Department of Commerce ▪ National Oceanic & Atmospheric Administration ▪ National Weather Service

NATIONAL WEATHER SERVICE POLICY DIRECTIVE 80-8
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Office of Science and Technology Integration

TRANSITION OF RESEARCH AND DEVELOPMENT PROJECTS TO OPERATIONS

NOTICE: This publication is available at: http://www.nws.noaa.gov/directives/.

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SUMMARY OF REVISIONS: This directive supersedes NWSPD 80-8, "*Transition of Innovation and Research to Operations*", dated March 29, 2010. Changes made to reflect the NWS Headquarters reorganization effective April 1, 2015. Other revisions made were:

- Title Change
- Updated sections 3.1 (minor edits), 3.2 (add linkage to governance process), 3.3 (add STI stakeholder responsibilities); and 3.4 (minor edits).
- Updated glossary (add Readiness Levels definition table).

1.0 Introduction

The transition of Research and Development (R&D) to operations, commercialization, and other uses is a core part of the National Oceanic and Atmospheric Administration's (NOAA) mission. Every fiscal year, through the appropriations process, Congress invests millions of taxpayer dollars in a wide variety NOAA R&D programs with the expectation this investment will lead to tangible outcomes and benefits to the Nation. It is important the Agency measures performance in this critical area and be able to demonstrate our commitment towards making improvements. NOAA Administrative Order (NAO) 216-105A, Policy on Research and Development Transitions, establishes the fundamental policy governing transitions in NOAA. The purpose of this directive is to define how the NAO is implemented within the National Weather Service (NWS).

2.0 Objective

The Office of Planning and Programming for Service Delivery (OPPSD) is responsible for enhancing the operational mission of NWS through new science and technology. The transition of R&D projects to NWS operations is the core activity of OPPSD. This demands the NWS maintains a flexible, adaptable, and scalable information technology (IT) infrastructure. It also requires all organizational parts of NWS adhere to NAO 216-105A when executing R&D transitions.

Specifically, this policy requires that all R&D projects targeted for transition to NWS operations must:

a. Have a viable transition path to a target operational system;
b. Be registered in the Projects Registry of the NOAA VLab (https://vlab.ncep.noaa.gov/group/guest/noaa-projects-registry);
c. Be assigned a Readiness Level (RL) which is updated in a timely manner whenever necessary as defined in Section 2, subsection 11 of NAO 216-105A defining numerically Readiness Levels (RL);
d. Have an approved transition plan, or its equivalent, at RL 5 or greater.

3.0 Authorities and Responsibilities

This directive establishes the following authorities and responsibilities associated with the transition of R&D projects to operations (R2O):

3.1 Director, Office of Planning and Programming for Service Delivery (OPPSD)

The Director of the Office of Planning and Programming for Service Delivery (OPPSD) is responsible for:

a. Ensuring that OPPSD budget portfolios are managed effectively so that the transition function in NWS is funded commensurate with approved transition plans;

b. Ensuring R&D projects in transition in NWS have validated requirements.

3.2 NWS Line Office Transition Manager (LOTM)

The Director of the Office of Science and Technology Integration (OSTI) or their designee serves as the NWS Line Office Transition Manager (LOTM). The LOTM also serves as the manager of NWS field, regional, national center, and headquarters R2O transition activities. Under this authority the LOTM, with the full support of the Directors of the Office of Central Processing, the Office of Dissemination and the Office of Observations, and the Analyze, Forecast and Support Office is responsible for:

a. Ensuring NOAA Administrative Order 216-105A, Policy on Research and Development Transitions, and its associated Handbook is followed. The LOTM monitors R&D projects for transition to NWS enterprise operations;

b. Promoting early engagement with NOAA research organizations and NOAA programs to ensure appropriate R&D projects: (1) address NWS requirements, (2) have a viable transition path, and (3) adopt technical approaches that are consistent and fully compatible with NWS operational infrastructure and systems;

c. Overseeing the NWS R2O transition portfolio by tracking project performance, addressing issues, identifying R&D projects ready for transition to NWS enterprise operations, and risks that endanger transition success;

d. Reviewing and coordinating transition projects to ensure that only vetted scientific approaches and systematic technical solutions are considered for implementation and thus avoid redundant and/or incompatible development.

e. Informing NWS Corporate Decision Making and Portfolio Management through the monitoring of relevant NOAA R&D transition projects. (Per NWS Governance, the primary, but not exclusive, forum for conveying this information is the Portfolio Integration Council);

f. Tracking and providing reports to NWS and NOAA leadership on the status of the transition portfolio including any issues related to resource gaps, schedule modifications, and changes in priorities;

g. Promoting transition "best-practices" across NWS R2O portfolio activities, including transition activities at testbeds and proving grounds, operational testing, research activities performed on operational platforms, and common information technology (e.g. NOAA VLab - https://vlab.ncep.noaa.gov/);

h. Ensuring all training requirements for the transition to operations are coordinated with the Office of the Chief Learning Officer and Portfolio Program Managers to the required training is funded as part of the transition;

i. Ensuring all potential licensing, intellectual property rights, distribution, and agreement issues associated with technology transfer are properly addressed; and

j. Ensuring all R&D projects originating outside of NWS (e.g. from another NOAA Line Office, Federal agency, Academia, etc.) are registered in the Projects Registry in NOAA VLab.

k. Maintaining situational awareness on R&D projects in NWS so as to facilitate coordination among related projects and avoid redundancy of effort;

l. Encouraging early engagement with R&D partners both inside and outside of NOAA so as to facilitate the planning and preparation for potential transition of promising R&D projects to NWS operations.

