

Positioning, Navigation, and Timing Systems for Critical Infrastructure

Resilient PNT Standard IEEE Conformity Assessment Program



Science and Technology

IMPROVED RESILIENCE FOR CRITICAL INFRASTRUCTURE

Positioning, Navigation, and Timing (PNT) services play a pivotal role in the nation's Critical Infrastructure (CI). Essential services such as communications networks, financial systems, emergency response, utilities, and transportation rely heavily on PNT data to operate. Natural disasters, accidents, or deliberate actions pose threats that can disrupt PNT services, leading to adverse consequences for individuals, businesses, and the nation as a whole. To counter these threats, the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) is researching new ways to strengthen PNT resilience, including safeguarding existing services and developing alternative PNT systems.

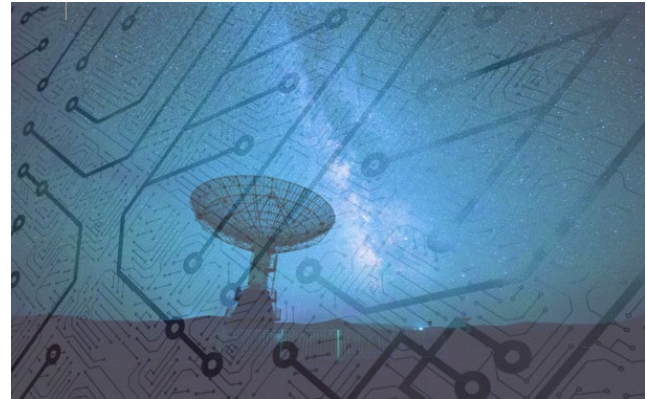
A SAFER WORLD THROUGH STANDARDS DEVELOPMENT

In 2021, the Institute of Electrical and Electronics Engineers (IEEE) P1952 Working Group was created to work with industry in developing standards and guidelines to promote more resilient CI.

The IEEE P1952 standard delineates resilience criteria for a key component of PNT systems: user equipment. These technical specifications outline diverse resilience levels for PNT user equipment, allowing users to choose devices that align with their risk tolerance, financial resources, and application priorities. The standard applies to various PNT user equipment types, including integrated receivers, systems of systems, and PNT source components such as Global Navigation Satellites Systems chipsets and drawbacks.

RAISING THE STANDARD

The IEEE Conformity Assessment Program (ICAP) raises the rigor associated with the P1952 standard, providing the technical means to verify standard compliance and credibility for CI end users. The program provides technical feedback on the viability of P1952 proposed requirements and, most importantly, enables insights and knowledge from the extended body of DHS PNT resilience research to be channeled into the PNT ecosystem. Examples include the Reference Architecture, its implementation, resilience demonstrations, and test vector development.



THE FUTURE OF RESILIENT PNT

ICAP promotes the education, adoption, and the development of methods of evaluation for IEEE P1952 standards for domestic and international beneficiaries, which will help strengthen the nation's critical infrastructure through improved PNT capabilities and resilience.

[IEEE SA - Standard for Resilient PNT UE](#)

RECENT ACCOMPLISHMENTS

- Kicked off Conformance Assessment Steering Committee (CASC) – April 24

UPCOMING MILESTONES

- ICAP Evaluation Plan Q2 FY 24
- Draft Working Group Standard Q2 FY25

PROJECT PERFORMERS & PARTNERS

Performer: Homeland Security Systems Engineering and Development Institute Federally Funded Research and Development Center, MITRE Corp., IEEE, University of New Hampshire Innovation Laboratory

Partner(s): DHS Cybersecurity and Infrastructure Security Agency, DHS Enterprise, and other federal agencies

Stakeholders: GPS equipment manufacturers, PNT technology providers, critical infrastructure owners and operators, industry groups, and federal civilian agencies.

