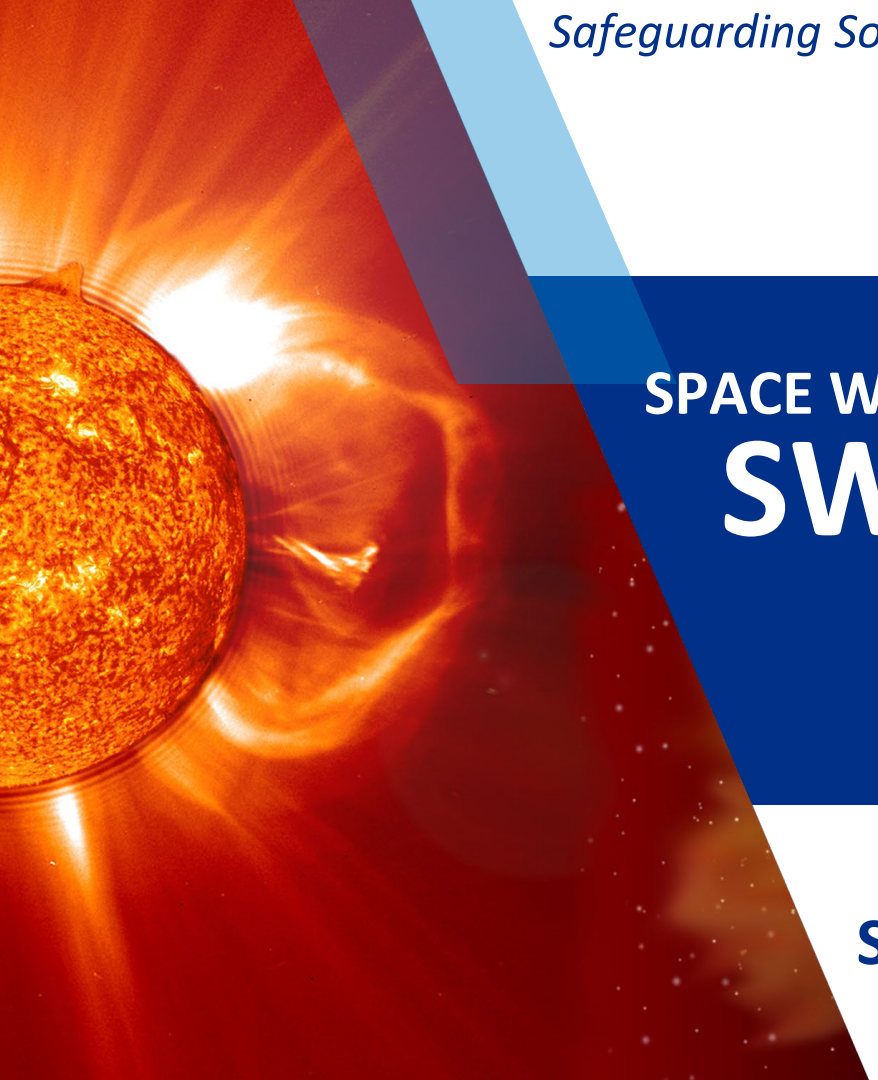
Safeguarding Society with Actionable Space Weather Information



