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NWS/NCEP CENTRAL OPERATIONS (NCO) MANAGED SYSTEMS CHANGE PROCESS FOR THE INTEGRATED DISSEMINATION PROGRAM (IDP) SYSTEMS

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1 Introduction

This National Weather Service (NWS) Instruction (NWSI) provides information and instructions on providing guidance on the software change process for having a break-fix, enhancement, a new requirement or major upgrade implemented into the NWS Integrated Dissemination Program (IDP) and legacy NWS Internet Dissemination System (NIDS) web applications. This Instruction includes a brief description of system change categories and the process for each category. This Instruction does not cover changes to IDP or NIDS hardware and network communications. These types of changes are handled by NCEP Central Operations internal policies and procedures.

The NWS directives are available at https://weather.gov/directives/

2 Purpose

The purpose of this document is to ensure a consistent, repeatable, and documented process for break-fixes, updates, and enhancements to an existing service, and for new or major upgrades to applications is followed. This process mitigates duplication of efforts, indicates the quickest and most appropriate route for change requests, allows for coordination and planning facilitation, and sets expectations. The process applies to technical and administrative direction to control changes, records and reports change processing, verifies compliance with established requirements, and provides process improvements.

3 Systems Change Categories

There are four systems change categories: 1) Break-fix, 2) Update/Minor Enhancement, 3) New Requirements (New Capability) /Major Upgrade; and 4) Termination of a System or Capability.

3.1 Break-Fix

A break-fix addresses an existing operational software capability on IDP and NIDS that is broken or not working as designed. This category is not for adding missing requirements or features not included in the original design. Examples include an operational service or capability that worked in the past but does not currently work, an enhancement change that was released but did not go out when it was implemented into production or had errors that need to be resolved, or a newly implemented product or application that was not delivered in operations as designed.

3.2 Update/Minor Enhancement

An update or minor enhancement addresses a change to an existing product or service. This includes enhancements to the existing NWS IDP (see Appendix B) and legacy NIDS (i.e., Alerts Legacy, Content Management System, NWS Chat) web applications (Appendix C) that do not constitute a major change in functionality or a significant amount of enhancements. Examples of updates/minor enhancements are shape or zone file changes, new data sets/ data services, adding another location to existing previously developed product (e.g., adding Storm Surge to Weather Forecast Office San Juan), modifying the color or text to an existing product and adding a product to NWSChat. This includes enhancements to existing IDP-hosted applications that do not constitute a major release. Applications running on systems outside of IDP are considered New Requirements. Updates and enhancements for implementation on the IDP are planned in quarterly releases.

3.3 New Requirement (New Capability)/Major Upgrade

A new requirement is a new product or service that *does not* currently exist in the NWS IDP and NIDS environments. Implementing new applications onto IDP are considered new requirements/major upgrade. New requirements are first captured following the NWSI 10-103 Capabilities and Requirements Decision Support (CaRDS) process and then validated by the Mission Delivery Council (MDC) and assigned to the appropriate Portfolio by the Portfolio Integration Team (PIC), either directly or as part of coordination with other Portfolio(s) (e.g., Office of Science and Technology Integration (STI), Office of Observations (OBS), Analyze, Forecast and Support Office (AFS), Office of Central Processing (CP) and Office of Dissemination (DIS).

A major upgrade is an existing product or service that *does* currently reside in the NWS IDP and NIDS environments, but requires substantial changes such as but not limited to increasing server footprint, improving overall service/product performance, efficiency and/or usability, an overhaul of the user interface, adding new functionality, or a change in compatibility.

3.4 Termination of a System or Capability

When it is proposed that a given NWS system or capability should be terminated, the process described in NWSI 1-1002 Termination of NWS Information Services will be followed. This Instruction does not apply to termination of NWS experimental products and services; see NWSI 10-102, New or Enhanced Products and Services.

