



POSITION STATEMENT

February 3, 2021, statement of Dr. Michael O'Connor, CEO of Satelles, Inc., in response to a U.S. Department of Transportation report on January 14, 2021, that followed up DOT's March 2020 demonstration of multiple PNT technologies.

Satelles welcomes the recent [Complementary PNT and GPS Backup Technologies Demonstration Report](#) delivered to Congress by DOT as required by the FY18 National Defense Authorization Act (NDAA). Our company was honored to be one of the demonstration participants last year, and we concur with DOT's findings that multiple forms of PNT are urgently needed to meet wide-ranging performance specifications and operational requirements of critical infrastructure providers that must back up or augment GPS.

Satellite Time and Location (STL) is one of the technologies that is available today to meet these needs, and we encourage government and business leaders to adopt alternative PNT for civil and commercial applications. Industry can respond to PNT requirements with existing commercial solutions, and it would be costly and counterproductive for the government to create or acquire its own.

THE UNITED STATES REQUIRES MULTIPLE PNT TECHNOLOGIES

DOT's findings and determinations in their new report complement the U.S. Department of Homeland Security's [Report on Positioning, Navigation, and Timing \(PNT\) Backup and Complementary Capabilities to the Global Positioning System \(GPS\)](#) delivered to Congress last year. In its statement from the Conclusions and Recommendations section of the new report (p. 194), DOT clearly expresses its alignment with DHS:

"The demonstration indicates that there are suitable, mature, and commercially available technologies to backup or complement the timing services provided by GPS. However, the demonstration also indicates that none of the systems can universally backup the positioning and navigations capabilities provided by GPS and its augmentations. The critical infrastructure positioning and navigation requirements are so varied that function, application, and end-user specific positioning and navigation solutions are needed. This necessitates a diverse universe of positioning and navigation technologies."

The statement above is also consistent with the core principles of the [Open PNT Industry Alliance](#), a coalition of PNT service providers and equipment manufacturers. Like all alliance members, Satelles shares the belief that market requirements are sufficiently diverse to necessitate multiple forms of alternative PNT. We also maintain that the technological landscape is abundantly varied to provide such a broad array of solutions right now.

STL IS A ROBUST SOLUTION AVAILABLE TODAY

Satellite Time and Location (STL) from Satelles was one of the 11 technologies subjected to a range of testing scenarios during the demonstration for DOT, and it emerged as one of the top performers. The solutions were evaluated based on various measures of effectiveness, each with its own detailed rubric. **Satelles earned top-tier scores in categories such as PNT Signal Robustness, Service Resilience, and Service Synchronization.** We believe the two most important top-level takeaways from the report are as follows:

- ▶ DOT applied weighting factors and technology considerations to produce scoring and ranking in six aggregate groupings. These high-level values were rolled up even further to generate combined scoring and overall ranking. In addition to being evaluated favorably in many individual underlying test scenarios and evaluation categories, **STL was ranked #2 overall for timing and positioning in**



both the performance-sensitive weighting and cost-sensitive weighting classifications, and in key categories Satelles performed better than the #1 overall provider.

- ▶ STL has some important distinctions compared to other solutions demonstrated, such as being **the only solution that is nationally and globally scalable without incremental infrastructure expense**. STL is available today across the entire United States — including urban centers, rural areas, and navigable waterways — as well as offshore locations. This ability to provide timing and 3-D positioning coverage in the U.S. and worldwide is made possible by the multibillion-dollar investment that has already been made by Iridium to launch and operate its commercial satellite network.

STL also stood out in these specific areas:

- ▶ **Technical Readiness** – In separate evaluations for both the system and user equipment, STL rated at the highest technology readiness level (TRL 9) in all categories for which it was evaluated, including the challenging underground environment test. **STL was one of only two time and location technologies that achieved TRL 9 and is ready for operation today**. As defined by DOT, TRL 9 means that a particular technology has been refined and adopted — the hallmark for commercially available solutions.
- ▶ **Service Deployment Effort** – DOT acknowledged that the “demonstration effort was not comprehensive enough to formulate cost estimates for implementation” of the evaluated technologies. However, they stated that the demonstration “provide[d] a reasonable indication of service deployment effort.” **STL was rated ‘Low’ (best)**, meaning that “the time and materials needed to execute the demonstrated technology’s PNT function” are less than those solutions rated at ‘Medium’ or ‘High’ on the scorecard.
- ▶ **Time to Service Implementation** – According to DOT, this category “was formed as a mechanism to convey [subject matter expert] assessment of this key factor in the Government’s strategy and expectations to implement one or more complementary PNT services.” **STL scored ‘Short’ (best)**, meaning that DOT estimated the implementation period to be “less than two years.” In fact, STL can be immediately deployed for customers because it is fielded today as a commercially available service.
- ▶ **Service Interoperability** – This category evaluated the extent to which “PNT technologies are suitable in combination with other PNT technologies.” **Satelles scored ‘High’ (best)**, meaning that STL “demonstrated some significant compatibility.”
- ▶ **PNT Information Security** – DOT evaluators “observe[d] security mechanisms, either explicitly in scenarios, or implicitly in the implementation of the PNT signal itself.” **STL scored ‘High’ (best)**, which, as DOT points out, is important because “[t]he information security and resilience of a given PNT signal have significant correlation when considering intentional disruption or manipulation of the PNT function.”

A companion document from DOT entitled “[National Timing Resilience and Security Act Roadmap to Implementation](#)” was informed by the outcomes of the technology demonstration. Among DOT’s conclusions is that they will “promote adoption by owners and operators of critical infrastructure of PNT service technologies currently available to ensure PNT resiliency.” This thinking is aligned with the multi-technology approach endorsed in the conclusion of the technology demo report, and in so doing amplifies



directives for the responsible use of PNT by the critical infrastructure owners and operators themselves (as articulated in [Executive Order 13905](#)).

THE TIME TO ACT IS NOW

By simultaneously releasing the in-depth technology demonstration report and the NTRSA implementation roadmap, DOT has taken some very important actions:

- ▶ recommended multiple technologies to meet diverse market requirements rather than a one-size-fits-all single solution;
- ▶ underscored the urgency for critical infrastructure owners and operators to adopt backup and complementary PNT services; *and*
- ▶ showcased that high-performance and cost-effective solutions already exist.

STL from Satelles received top scores in the important categories related to technical readiness, service deployment effort, interoperability, and security, and ranked in the overall top two (out of 11) based on DOT's aggregate scoring system. The Satelles solution was also highlighted as one of only two time and location technologies that is available today.

Satelles looks forward to working with civil government officials and private sector leaders to implement precise time and location solutions that provide uninterrupted access to PNT sources that protect critical infrastructure and strengthen our national resilience.

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