Resilient Navigation and Timing Foundation
Statement Submitted for the Record

U.S. Senate Committee on Commerce, Science, and Transportation
Hearing February 13, 2019
"America's Infrastructure Needs: Keeping Pace with a Growing Economy"

When GPS signals are not available because of natural, accidental or malicious interference, every mode of transportation slows down, carries less capacity, and becomes more expensive and dangerous. First responder communications and coordination systems are degraded. If the disruption lasts long enough, networks of all kinds begin to fail.

For this reason, officials at the Department of Homeland Security have called our nation's over-reliance on GPS "a single point of failure for critical infrastructure." This sentiment and concern has been echoed by a wide range of engineers and technologists including the National Space-Based Positioning, Navigation and Timing Advisory Board, and the "father of GPS," Dr. Bradford Parkinson.

The lack of a difficult to disrupt, terrestrial backup system for GPS is a significant gap in our nation's infrastructure. It must be filled to protect and enable current applications and allow development of future transportation and IT systems.

Validating this shortfall, the National Institutes of Standards and Technology has twice warned that our nation's wireless precise timing architecture (almost entirely based on GPS signals) is insufficient to support development of the internet of things (IOT). As another example, further development of safe automated vehicles and intelligent transportation systems of all kinds will be unwise without difficult-to-disrupt, wide area location and timing signals to pair with the much weaker signals from space (see our comment to the Department of Transportation here: https://www.regulations.gov/document?D=DOT-OST-2018-0149-0022).

Congress began to address this shortfall by passing the National Timing Resilience and Security Act of 2018 which became law in December. This act requires the Secretary of Transportation to establish a terrestrial timing system as a backup for GPS by the end of 2020. Also, that this timing system be expandable to provide a backup for GPS navigation. Separate legislation last year provided $15M for a technology demonstration of GPS backup technology.

These initial steps are important but will not by themselves make our nation safer. Sufficient funds must be made available to establish the timing system, and the administration must be held accountable for progress on all fronts.

The last two administrations promised to establish backup systems for GPS, but never followed-through. And we have seen little action from the current administration. For example, funds for the GPS backup technology demonstration Congress mandated have been available for almost a year. Yet we have seen no public evidence that the project has even begun. This, despite Congress' mandate the demonstration be complete by June 2019.

Our nation's infrastructure is much more than just roads and waterworks. Our dependence upon wireless precise time and navigation continues to increase. We must focus on ensuring America has the positioning, navigation, and timing infrastructure it needs to be secure today, and to prosper in the future.

We urge you to:

- Support funding for the timing system mandated by the National Timing Resilience and Security Act of 2018,
- Encourage the Department of Transportation to actively pursue its role as the federal lead for civil positioning, navigation, and timing issues,
- Hold the administration accountable for complying with Congressional direction and intent, and
- Identify a terrestrial, difficult-to-disrupt, terrestrial navigation and timing system as an essential part of our nation's infrastructure.

Respectfully submitted,

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President
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