4 Systems Change Process

Figure 1 illustrates the three processes for Break-fix, Updates/Minor Enhancement, and New Requirement for changing the IDP/NIDS software environment. The following sections explain each process.

Note, as part of the systems change process, the directive NWSI 10-102 Products and Services Change Management is to be followed for internal and external review of proposed substantial changes to NWS environmental information services. The procedures apply to all NWS products/services that are provided to the public regardless of output type (e.g., text, graphical, digital, Geographic Information Systems (GIS)) or method of delivery (e.g., Internet, email, social media). An IDP or NIDS products/services change that may need to follow this directive's guidance may occur in either the updates/minor enhancements or new requirements change process. The intent is to incorporate the NWSI 10-102 process into the development/implementation phases.

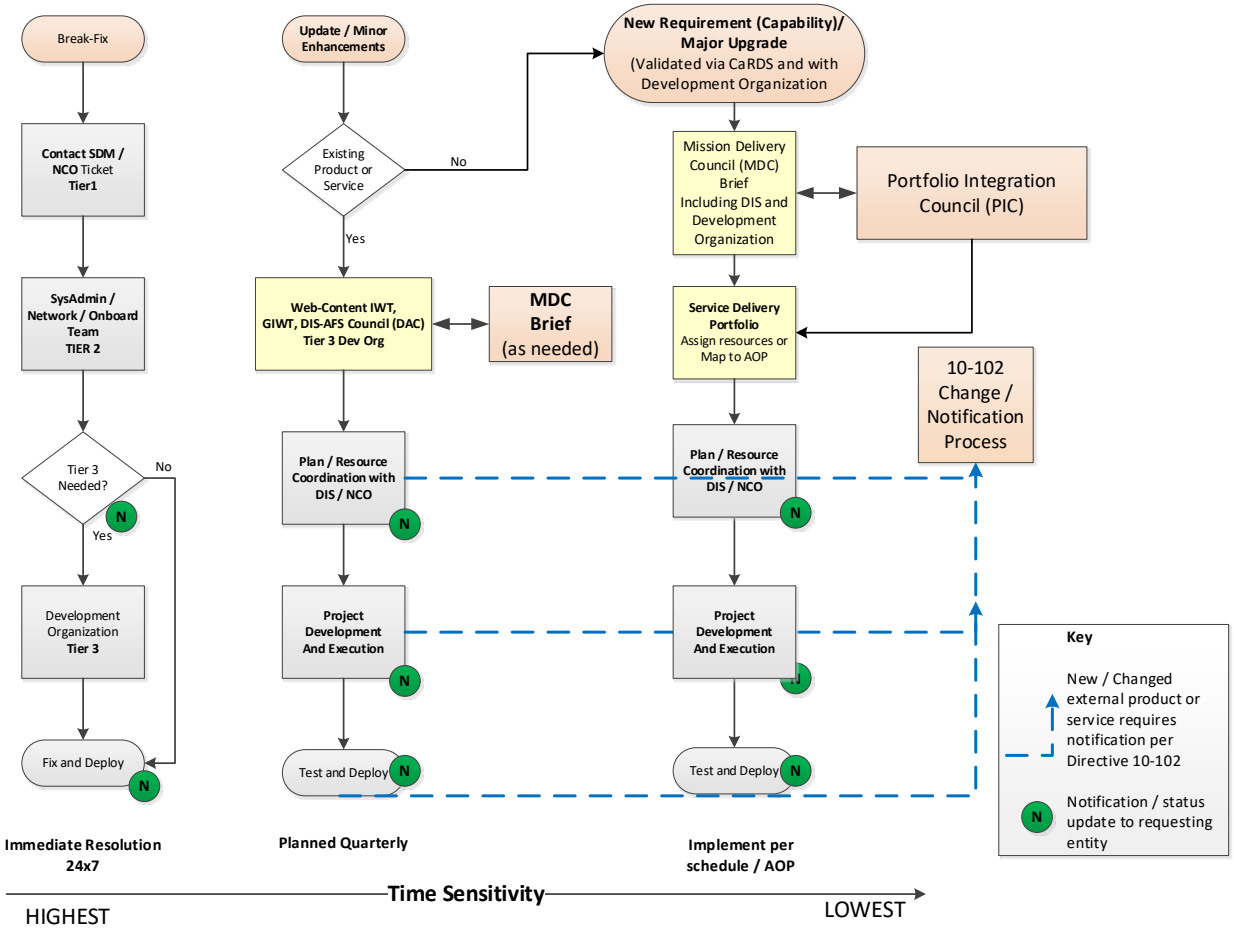

Figure 1 **National Weather Service (NWS)/National Centers for Environmental Prediction (NCEP) Central Operations (NCO) Manage System Change Process**

4.1 Break-Fix Process

This process is for resolution of an existing capability that is broken or not working as designed. These types of changes are generally reported to the Senior Duty Meteorologist (SDM) for investigation. See Section 3.1 for examples of these types of changes.

1. Once NCEP Central Operations (NCO) becomes aware of a problem with an application or capability, Tier 2 investigates reported application issue(s) to determine root cause. Definitions of Tier 1, Tier 2 and Tier 3 are found in Appendix B.
2. If Tier 2 solves the issue and it required a baseline change, implementation follows the NCO Change Control Board policies and processes.
3. If Tier 2 cannot solve the issue, they contact the Tier 3 personnel for additional assistance. The Tier 3 personnel are the development organization supporting the application.
4. When Tier 3 support fixes the issue, Tier 2 implements the corrective measures into production, following the NCO Change Control Board policies and processes.
5. Once implemented into production, Tier 2 support notifies the SDM, all Tiers that were

involved in solving the problem, and the trouble ticket submitter. The submitter then verifies in production that the corrective measure is functioning is as expected.

Note: There are times when a break-fix error is discovered and fixed, but NCO staff may decide not to implement a fix right away. The fix may be held for a future upgrade or wait for a later date to implement the change.

4.2 Update/Minor Enhancements

The Update/Minor Enhancements process addresses updates or enhancements to EXISTING products or services. For examples of these types of changes, see Section 3.2.

4.2.1 Update/Minor Enhancements Process

