

The Times They are A-Changin'

Part II - A Call for Strategic Progress on Achieving APNT

In the last issue of the ION Newsletter's Defense Matters column, I borrowed Bob Dylan's 1964 song title, "The Times They Are A-Changin'," to reflect on the dynamics surrounding GPS and the broader need for assured positioning, navigation, and timing (APNT). This follow-up continues under Part II of the same title.

Dylan's words captured a moment of transformation, urgency, and the dangers of inertia. That same warning applies today, as the United States confronts growing threats to the known vulnerabilities in its PNT architecture which is heavily dependent on a single PNT source – GPS.

The Path to Achieving APNT

As members of the ION, we are particularly aware of the advances being made in integrating new technologies into PNT user equipment—especially in commercial and civil applications. Both emerging and established examples include inertial navigation, use of signals of opportunity, map matching, gravimetry, and enhanced celestial navigation, to name a few.

While these technologies hold significant promise for enabling APNT capabilities, their widespread fielding and integration into military platforms continue to be hampered by bureaucratic acquisition practices and institutional lethargy within the DoD.

However, advances in the civil and commercial marketplace serve as valuable pathfinders that should be actively considered to encourage more rapid adaptation and acquisition for military use.

Organizational Fragmentation and the Call for a Joint PNT Program Office

In the 1970s, the GPS Joint Program Office (JPO) enabled the integrated development and fielding of all three GPS segments: space segment, ground control segment, and military user equipment segment. The latter has consistently been the most challenging to manage and synchronize, due to the complexity of equipping diverse military platforms, personnel, and weapon systems.

This centralized organizational structure—bringing all GPS segments under a single command with

acquisition authority and control of implementation resources, was key to GPS becoming the global gold standard for space-based PNT.

However, this unified structure began to unravel as the GPS JPO transitioned from a joint institution with participation by all the Services to the Air Force-centric GPS Directorate in 2006. GPS fragmentation continued under the subsequent SMC 2.0 initiative, which separated responsibility for the space, control, and user segments among different offices and has only accelerated following the formation of the U.S. Space Force (USSF).

Today, responsibility for military GPS user equipment is fragmented across the Service branches, each operating under separate budget lines, timelines, and acquisition strategies.

"The DoD should consider establishing a Joint Program Office for integrated PNT"

While the Space Force maintains control of the space and ground control segments, there is no longer a unified vision to synchronize all three segments. As a result, issues such as on-orbit satellites with M-Code capabilities lacking corresponding ground control support (evidenced by continued delays with OCX) and the equally delayed fielding of user equipment able to fully leverage M-Code signals and lacking complementary PNT sources to

accompany GPS, highlight the ongoing challenges for the DoD.

As achieving APNT capabilities becomes increasingly critical to defense operations, the DoD should consider establishing a Joint Program Office for integrated PNT to restore the coherence and strategic focus that once defined GPS development and production and ensured its widespread adoption. A similar arrangement would greatly benefit both modernized GPS, as well as the diverse array of complementary technologies necessary to augment GPS in challenging navigation warfare (NAVWAR) environments.

Such an office could provide the unified structure necessary to align technology development, user requirements, and acquisition strategies while ensuring the U.S. military is not only equipped for today's missions, but prepared for the contested and degraded PNT environments seen daily in conflicts such as those in Ukraine and the Middle East.



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Navigation Warfare: A Changing Mission for a Changing Threat

The redesignation of the 2nd Space Operations Squadron (2 SOPS) to the 2nd Navigation Warfare Squadron in late 2024 marked a pivotal change in operational emphasis.

No longer solely focused on satellite operations, the new Space Force unit now addresses the full spectrum of NAVWAR Operations. This may be in part a response to prior command guidance that specifically assigned responsibility for NAVWAR Operations to US Space Command, the military Combatant Command to which the Space Force provides warfighting capabilities.

This promising transition reflects a necessary recognition that warfighters operating in electronically contested environments require PNT capabilities that go beyond GPS alone.

As demonstrated in ongoing conflicts, GPS signals are increasingly subject to jamming and spoofing, with adversaries rapidly integrating those threat capabilities into their strategies for conducting asymmetric warfare.

Public Awareness

In keeping with the theme that “times are a-changin’,” APNT is not solely a military concern, it plays a vital role in civil and commercial sectors, underpinning the national economy, emergency

response, and critical infrastructure.

Recent announcements raise questions about whether civil-military coordination is evolving or also beginning to unravel. An example is the delay and relocation of the 65th Civil GPS Service Interface Committee (CGSIC) meeting to a yet-to-be-determined venue in the National Capital Region in the spring of 2026. This breaks a long-standing tradition of holding CGSIC meetings in conjunction with the ION GNSS+ conference, the next of which is to be held in September 2025 in Baltimore.

A similar concern arises with the GPS.gov website maintained by the National Coordination Office for Space-Based PNT. As of early August 2025, when this column was being drafted, the site advises that it has not been updated since February 2025 due to staffing shortages.

If the U.S. is to maintain leadership in PNT, it must also lead in communicating its intentions, strategy, and capabilities, and the GPS.gov website has served for many years to meet this obligation.

PNT in the National Defense Strategy: Will It Be Recognized?

As noted in the previous ION Defense Matters column, on May 1 the Secretary of Defense directed the Under Secretary of Defense for Policy to begin drafting the 2025 National Defense Strategy (NDS), with a deadline set for the end of

August.

It remains to be seen whether APNT will be explicitly recognized as a critical enabler of Joint Force operations, as it has been in previous defense strategy documents, most notably the DoD CIO Strategy for the DoD PNT Enterprise, issued in 2019.

That strategy forms the basis for the PNT open system approach concepts now being widely developed for multi-Service applications. The omission of APNT from the defense strategy at this point would represent a significant oversight.

To align with the document’s strategic purpose, APNT must be identified as a national operational priority for all defense applications, including those supporting domestic critical infrastructure.

Proceeding with Purpose

The DoD must remain focused on building a resilient, integrated APNT ecosystem with military utility at its core.

Yes, the times are changing, but these changes should be shaped with intention. APNT for the warfighter cannot be left to fragmented development and acquisition. It requires strategic leadership, unity of effort, and deliberate investment with a Joint Program Office for Integrated PNT at its core. Let Dylan’s words not just be a warning, but a reminder: “You better start swimmin’ or you’ll sink like a stone.” 🌊

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