3.3 Regional SSD/STID Chiefs

The Chiefs of the Regional Scientific Services/Science and Technology Infusion Divisions are responsible for:

a. Encouraging the use of VLab within their region as a tool for collaboration, development, as well as project and code management;
b. Ensuring all Regional R&D projects are assigned an RL and registered in Projects Registry in VLab; and
c. Vetting and evaluating Field-driven R2O projects for potential funding and transition.
d. Maintaining situational awareness on R&D projects in NWS so as to facilitate coordination among related projects and avoid redundancy of effort;

e. Encouraging early engagement with R&D partners both inside and outside of NOAA so as to facilitate the planning and preparation for potential transition of promising R&D projects to NWS operations.

3.4 NCEP , Office of Water Prediction and MDL directors

The Directors of the National Centers for Environmental Prediction, the Office of Water Prediction and the Meteorological Development Lab responsible for:

a. Encouraging the use of VLab within their Center/Lab as a tool for collaboration, development, as well as project and code management; and
b. Ensuring all Center/Lab R&D projects are assigned an RL and registered in Projects Registry in VLab.
c. Maintaining situational awareness on R&D projects in NWS so as to facilitate coordination among related projects and avoid redundancy of effort;
d. Encouraging early engagement with R&D partners both inside and outside of NOAA so as to facilitate the planning and preparation for potential transition of promising R&D projects to NWS operations.

4.0 Measuring Effectiveness

The NWS will measure its performance in the transition of research and development projects to operations through the application of NOAA-approved performance metrics for transition.

5.0 Reference

This policy directive is supported by the reference listed below. Procedural directives and instructions to implement this policy will be developed as needed and determined by the OSTI Director.

-Signed- 2/17/2017

Louis W. Uccellini Date

Assistant Administrator for Weather Services

REFERENCE

NOAA Administrative Order 216-105A, Policy on Research and Development Transitions

GLOSSARY

Target Operational System: Information technology, computer, or instrument system, where an R&D capability will be implemented, run, and maintained in support of NWS mission operations.

Transition Path: Discrete set of development and testing stages, steps or gates that an R&D project must following in order to be implemented or deployed on a target operational system. A transition path usually includes multiple testbeds and/or proving grounds. The RL of an R&D project increases the further along it is on its designated transition path.

Readiness Levels (RLs): A systematic project metric/measurement system that supports assessments of the maturity of R&D projects from research to operation, application, commercial product or service, or other use and allows the consistent comparison of maturity between different types of R&D projects. A project achieves a readiness level once it has accomplished all elements described within a readiness level.

A Readiness Level (RL) should be assigned to all R&D projects in order to establish a NOAA common "language" and baseline for the maturity of R&D projects. Their definitions are:

RL	Definition
RL 1	Basic research: experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view. Basic research can be oriented or directed towards some broad fields of general interest, with the explicit goal of a range of future applications.
RL 2	Applied research: original investigation undertaken in order to acquire new knowledge. It is however, directed primarily towards a specific, practical aim or objective. Applied research is undertaken either to determine possible uses for the findings of basic research or to determine new methods or ways of achieving specific and predetermined objectives.

RL 3	Proof-of-concept for system, process, product, service or tool; this can be considered an early phase of development; feasibility studies may be included
RL 4	Successful evaluation of system, subsystem, process, product, service or tool in laboratory or other experimental environment; this can be considered an intermediate phase of development
RL 5	Successful evaluation of system, subsystem process, product, service or tool in relevant environment through testing and prototyping; this can be considered the final stage of development before demonstration begins
RL 6	Demonstration of prototype system, subsystem, process, product, service or tool in relevant or test environment (potential demonstrated)
RL 7	Prototype system, process, product, service or tool demonstrated in an operational or other relevant environment (functionality demonstrated in near-real world environment; subsystem components fully integrated into system)
RL 8	Finalized system, process, product, service or tool tested, and shown to operate or function as expected within user's environment; user training and documentation completed; operator or user approval given
RL 9	System, process, product, service or tool deployed and used routinely

RLs 1-2 are nominally considered Research, RLs 3-5 are Development, RLs 6-8 are Demonstration, and 9 is Deployment, Implementation, or Operational Transition.