1. An update or enhancement is identified for an existing product or service through the NWS governance process. The request is then submitted to the appropriate Tier 3 development organization, the Web-Content Integrated Web Team (IWT), Geospatial Integrated Working Team (GIWT), or DIS-AFS Council (DAC). The development organization will consult with the request originator to help determine the scope and level of effort of the request.
2. Depending on the scope of the enhancement and level of effort required to complete the update/enhancement, the development organization may brief the request to the MDC to prioritize against other existing or scheduled work. For enhancements with high impact/visibility or with strong cross-portfolio dependencies, the Portfolio Integration Council will review the request and make a decision to proceed with the request.
3. Guidelines for what the MDC reviews are if it is a CaRDS request or any enhancement/update that will require an increase in the amount of computer processing, storage capacity, or if additional funding is required for the implementation of the request. Guidance for types of requests the MDC reviews is located in the National Weather Service Governance Overview V3.0.
4. The development organization coordinates with the appropriate Portfolio and NCO for planning and resource coordination. This information is presented to the MDC or PIC for approval to move forward. If approved to move forward on the project or if the level of effort is determined not to take significant resources, the development organization notifies the submitter of the status. An updated field-validated minor enhancement or requirement that would cause a change, or introduce a new product or service must work through NWSI 10-102 Products and Services Change Management the development/implementation process.
5. DIS will work with NCO for determining where the request will be prioritized against the NCO onboarding enhancement and update schedule. DIS will then notify the submitter of where the planned update/enhancement fits within the NCO Onboarding release schedule.
6. Project development and execution begins once resources are available, and the development organization notifies the submitter.
7. When the update or enhancement is ready for implementation, NCO and DIS review it to determine resource availability and release prioritization.
8. Once the update or enhancement is ready to be implemented by the NCO Onboarding Team (OBT), they will implement the changes in the Quality Assurance (QA) Tier for

stability testing. The NCO Onboarding Team will determine the length of the stability testing following their IDP Application Onboarding Guidelines. Once the updated application passes the stability testing, NCO OBT implements the changes in production, and the development organization assists in verifying the change(s) are working as expected.

