



NWS Operations Proving Ground Charter and Terms of Reference

NWS Operations Proving Ground
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NWS Operations Proving Ground

Charter and Terms of Reference

I. Vision Statement

Preparing today's National Weather Service forecaster to support tomorrow's Weather Ready Nation by building capacity for superior impact-based decision support services.

II. Purpose and Objectives

To support the Weather Ready Nation (WRN) initiative and improve impact-based decision support services (IDSS), the National Weather Service (NWS) Operations Proving Ground (OPG) serves as a framework for advancing two important components of the WRN Roadmap: Services and Science & Technology.

Services

The WRN Roadmap outlines a strategy for providing enhanced IDSS to core partners nationwide. A critical element to implementing this strategy involves the training and eventual certification of Emergency Response Specialists (ERSs). These ERSs represent the backbone of extending IDSS for high-impact events, whether on a scheduled basis or on-demand in the context of hazardous emergency incidents.

NWS is developing a Professional Develop Series (PDS) centered on training requirements for the entire decision support spectrum. The OPG facilitates a key component of this PDS by testing prototype tools and applications for in-residence simulation training to the Senior ERSs identified in the Workforce Evolution plan of the WRN Roadmap. While all NWS operational personnel receive training related to IDSS, and thus attain baseline IDSS proficiency, the senior ERSs represent the personnel NWS deploys to high-impact venues to provide on-scene support.

At the OPG, science and technology prototype testing is conducted with participation by relevant partner agencies such as local emergency managers, FEMA Region VII, state divisions of emergency management, and others, to provide a simulation immersion environment for senior ERSs. Through this process, these personnel gain valuable experience such that, when deployed, their seasoned approach translates to effective IDSS.

Science and Technology

The OPG facilitates testing of advanced operations, services, and science and technology (S&T) capabilities which address the needs of both internal and external users. By creating a streamlined research-to-operations (R2O) and operations-to-research (O2R) process, an iterative, two-way interaction between S&T development and NWS operations is optimized. To be considered for operational implementation, candidate capabilities must successfully introduce a new or enhanced operational capacity with no appreciable negative impact on existing systems and practices. Particular emphasis is placed on applications which demonstrate substantive

improvement to one or more of the following: the warning and forecast process, collaborative decision making, risk communication, and/or provision of impact-based decision support services.

In order to facilitate an accurate assessment for any new potential tool, technique, system or data set, formal Operational Readiness Evaluation (ORE) sessions are scheduled and conducted at the NWS OPG in a realistic NWS operations-like setting. Candidate capabilities are identified from proposals submitted by participating NOAA testbed facilities or supplied to the OPG through acquisition programs, as appropriate. Prior to any given evaluation session, a specific test plan and associated performance metrics will be defined for each candidate capability. Measurement categories will include, as appropriate:

- objective performance (e.g., accuracy/skill)
- subjective evaluations of utility (e.g., user feedback on balance positive)
- production/engineering readiness (e.g., systems and communications reliability/security/backup, data retention)
- workflow/workforce impacts

In addition to traditional performance metrics, evaluations examine and document any workflow changes, end-to-end delivery of services, effectiveness of risk communication, quality of internal and external collaboration, etc. Therefore, some evaluation sessions will involve external partners, consultants and observers, in addition to NWS forecasters. For example, where relevant, some sessions may include active participation by representatives from core stakeholder agencies, such as the emergency management community, flood control district managers, or media partners. Others may include observers who bring added value to the process by offering specialized expertise, such as risk assessment knowledge, crisis communication skills, or social science insight.

In order to solicit proposals for inclusion into ORE sessions, “Announcements of Opportunity” (AOs) are issued regularly to participating NOAA testbeds, proving grounds, and operational programs. These AOs outline the service areas of interest, as well as any limiting parameters associated with the framework and design of a given evaluation session. For example, some sessions may be crafted to focus on improvements in winter-weather forecasting, others on expanding science horizons toward the warn-on-forecast concept, still others on enhancing collaboration with emergency managers or incident commanders in the risk communication process. Therefore, selection of candidate prototypes to be reviewed and tested will be dependent on the context of the evaluation scenario.

