision clocks and inertial instruments. The program, Micro-PNT is comprised of four thrust areas: Clocks, Inertial Sensors, Microscale Integration, and Test & Evaluation. Each of these thrust areas is made up of various efforts exploring new fabrication techniques, deep integration, and on-chip self-calibration, all hand-in-hand with the development of "plug-and-test" architectures.

The developments consider a number of operational scenarios, ranging from dismounted-soldier navigation to navigation, guidance, and control (NG&C) of Unmanned Air Vehicles (UAVs), Unmanned Underwater Vehicles (UUVs), and guided missiles. The new Micro-PNT initiatives seek to increase the dynamic range of inertial sensors, reduce the long-term drift in clocks and inertial sensors, develop ultra-small chips providing position, orientation, and time information, and provide a universal and flexible platform for the test and evaluation of components developed within the comprehensive Micro-PNT program.

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