SPACE WEATHER ROUNDTABLE FALL MEETING

SWPT Role in R2O Pipeline

Clinton Wallace, Director

Space Weather Prediction Center

December 4, 2025

PROSWIFT ACT and R2O2R

SEC. 2. SPACE WEATHER

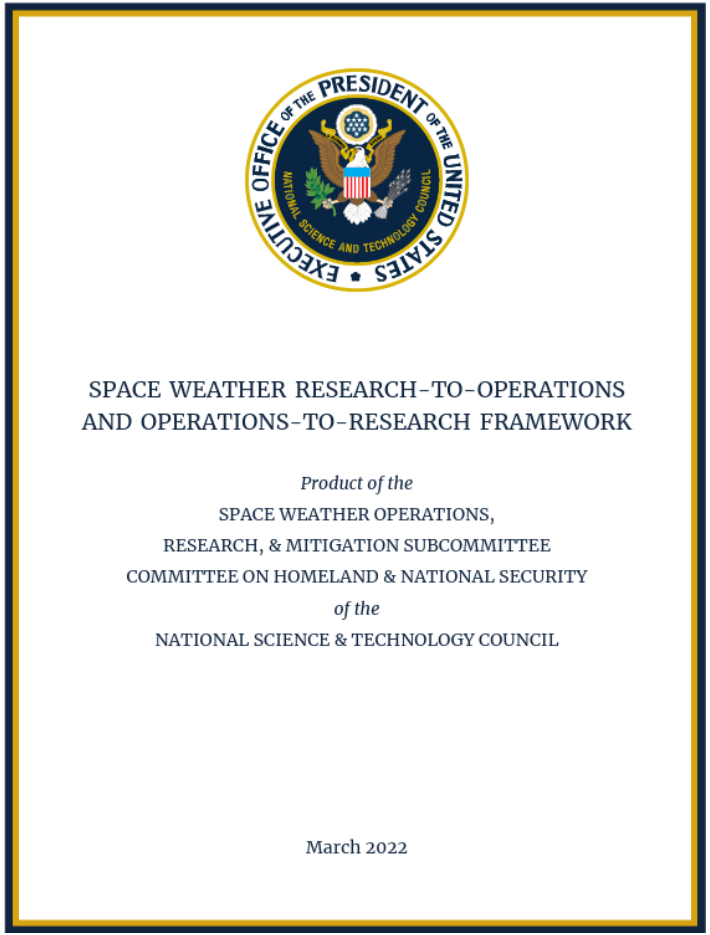
(a) Policy

It shall be the policy of the United States to prepare and protect against the social and economic impacts of space weather phenomena by **supporting actions to improve space weather forecasts and predictions including**: sustaining and enhancing critical observations, identifying research needs and **promoting opportunities for research-to-operations and operations-to-research collaborations both within and outside of the Federal Government**, advancing space weather models, engaging with all sectors of the space weather community, including academia, the commercial sector, and international partners, and understanding the needs of space weather end users.

The R2O2R Framework

- Formal interagency R2O2R Framework
- Established by the SWORM
  - Responds to §60604(d)
  - NOAA/NASA initially led development
- Framework Requires Revision to Mature Processes and Governance

*A NOAA testbed is a **working relationship for developmental testing** in a quasi-operational framework among **researchers and operational scientists/experts** (such as measurement specialists, forecasters, IT specialists) including partners in **academia**, the **private sector**, and **government** agencies aimed at **solving operational problems or enhancing operations, in the context of user needs**. A successful testbed involves physical assets as well as substantial **commitments and partnerships**.*



EXECUTIVE OFFICE OF THE PRESIDENT OF THE UNITED STATES
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

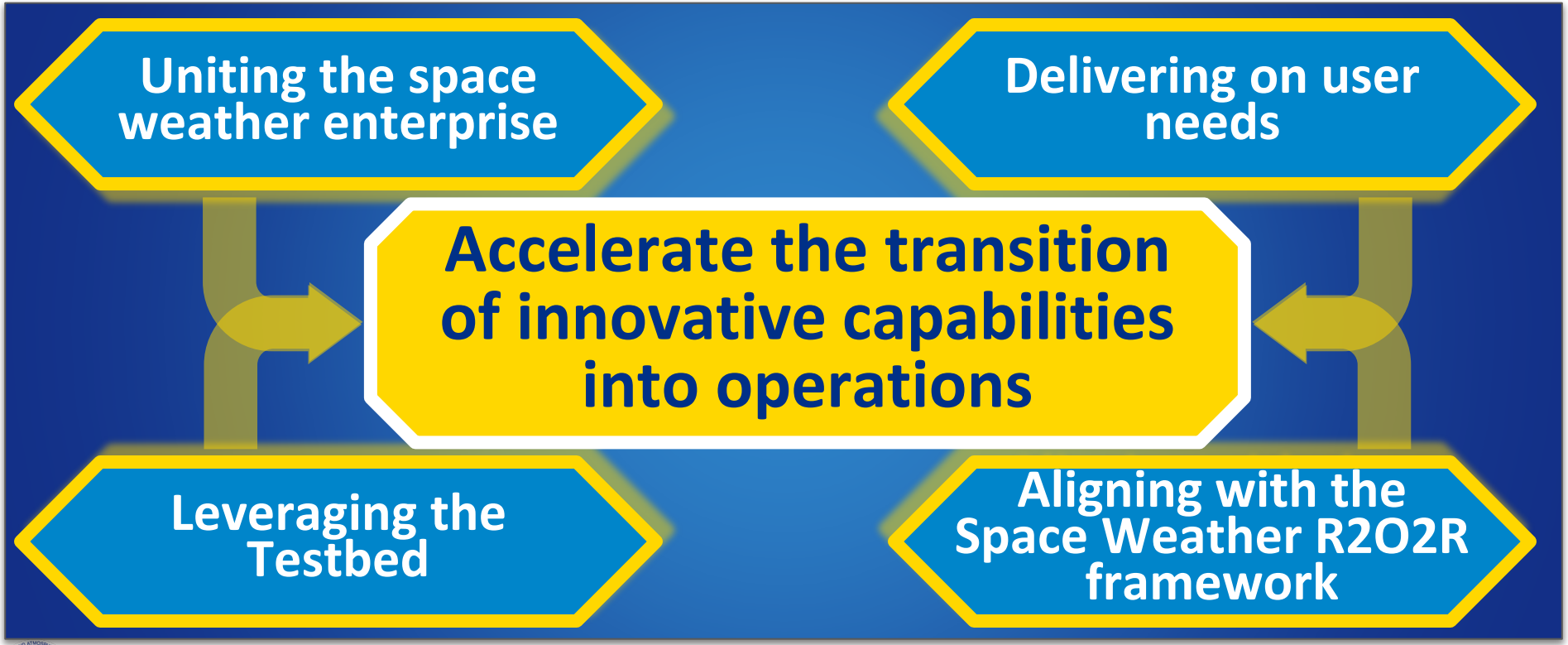
SPACE WEATHER RESEARCH-TO-OPERATIONS AND OPERATIONS-TO-RESEARCH FRAMEWORK

Product of the
SPACE WEATHER OPERATIONS,
RESEARCH, & MITIGATION SUBCOMMITTEE
COMMITTEE ON HOMELAND & NATIONAL SECURITY
of the
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

March 2022


SPACE WEATHER PREDICTION TESTBED
DELL

Testbed Strategic Objective



Strategic Outcomes

Integrated R2O2R Framework

The Testbed enables structured transition pathways that

- accelerate innovation to operations and
- closes the gaps between research, development, and operations,

ensuring new mission-aligned capabilities support national resilience.

