NATIONAL WEATHER SERVICE INSTRUCTION 01-1003

Administration and Management

Managing the Provision of Environmental Information, NWSPD 1-10

PROVISION OF ENVIRONMENTAL INFORMATION SERVICES SUPPORTING MOBILE DEVICES

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Provision of Environmental Information Supporting Mobile Devices

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1 Introduction

Over the past two decades, wireless communication technology and the prevalent use of mobile devices has changed the way people communicate and share information on a day to day basis. The National Weather Service (NWS) Strategic Plan identifies NWS as an agency responding to the changing ways people communicate, network, and share information, and we are already using new technologies to make information more accessible. Providing environmental information services supporting mobile devices using wireless communication technology has the potential to increase the effectiveness of NWS warnings designed to protect life and property. Moreover, capitalizing on the innovative capabilities of the NWS workforce can help leverage this technology to increase the benefits to the U.S. As with every new opportunity, there are important factors which must be considered to ensure their effectiveness. This Instruction does not make a priori decisions regarding which services NWS might provide. Rather this Instruction provides process guidelines intended to ensure NWS develops environmental information services using mobile devices in a manner that adheres to appropriate U.S. Government policies and maximizes the effectiveness of the NWS in meeting its core mission.

2 NWS Approach for Providing Environmental Information Services Supporting Mobile Devices

Providing environmental information services supporting mobile devices includes, but is not limited to, mobile-enhanced web content, mobile applications (a.k.a., "apps"), and integration of environmental information into emerging mobile technologies. Any component of the environmental information enterprise (government, weather industry, and academia) can provide these services to the public. NWS currently provides web content scaled for mobile devices (e.g., mobile.weather.gov) and has developed experimental services which push hazardous weather alerts to a limited set of users (NWS "core partners") via SMS messaging. America's weather and climate industry (private sector providers) provides a rich array of services including alerts and general weather information tailored to the mobile community. Academia, too, provides environmental information tailored to mobile devices, to make important data sets available to a wider audience and to explore the utility of new data sets to various user groups.

The NWS approach to providing environmental information supporting mobile devices includes both direct and indirect services. Direct services are those for which NWS provides content suitable for users' specific mobile device and controls its presentation on that device. NWS indirect services support direct environmental information services serving mobile devices provided by other entities in the environmental information enterprise. Taking this two-pronged approach optimizes the rapid delivery of critical weather services to emergency managers, electronic media, and other core partners as well as to the public.

2.1 Support for NWS Core Partners[1]

NWS recognizes that we have a special mission responsibility for our core partners (emergency management community; domestic and international government partners; electronic media). This subset of the NWS user community requires timely information wherever they are, through

[1] See Appendix A for definition of NWS "core partners."

multiple channels of dissemination, including wireless. NWS needs to know these core partners have access to unaltered NWS data/products to ensure successful interaction between these partners and our field forecasters. In addition, these core partners require tools to facilitate two-way information sharing and decision support with NWS. Consideration for the special needs of this user community will be given in applying the decision process in section 4, below, with the intent of maximizing NWS flexibility in developing mobile services (mobile apps, alerts, web services, etc.) to meet core partner needs promptly.

2.2 Direct Environmental Information Services Supporting Mobile Devices

To ensure responsible use of federal tax dollars, NWS must provide a compelling case for direct provision of environmental information services supporting mobile devices. Factors that support direct provision of NWS environmental information services serving mobile devices include:

- Service is essential to protection of life and property;
- Service is essential for use by NWS employees in performing NWS mission;
- Service is essential for use by NWS core partners to access information needed for coordination / collaboration with NWS;
- Service is provided using widely applied standards and vendor-neutral forms, as opposed to methods which depend on proprietary standards;
- Commercial or other government sources do not provide service, or provide a service that does not have features essential to NWS mission; and
- NWS expects to be able to sustain development and operating costs for NWS to provide the service.
    - Development and operating costs include costs of compliance with relevant policies and may include licensing fees for patents, etc.

2.2.1 Web content - NWS will design web content to render appropriately on mobile device web browsers. NWS web sites will offer mobile-optimized content, using Mobile Best Practices 1.0 from the World Wide Web Consortium[2] (W3C) at http://www.w3.org/TR/2008/REC-mobile-bp-20080729/ .

2.2.2 NWS should update existing NWS environmental information services supporting mobile devices to reflect the evolving technological capabilities.