Prior to acceptance for evaluation in the OPG, new capabilities must have been rigorously assessed in a developmental testbed environment. Examples might include advanced observing systems, better use of data in decision making, improved forecast

models, applications which enhance services, or tools that promote benefits to public safety in relation to preparation and response to weather events.

III. Roles and Responsibilities within the OPG

In its incipient phase, the OPG is sponsored by the NWS Office of Climate, Weather and Water Services (OCWWS), and hosted at the NWS Training Center (NWSTC) in Kansas City, Missouri. The OPG staff is currently comprised of a Director; a Lead Science Coordinator, initially funded by the GOES-R Program; two Research Associates, initially funded by the Cooperative Institute for Mesoscale Meteorological Studies (CIMMS); and a System Administrator.

It is the responsibility of the OPG Director to:

- Provide effective leadership and management of OPG staff, activities, and operations.
- Facilitate a streamlined R2O transition by coordinating and prioritizing potential improvements and new capabilities emerging from testbeds, labs, and similar entities.
- Plan and execute ORE sessions for candidate testbed tools, techniques, or data sets in a realistic NWS operations environment. Ensure test results, including any suggested enhancements or improvements, are communicated via an agreed upon O2R feedback mechanism.
- Oversee and/or prepare documentation related to OPG activities, including issuing AOs, coordinating test plan metrics, distributing evaluation session summaries, circulating best practices, compiling program progress reports, and recommending operational implementation strategies to the NWS Corporate Board.
- Work with appropriate committees (e.g., executive oversight committee, testbed management teams, steering and coordinating committees, technical advisory boards, etc.) and OCWWS to set program priorities, prepare and facilitate the approved schedule of ORE sessions, and execute the annual operating plan within assigned budgetary constraints.

It is the responsibility of the Lead Science Coordinator and Research Associates to:

- Work with the OPG Director to ensure proper alignment between strategic NWS operational priorities and advancements in science, forecasting tools, warning decision techniques, and service enhancement capabilities.
- Represent and serve as liaison or spokesperson(s) for the OPG to internal and external stakeholders, as assigned by the Director.
- Provide candid advice to the Director on scientific direction of the program.

- Serve on appropriate teams or steering committees, and offer recommendations on transition opportunities, relevant new science, emerging technologies, etc.
- Lead efforts to identify critical events and associated data needed to support realistic simulation scenarios, and develop solutions for integrating those data into OPG evaluation sessions.
- Establish R2O and O2R relationships and enable transitions, as needed.
- Assist in support and facilitation of OPG evaluation sessions, as needed.
- Provide regular updates to the OPG Director for inclusion in progress reports to senior leadership.

IV. Governance

OPG governance policies are largely collaborative and designed to follow practices that promote transparency, fairness, efficiency, and effectiveness in producing results that serve the NOAA/NWS mission. Appropriate stakeholder involvement is encouraged, and often solicited, in every phase of the testing and review process. Annual budget and general priorities are established by the Executive Oversight Committee. Additionally, the Executive Oversight Committee, in cooperation with appropriate advisory boards, coordinating committees, etc., manages the review of incoming AO proposals and subsequent evaluation results. The OPG Management Team oversees evaluation session operations to ensure rigorous testing and evaluation procedures are followed.

The **Executive Oversight Committee** is comprised of the NWS OCWWS Director, the NWS OS&T Director, the NWS Training Division Director, and the NWSTC Director. The OPG Director will serve as an ex-officio member, fulfilling a reporting and advising role to the board.

The **OPG Management Team** is comprised of the OPG Director, the NWSTC Director, the OPG System Administrator, and the Lead Science Coordinator. For a given evaluation process, additional managers or experts may be brought in to advise the management team concerning readiness of candidate capabilities, development of test procedures, evaluation metrics, etc.

A **Proving Ground Review Panel**, typically made up of 6-10 members, is convened to review proposals received in response to AOs, assess merits and maturity for rigorous testing in an operational environment. Members contribute individual, non-consensus reviews and recommendations to the OPG Director, who then prioritizes proposals for inclusion in a formal ORE session at the OPG, subject to approval by the Executive Oversight Committee.