The Office of Dissemination Weather Information Dissemination Services (WIDS) Branch Chief will be responsible for providing updated status information for each request

4.2.2 Non-NWS Update/Minor Enhancement Process

There are applications hosted on IDP which the development organization line office is not the NWS (See Appendix B). When these requests for change are provided to NWS', they will follow the steps below.

1. The user identifies an existing product or service that they want updated or enhanced.
2. Once it is determined by the appropriate NWS GIWT, IWT Team, or the DAC that the application to be changed is not an NWS-developed product, the request is submitted by the review team or council to the non-NWS application's Tier 3 development organization for review.
3. The request will follow the Tier 3 development organization change control process.
4. When the request is ready for implementation, NCO and DIS review it to determine resource availability and release prioritization.
5. Once the update or enhancement is ready to be implemented by the NCO OBT, they will implement the changes in the QA Tier for stability testing. Once the updated application passes the stability testing, NCO OBT implements the changes in production, and the development organization assists in verifying the change(s) are working as expected.

4.3 New Requirement (New Capability)/Major Upgrade

The New Requirement process addresses the need for a new product or service and is validated through NWS' CaRDS process. CaRDS is managed by the Digital and Graphical Information Support Branch under AFS. More information on the CaRDS process may be found in NWS Directive 10-103, *"CAPABILITIES AND REQUIREMENTS DECISION SUPPORT PROCESS*." For new requirements (new capability) / major upgrades, these projects may be reported at the Annual Operational Planning meeting as a milestone and at the Quarterly Project Reviews to ensure that they are proceeding as scheduled.

4.3.1 New Requirement Process

1. An initial request is submitted by the Originator of the request, which may be an *Internal* (NWS) or *External* (Executive / Legislative Branch, International, Partner, or other organization or agency) entity. Originators are expected to follow their requests through the CaRDS process as a Subject Matter Expert (SME). As appropriate, external originators present their requests via their NWS contact.
2. The development organization, in consultation with the Originator, and the MDC review the request to determine if it is appropriate and applicable to NWS mission and provides a benefit such that investing resources (people, resources, dollars, or changing a process)

justifies implementing the request. Large software development projects that require cross-portfolio integration will be discussed at the PIC.

3. CaRDS requests are validated and prioritized by the MDC and are then addressed by the PIC for solution space analysis and resource assignment. The Originator and development organization work with DIS and NCO to plan and coordinate resources for the new requirement.
4. Once resources are available, project development and execution begin, and the development organization notifies the request Originator and CaRDS analyst. When the development organization completes development for the requirement, they will notify the NCO OBT and the request Originator. When the update or enhancement is ready for implementation, NCO and DIS will review it to determine resource availability and implementation prioritization.
5. Once the new development is ready to be implemented by the NCO OBT, they will implement the changes on the QA Tier for stability testing. When the updated application passes the stability testing, NCO OBT implements the changes in production and the development organization assists in verifying the change(s) are working as expected. The request Originator is notified by the OBT so that they can also verify production functions as expected.

