

# Positioning, Navigation, and Timing Systems for Critical Infrastructure



Science and Technology

## Capability Maturity Model

### THE ROLE OF POSITIONING, NAVIGATION, AND TIMING IN CRITICAL INFRASTRUCTURE

Today's Critical Infrastructure (CI) environment includes an ever-evolving landscape where multi-Positioning, Navigation, and Timing (PNT) ecosystem attack surfaces are larger, the incorporation of PNT dependencies into future technologies are increasingly interdependent, and the scale of impacts are more widespread and longer-lasting. That is why it is critical that the U.S. government focus on improving resiliency to PNT threats. National CI sector owners and operators (O&O) are increasingly dependent on PNT services and systems and the applications they support. Threats include interference to signals PNT systems rely upon, satellite constellation vulnerabilities, and cyberattacks affecting PNT communications networks, data accuracy, and integrity.

### BETTER RESILIENCE THROUGH KNOWLEDGE

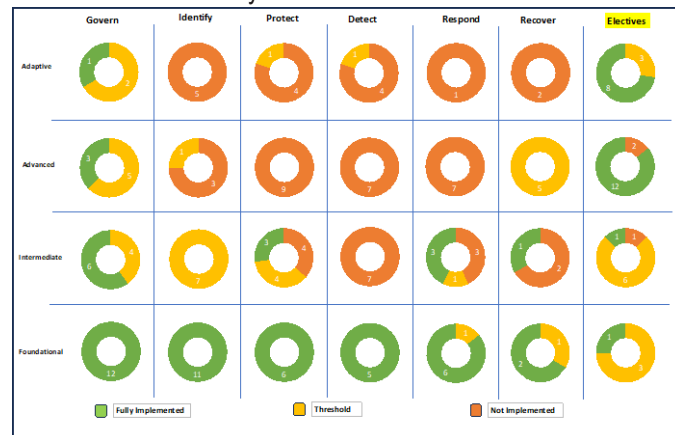
The Resilient PNT Capability Maturity Model (CM2) establishes a maturity framework, an assessment method, and tool that allows organizations to systematically apply recommended profiles and other resilience guidance more easily. Through CM2, organizations can assess their maturity, identify gaps, develop action plans and roadmaps to achieve security and resilience specifically aligned to their organizations unique operating environment and vulnerabilities.

### MATURITY ON THE LEVEL

The CM2 and its assessment tool are designed to support responsible use of PNT through assessment of organizational, operational, and system dependencies, based on PNT services, infrastructure, and data. CM2 aims to integrate related cybersecurity and resilience considerations into organization risk management and system acquisition lifecycle and decisions.

This tool is intended for use at various levels and by different roles within an organization. For example, leaders and managers can use maturity assessment results to understand and communicate the current state of PNT cybersecurity and resilience across an organization. The model serves as a maturity benchmark for organizations to identify gaps and build a profile for a more resilient future state. Leaders will be able to see how well their organizations or programs are progressing

across maturity levels, as well as within functional pillars, and advocate for necessary resources to address risks.



### A LASTING MODEL

The CM2 model supports organizational understanding and implementation of PNT foundational profile principles of responsible use by consolidating and organizing guidance into maturity levels, attributes, and desired outcomes. The intent is for the model to serve as a lasting, flexible, and evolving framework supporting CI owners and operators in assessing risk and maturing capabilities.

### ACCOMPLISHMENTS

- Draft Resilient Positioning, Navigation, and Timing Capability Maturity Model (CM2) – 1/26/24

### UPCOMING MILESTONES

- Socializing CM2 with Communications Sub-Sector via Cybersecurity & Infrastructure Security Agency (CISA) / National Risk Management Center Tabletop Exercise – ≈ Q1 FY25
- Final Report – Q2 FY25

### IDENTIFY PERFORMERS/PARTNERS

**Partners:** DHS CISA, DHS Enterprise, and other Federal agencies

**Performers:** Homeland Security Systems Engineering and Development Institute™, Federally Funded Research & Development Centers, MITRE Corp.

**Stakeholders:** CI O&O, industry groups, and Federal civilian agencies.