2.2.3 NWS may initiate new environmental information services supporting mobile devices using the development/decision process outlined in section 4, below.

2.3 Indirect Environmental Information Services Supporting Mobile Devices

NWS recognizes that America's weather industry plays an important complementary role in rapid delivery of critical NWS environmental information and relies on NWS environmental information to create services specific to their clients.

[2] By following W3C Best Practices for mobile websites, mobile-enhanced websites will enable mobile device access to NWS information and data while reducing the need to create and manage multiple versions of the website.

NWS will provide indirect environmental information services supporting mobile devices by:

a. making our data highly accessible and easy to use by those who develop mobile applications;
b. providing our data in standard formats/protocols which are easily accessed and manipulated;
c. providing adequate documentation and interface tools to ensure easy access/use of NWS data; and
d. educating the public about existing environmental information services supporting mobile devices, regardless of the source.

3 Guidelines for Adopting New Environmental Information Services Supporting Mobile Devices

New environmental information services supporting mobile devices must comply with applicable law and policy, and a decision whether to implement such services will consider the effects of the service on NWS operations. NWS will consider the following factors in any decision on whether or not to implement a new environmental information service supporting mobile devices.

a. Requirements/Mission Connection – NWS will base development of new environmental information services supporting mobile devices on established requirements and these services will directly support the NWS mission.
b. Legal/Policy Factors – Development of new environmental information services supporting mobile devices must conform to existing U.S. Government laws and policies. NWS will consider the key legal and policy factors identified in Appendix B when developing new environmental information services supporting mobile devices.
c. Scientific Validation and Technical Merit – NWS will validate the science and/or technology upon which the new service is based prior to operational implementation.
d. Operational Sustainability – A decision will consider life cycle costs for developing and sustaining the new service and the expected impacts on NWS operations, systems and telecommunications, including resources to provide updates/patches, training, and user support. Responsibility for operations and maintenance of the new service must be identified.

4 Development/Approval Procedures – New environmental information services supporting mobile devices will be developed in accord with standard NWS development practices and policies.

4.1 With today's escalating demand on IT resources coupled with Government wide budgetary constraints and shortfalls, the NWS needs to focus its IT and hydrometeorological workforce to maximize effectiveness of development efforts. With this understanding, NWS developers should collaborate across NWS in their development of new environmental information services supporting mobile devices.

a. NWS Office of the Chief Information Officer (CIO)/Office of Climate, Water, and Weather Services (OCWWS) will maintain a repository of requirements for

environmental information services supporting mobile devices.

b. NWS CIO will catalog local programming efforts (i.e., programs/applications, etc.) for the purpose of facilitating collaboration.

4.2 Development should focus on providing environmental information services supporting mobile devices on a national basis to support basic operations and decision support services. Unless specifically addressing a unique local/regional user need, local/regional developers should apply their efforts to development or enhancement of nationally consistent NWS services. Whenever possible, developers will make enhancements to an existing service to satisfy new requirements in order to ensure efficiency and avoid duplication.

4.3 Development of environmental information services supporting mobile devices will be platform/service-neutral whenever possible. If developing an NWS environmental information service supporting mobile devices that requires technologies which are not vendor-neutral, the NWS CIO will include the reasoning behind this decision in the decision analysis (see, Section 5.1.1).

4.4 Managers at the office supervisor level (i.e., MIC/HIC, branch chief, etc.) will recommend initial development (e.g., prototyping) of new environmental information services supporting mobile devices for approval by that office's Corporate Board member (e.g., Regional Director).

4.5 Upon approving new development efforts, the approving Corporate Board member will send to NWS CIO a description of the development work being undertaken. This description will include the following:

a. User requirements for the service being developed

b. Connection to NWS mission

c. Description of proposed functionality of new service

d. Lead developer/contact information

NWS CIO will update its records of requirements and ongoing development efforts to help facilitate collaboration, as appropriate.

4.6 When the new development effort is approved, the developer will submit a request for the development environment for the appropriate system (e.g., NIDS for external audience).

4.7 During development, the new environmental information service supporting mobile devices will not be available to the general public; however, the developer may request feedback from parties external to the National Oceanic and Atmospheric Administration (NOAA)/NWS.

4.8 In parallel with development, the NWS CIO and its designated team(s) will work in conjunction with the lead developer to gather information to support an analysis of policy and management factors (see Section 3) to be considered for an implementation decision.