The Review Panel is also reconvened to review results, contribute to a summary report for each evaluation session, and provide counsel on recommendations with respect to

readiness of each test element for operational implementation. Panel membership is determined by a selection committee consisting of the OPG Management Team and Regional Division Chiefs, pending approval by the Executive Oversight Committee. Individuals accepting nomination to serve on the panel agree to serve a two-year term. Membership tenure is designed to overlap such that turnover is graduated. This continual mix of experience and new members ensures a balance of continuity and fresh perspective is maintained.

Proving Ground Review Panels normally include:

- Representatives from Regional Science, Services and Systems Divisions
- Field Operations Advisors (MICs, SOOs, WCMs, ESAs, ROC staff, etc.)
- Appropriate Subject Matter Experts (e.g., AWIPS-2, WSR-88D, GOES-R, etc.)
- Relevant external stakeholders (e.g., Emergency Managers, Social Scientists, Media Partners, etc.)

Each year, the Review Panel selects its own chairperson to schedule and coordinate meetings and calls, facilitate agenda discussions, moderate panel disputes, and act as a focal point for communication, including oversight for the composition and timely delivery of formal panel reports to the OPG Director.

Evaluation Session Teams are formed to conduct each ORE Session. Since the objective of any ORE session is an official readiness endorsement for deployment into NWS operations, it is imperative for the OPG test environment to realistically simulate the conditions of a Weather Forecast Office. As such, the primary participants on an evaluation team will be certified forecasters from NWS Field offices (Weather Forecast Offices, River Forecast Centers, Center Weather Service Units, etc.). Participating NWS forecasters will be selected through NWS Regional Headquarters. Additional team members may include contributions from: OPG Facilitators; appropriate information technology (IT) specialists and/or systems engineers; collaboration entities (NOC, ROC, FEMA Regions, neighboring WFOs, etc.); representatives from core partner agencies (e.g., FEMA HQ, USACE, local EM community, broadcast media, etc.); and relevant observers or assessors (e.g., social scientists, NWS managers).

As part of the NOAA testbed and proving ground structure, the NWS OPG works in close cooperation with the **Testbed and Proving Ground Coordinating Committee** (TPGCC), a group commissioned by NOAA to facilitate communication, coordination, and consistency among the participating facilities.

This collaboration involves coordinating science themes, development priorities, and major gaps among testbeds and proving grounds. The TPGCC also assists in the programmatic evolution of testbeds and proving grounds; provides progress reports to the Line Office Transition Managers (LOTMs); advocates for support and resources, including linkage to the NOAA budget planning and execution process; and performs an outreach and education role for the NOAA testbed/proving ground system.

The TPGCC consists of each of the testbed and proving ground managers or their designees, as well as Line Office Focal Points for testbeds, appointed by Line Office Assistant Administrators. Additional governance details can be found in the TPGCC Charter at: <http://www.esrl.noaa.gov/research/uswrp/testbeds/>

V. Schedule

Each year, the NWS OPG will publish an Annual Operating Plan (AOP) which identifies priorities and critical goals for the ensuing year. In general, program execution will be governed by matching identified science and services gaps of precedence against projects emerging from testbeds and labs to determine which capabilities merit formal evaluation for operational readiness.

Budget permitting, the NWS OPG will aim to conduct at least three formal ORE Sessions each year. Most sessions will be one to two weeks in duration. For each evaluation session, the OPG Management Team, in coordination with the PG Review Panel, will develop a summary report, based on performance metrics outlined in the session test plan. Each report will convey capabilities evaluated, milestones achieved, and recommendations concerning operational implementation.

VI. Program Assessment

In addition to regular progress reports, ORE session summary reports, and appropriate collaboration efforts with the Management Team and CCTBP, the Executive Oversight Committee will appraise the state of the OPG program in four areas:

- Progress toward transitioning advanced science and technology, and/or service enhancement applications into operations
- Alignment of current science and services priorities with stakeholder needs
- Effectiveness of connection between development testbeds and the NWS OPG, including demonstrated value in improving the R2O process and O2R feedback
- Efficacy of the OPG organization and procedures, in conjunction with those of other test bed and proving ground operations

This deliverable will be codified in the form of an Annual Program Assessment with recommendations for adjustments as needed. Recommendations approved by senior leadership will be implemented into NWS operations as soon as practical, in accordance with applicable protocols and procedures. In combination with the AOP and summary reports, the Annual Program Assessment will provide a coherent summary of OPG activities, accomplishments, concerns, and priorities for future improvement.