APPENDIX A - Acronyms and Definitions

Acronym	Definition
AFSO	Analyze, Forecast and Support Office
CaRDS	Capabilities and Requirements Decision Support Process
CP	Office of Central Processing
DAC	DIS-AFS Council
DIS	Office of Dissemination
GIS	Geographic Information System
GIWT	Geospatial Integrated Working Team
IDP	Integrated Dissemination Program
IT	Information Technology
IWT	Integrated Web Team
MDC	Mission Delivery Council
NCEP	National Centers for Environmental Prediction
NCO	NCEP Central Operations
NIDS	NWS Internet Dissemination System
NWS	National Weather Service
NWSI	National Weather Service Instruction
OBS	Office of Observations
OBT	Onboarding Team
PIC	Portfolio Integration Team
QA	Quality Assurance
SDM	Senior Duty Meteorologist
STI	Office of Science and Technology Integration
WIDS	Weather Information Distribution Dissemination Services

APPENDIX B - IDP Operational Applications (As of September 2019)

Application	Development Organization Line Office
AOMC/EM7	NWS
Aviation.weather.gov**	NWS
BUFR Migration Tool	NWS
EDIS/FTPMail	NWS
EMWIN	NWS
FTP / SFTP	NWS
FTPPRD	NWS
FTPPush	NWS
FTPSIn/FTPSOut	NWS
Global Information Center System (GISC)	NWS
GMDSS	NWS
HazCollect Extended	NWS
HazCollect Legacy	NWS
HF-FAX	NWS
Hurricane Hotline	NWS
Hydrometeorological Automated Data System (HADS)	NWS
IRIS/iNWS	NWS
ISatSS	NWS
MADIS	NWS
MAG	NWS
MRMS	NWS
NextGEN IT Web Services	NWS
NLETS	NWS
NOMADS	NWS
NOS Chart Tile**	NOS
nowCOAST	NOS
NWS GIS Services	NWS
NWSTG Switch	NWS
OWP Processing	NWS
Radar Level 2	NWS

Radar Level 3	NWS
SNOTEL	NWS
SOCKET/CMHP	NWS
SPOT*	NWS
TGFTP	NWS
Tsunami.gov*	NWS
VLAB**	NWS
Weather.gov*	NWS

Note:
* - Available at IDP-College Park and at the Web Farms in Kansas City, MO and Silver Spring, MD
** Available at IDP-College Park only

APPENDIX C - NIDS Operational Applications (As of September 2019)

Application	Development Organization Line Office
AHPS Web site	NWS
alerts.weather.gov	NWS
Climate Services Web Page	NWS
forecast.weather.gov	NWS
Global Telecommunications System Internet File Service	NWS
Graphical Forecasts web page	NWS
marine.weather.gov	NWS
mobile.weather.gov	NWS
National Doppler Radar Web Sites	NWS
NOAA Weather Wire Service (NWWS) Open Interface	NWS
NWS Chat	NWS
Older Graphical Forecasts web page	NWS
Preview.weather.gov	NWS
weather.gov	NWS

APPENDIX D – Definitions of Tier Support on IDP

- Tier 1 support is provided by the NCO Operations and Monitoring Branch (OMB). The SDM and Tech Control teams provide 24x7 monitoring of the IDP hardware, the operational virtual machines (VMs), and the operational application running on these VMs.

- Tier 2 support is provided by the NCO Implementation and Data Services Branch (IDSB). Responsibilities of the Onboarding Team (OBT) include:

    - Provide 24x7 support for the application and output, troubleshooting operational issues using numerous tools
    - Test and implement any updates or fixes to the application.
    - Work with development organizations to onboard new applications
    - Respond to customer requests with regards to data availability/quality. Work with Tier 3 to resolve data quality issues.
    - Work with the developers to optimize the application
    - Perform failovers of the operational application to support system patching and data center failovers. Complete validation of the operational application after application failovers.
      NOTE: NCO's Infrastructure and Web Services Branch (IWSB) and Network Security Branch (NSB) provide the 24x7 Tier 2 support for the network and IDP and NIDS infrastructure on which these applications run.

- Tier 3 support is provided by the application's development organization according to the agreement stated within the roles and responsibilities document