4.9 The Assistant Administrator for Weather Services (AA) will appoint a Deciding Official who will consider the analysis of policy and management factors (see Section 3) and the associated recommendations (see Section 5) and make two decisions, following the guidelines of NWS Policy Directive (NWSPD) 1-10 and NWS Instruction (NWSI) 1-1001:

a. Approval / disapproval to begin public comment/review.

b. Approval / disapproval for operational implementation.

4.10 Provision for Emergencies. When the need to protect life and property warrants emergency dissemination of NWS information using means other than an official NWS service, the responsible office/region may do so. If the office(s) involved intend to continue providing this service, the provisions of this Directive will be followed within 30 days after the emergency has ended.

5 Authorities and Responsibilities

5.1 NWS Chief Information Officer (CIO)

5.1.1 The NWS CIO will analyze the policy and management factors (described in section 3, above) associated with implementation of new NWS environmental information services supporting mobile devices.

5.1.2 The NWS CIO may create or use existing teams (e.g., Emerging Technologies Integrated Work Team) to prepare the analysis. Expertise needed to support a thorough analysis should include views from individuals in the following areas: policy, legal, technical, knowledge of field operations, etc.

5.1.3 The NWS CIO will work with OCWWS to maintain a record of validated requirements for environmental information services supporting mobile devices and of ongoing development efforts.

5.1.4 The NWS CIO will work with Strategic Planning and Policy Office (SPP), OCWWS and Office of Operational Systems (OOS) to make a recommendation to the Deciding Official on a decision to implement new environmental information services supporting mobile

devices.

5.2 Strategic Planning and Policy Office (SPP)

5.2.1 SPP will take the lead in evaluation of input from public comment and review, as described in 4.9, above.

5.2.2 SPP will work with NWS CIO, OCWWS and OOS to make a recommendation to the Deciding Official on a decision to implement new environmental information services supporting mobile devices.

5.3 Office of Climate, Water, and Weather Services (OCWWS)

5.3.1 OCWWS will work with NWS CIO to validate requirements for new environmental information services supporting mobile devices.

5.3.2 OCWWS will work with NWS CIO, SPP and OOS to make a recommendation to the Deciding Official on a decision to implement new environmental information services supporting mobile devices.

5.4 Office of Operations and Services (OOS) – OOS will work with NWS CIO, OCWWS and SPP to make a recommendation to the Deciding Official on a decision to implement new environmental information services supporting mobile devices.

5.5 The Deciding Official – The Assistant Administrator for Weather Services will designate a Deciding Official responsible for approving the development/implementation of a new environmental information service supporting mobile devices.

5.5.1 The Deciding Official will review the analysis of policy and management factors (Section 3), input from public comment/review, and the recommendation of NWS CIO/OCWWS/OOS/SPP to carry out the two decisions identified in Section 4.9. The Deciding Official will make his/her decisions within 30 days of receiving the necessary input and may confer with others in NWS, NOAA, the Department of Commerce and elsewhere in reaching his/her decisions.

5.5.2 The decision for operational implementation (4.9.b) will be recorded in a decision memorandum and should include an explanation that is responsive to comments received from public comment/review. The decision memorandum will be posted in the public database of proposed changes to NWS information services (see, NWSI 1-1001).

APPENDIX A - References and Definitions

References

NWSPD 1-10 – Managing the Provision of Environmental Information
NWSI 1-1001 - Tracking and Public Notification of Proposed Changes to NWS Information Services
NWSI 10-102 – New or Enhanced Products and Services
NWSI 10-103 – Operations and Services Improvement Process Implementation
NAO 216-112 – NOAA's Policy on Partnerships in the Provision of Environmental Information (NAO 216-112)

Definitions (as applied in this instruction)

Mobile application ("apps") – a software application that runs on a mobile device such as a smartphone, tablet, or other portable device. Mobile applications typically perform one dedicated task. Mobile applications support both "pulling" data/information from a web service and allowing the web service to "push" information or data to the device.

Mobile-enhanced web content – web pages which allow mobile devices to interact with the web page using a standard mobile Web browser and use pull technology to access data/information from the web server and display on the mobile device.

NWS "core partner" –

The National Weather Service (NWS) has defined a classification of its users which it terms "core partners." This class of users is defined as:

> "Government and non-government entities which are directly involved in the preparation, dissemination and discussions involving hazardous weather or other emergency information put out by the National Weather Service."