Public-Private-Academic Partnerships for Resilience

Strategic engagement across the commercial sector, academia, and international partners

- synchronizes development efforts,
- enhances data interoperability, and
- ensures national investments address the most pressing operational and infrastructure protection needs.

User-Centered Capability Advancement

Continuous engagement with forecasters and infrastructure operators ensures development meets mission needs,

- enhancing operational relevance and
- meeting national mission requirements.

Testbed Scope

Operations to Research	Capture and communicate operations and end-user feedback to refine concept of operations, identify gaps, and drive research priorities back into the research-to-operations pipeline.
Testbed Operations	Align with the Space Weather R2O2R Framework and work in lockstep with allied Proving Grounds to run disciplined, operator-in-the-loop evaluations with clear roles, decision gates, and secure data handling so only proven capabilities advance to operations.
Validation	Validate candidate capabilities in relevant environments against objective benchmarks (e.g., accuracy, lead time, interoperability), producing documented evidence required for advancement to demonstration.
Demonstration	Conduct quasi-operational demonstrations with real data flows and forecaster procedures to confirm reliability, performance, and supportability under operations-like conditions.
Operational Implementation	Execute technical reviews, configuration/change management, training, and acceptance actions to commission sustainable mission-ready capabilities into operations.

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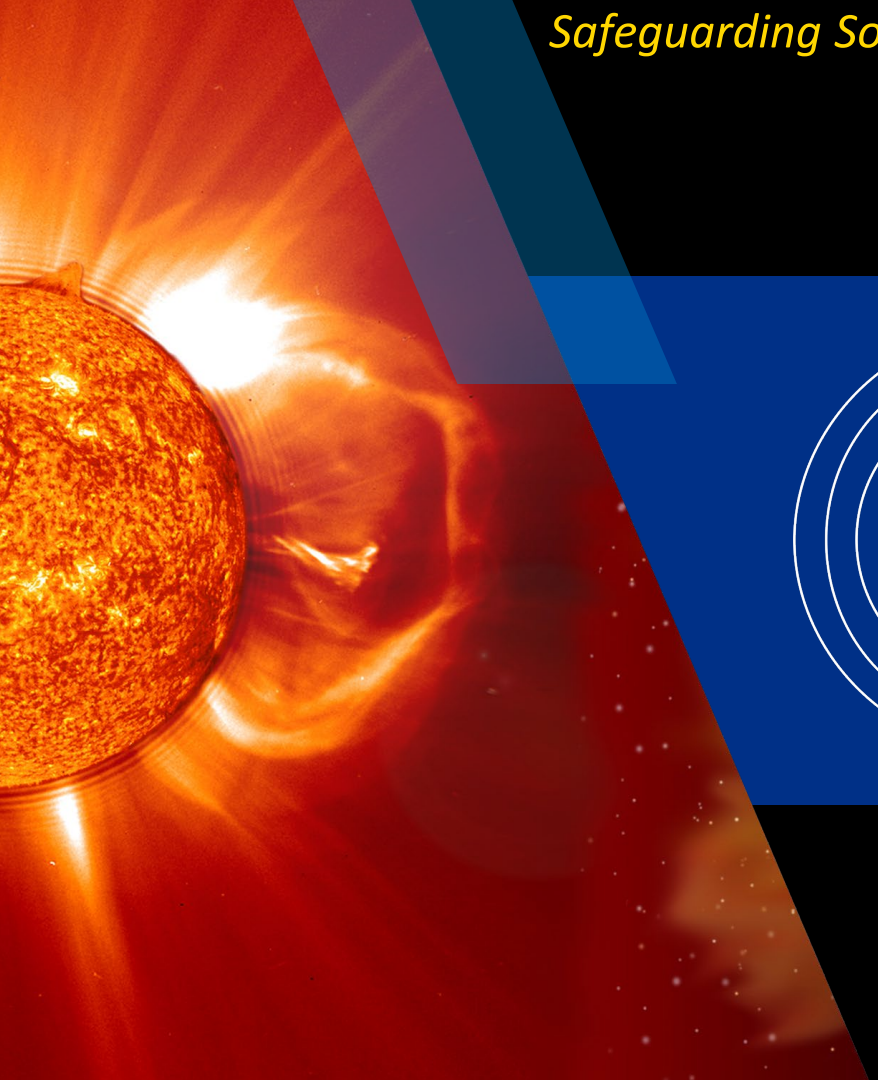

NOAA

SWPC

SPACE WEATHER
PREDICTION CENTER