While there are a large number of individuals who contribute to the overall services provided by NWS, all of whom play key roles in providing quality services to the public, this "core partner" designation is meant to identify those entities which have a unique need for assured access to unaltered NWS information because of the level of interaction they have with NWS personnel.

NWS "core partners" consist of the following three groups of individuals:

a. Member of the emergency management community. This includes public safety officials who serve as employees or contract agents of a government agency at the federal, state, local, or tribal level and are charged with protecting the public from hazards that are influenced by weather or weather-related events. Other members of this community include: safety and emergency personnel, from universities or other large entities with large populations whose roles are functionally equivalent to the public safety officials

described above, Skywarn Net Control Operators, such as Amateur Radio Emergency Services (ARES) and Radio Amateur Civil Emergency Services (RACES).

b. Government partners. Federal/state/local government partners who have missions that require close coordination with the NWS. Government partners include (but not limited to) the FAA, and water and land management officials.

c. Members of the electronic media. Members of the electronic media are parties, and contract agents of parties, who have a need to actively participate in discussions with NWS forecast offices on imminent weather or other hazards, and operate systems that routinely and rapidly relay weather and water watches, advisories, warnings and forecast information to a significant part of the population served by an NWS office. Electronic media includes providers of weather content through electronic information distribution such as radio, television, internet, cellular, and other wireless means.

Note: Individuals, companies, or other entities involved in 'chasing' weather events and posting or streaming video or pictures of the event, but do not otherwise have a need to communicate with NWS do not meet the "core partner" standard. In addition, NWS spotters, while playing a key role in providing information to our forecast offices are not included in the "core partner" classification as they do not routinely require assured access to unaltered NWS products to fulfill their function as a spotter.

At this time, the "core partner" designation has been used to distinguish those users who meet the need for user accounts for the NWSChat service (see https://nwschat.weather.gov/) and the experimental iNWS service (http://inws.wrh.noaa.gov/).

APPENDIX B - Existing Policy and Legal Factors Guiding Development/ Implementation of Environmental information Services Supporting Mobile Devices

1. Policy Factors: New environmental information services supporting mobile devices must conform to U.S. Government policies, including:

1.1 NOAA's Policy on Partnerships in the Provision of Environmental Information (NOAA Administrative Order (NAO) 216-112) **– NWS will adhere to NAO 216-112 in developing new environmental information services supporting mobile devices. In particular:**

a. As stated in NAO 216-112, NWS "will take advantage of existing capabilities and services of commercial and academic sectors to support efficient performance of NOAA's mission and avoid duplication and competition in areas not related to the NOAA mission. NOAA will give due consideration to these abilities and consider the effects of its decisions on the activities of these entities, in accordance with its responsibilities as an agency of the U.S. Government, to serve the public interest and advance the nation's environmental information enterprise as a whole."

b. In accordance NAO 216-112, the public shall have the opportunity to provide input on any proposed new mobile services. Procedures for seeking input are described in NWSPD 1-10 and NWSI 10-102. Input from a public comment/review period will be considered in making a decision on whether or not to pursue development/implementation of the proposed service. New environmental information services supporting mobile devices will not be provided external to NWS until this decision has been reached.

1.2 Other Applicable Policies include:

- Web
- Internet Use
- Privacy
- NWS, NOAA, and DoC IT Security policies
- Section 508 of the Rehabilitation Act of 1973
- Information Quality Act Guidelines
- Records Retention Requirements
- NWSPD 1-12, *Managing the Acquisition of Environmental Data from External Parties* – if the service is used to acquire information
- Technology transfer, NWSPD 100-4 – for technology solutions implemented external to NWS (e.g., mobile phone "apps")
- Executive Order 13166, Limited English Proficiency
- NWSI 1-10, Managing the Provision of Environmental Information Services, and its instructions

2. Legal Factors

a. Use of commercial services (e.g., Facebook, Twitter, etc.) to support the proposed environmental information service serving mobile devices must have an end-user license or agreement approved by the General Services Administration and the Department of Commerce Office of the General Counsel.

b. NWS must determine the extent to which (if any) functionality of the proposed environmental information service serving mobile devices is subject to existing patent restrictions (i.e., does any functionality infringe on rights established by existing patents).