21 December 2017

Unified Forecast System Communication & Outreach Plan

1. Synopsis

An effective communications strategy is critical to the success of any large and complex enterprise with a large number of interacting agents. This plan seeks to build on recent advances in NOAA to engage the community, push them further and institutionalize them as best practices for communication and outreach. NOAA has stated that the development of the Unified Forecast System[1] (UFS) will be a community effort. In this context, "community" might be defined as a group of people with a shared, common purpose. At a basic level, the relationships needed for this effort to be successful are or will be constructed and maintained through communication.

This document describes the Communications and Outreach Plan that is aligned with the main SIP document: *Strategic Implementation Plan (SIP) for Evolution of NGGPS to a National Unified Modeling System*; and it complements the SIP Governance Working Group's *Governance Model for Unified Forecast System for NCEP's Product Suite*. The governance model includes a number of working groups charged with developing specific UFS components and applications, as well as a UFS Steering Committee (UFS-SC) charged with providing overall direction.

Four major goals drive this communication plan:

- *GOAL 1: Establish, maintain, monitor, and assess a range of channels that promote multidirectional communication and convey content related to the UFS.*
- *GOAL 2: Establish guidelines and processes that result in improvements in content quality and consistency.*
- *GOAL 3: Promote and enable collaborative development and integrated decision making through open access to information and resources.*
- *GOAL 4: Create and sustain an identity through branding for the UFS, working through and with NOAA Communications and other parallel offices in partner organizations.*

Our working assumption is that this plan, and the recommendations and activities proposed herein, will be considered and activated by the UFS-SCas proposed in the SIP Governance Plan.

[1] As defined in the Governance Plan, the UFS is "a community-based, unified, coupled modeling system suitable for application in NCEP's Product Suite." This is an evolving issue and the scope and content of what is encompassed within the UFS (e.g. CROW (workflow) issues) remains TBD as of this writing.

1.1 Community Defined

The word “community” is used frequently in this plan. In the context of the UFS, Community is defined in the Strategic Implementation Plan (SIP) for Evolution of NGGPS to a National Unified Modeling System, inclusively as *salient researchers*, *core development partners*, *trusted super-users*, *operations*, and *stakeholders*. Each of these circumscribe a key piece of the puzzle with uniquely defined roles and differing priorities. Please refer to the document above for more background and detail.

1.2 Scope

This plan encompasses communication related to the UFS. It seeks to provide a careful and thoughtful set of proposed mechanisms to meet specific information, decision making, and community building needs. It specifies particular types of necessary content, which will be provided by working groups (WGs) and other contributors. We take as priorities both the need to undertake critical system development and the need to inform and be guided by community participants.

1.3 Interdependencies

The Communication and Outreach WG supports all of the other WGs and the community at large.

This Plan is integrally important to the success of UFS governance and product implementation. The Communication and Outreach Plan is to be informed by and closely coordinated with the “Governance Model for Unified Forecast System for NCEP’s Product Suite”. We recommend that direction of the execution of this plan should reside under the auspices of the governance process as embodied by the UFS-SC. Furthermore, much of the process described in this plan will be enabled by the Infrastructure WG (where objects and activities such as technical documents and training reside), this is another critical dependency.

2. Communication - Content

Content is the information that is conveyed in the communication system, which may take many forms - documents, images, code, and datasets, for example. Provision of the following types of content are necessary[2] to meet the stated goals.

[2] These content define some of the necessary conditions for efficient and effective communication, though are not necessarily both necessary and sufficient.

2.1 Mission, Vision, Values, and Iconography

It is essential that all levels of NOAA participate in the development and communication of a consistent identity for the UFS organization. This identity is expressed through statements of mission - what the organization does; vision - what the organization wants to do in the future; values or principles - how the organization wants to operate; and iconography - logos, graphics, and other images that support the statements of identity and become part of a brand. A consistent identity has value to the organization because it embodies the organization's role in the community and can quickly convey characteristics such as quality and service. This content must be developed in close concert with the UFS-SC and other NOAA and community management and communication bodies.

2.2 Governance Processes

Governance processes define how the many elements of UFS are integrated into a functioning whole, how system-wide decisions are made, and how the goals, strategies and organizational structure evolves. Transparency is an important attribute of governance processes for a community project because known processes promote stability and confidence, and allow for the broader community to provide input into or participate in decisions. The UFS-SC is expected to provide this content. Stating the self-evident: an effective communication process is the means by which governance processes are conveyed and enacted; in kind, the communication plan must adhere to the governance processes.

2.3 Requirements

Requirements encompass functions and characteristics that are needed or wanted in the UFS, and are critical because they form a foundation for design and implementation, as well as to define the scope of the UFS. They may range high-level specifications of what applications need to be developed (e.g. must provide a subseasonal prediction system) to low-level details such as computational performance constraints, and the need for specific types of documentation (e.g. must provide instructions on how to build and run a software application). The collection, categorization, management, and review of requirements requires both significant effort, as well as a decision making process that best allows the community to choose between conflicting requirements and identifies some requirements as invalid. These processes need to be in place before requirements can be effectively communicated. Requirements will need to be provided by working groups working in concert with an integrative management body such as the UFS-SC.

2.4 Plans, Schedules, Reports and other Management Records

The manner in which plans, schedules, reports and other management records documents are produced, reviewed, disseminated and archived is a key element of this UFS Communication

and Outreach plan. Because two critical objectives of this Communication & Outreach Plan are (i) facilitating working group interactions, and (ii) the sharing of technical and non-technical information with the public, including a range of partners with a more direct interest, it is critical that documentation and other outputs from working group,UFS-SC, and other UFS-related activities be communicated effectively across the UFS organization and be made available publicly. In addition, relevant documentation from parent and partner organizations need to be shared with the UFS organization. Such records also serve to track and document this effort for future reference and historical purposes.

2.5 Software and Technical Documentation

Software includes source code, scripts, tests, and diagnostics. Documentation covers both the software and associated procedures (e.g. developer's guides) and policies. They are presented together here since their development and management is closely intertwined. For example, several software components associated with UFS already follow the practice of embedding documentation in source code so that portions can be automatically generated.

The UFS relies on software components developed through community organizations, such as the MOM6 ocean model and ESMF coupling infrastructure. It is also likely to have a large code base of millions of source lines of code, even with efficiencies introduced through unification of applications. Management of codes and documentation and the development of standards is thus something that must be shared with the broader community. Content is expected to be generated by multiple organizations and working groups, with guidelines for code and documentation developed by the SIP Infrastructure Working Group and community-based standardization groups (e.g. those supported by the Earth System Prediction Capability).

2.6 Data

Data includes data inputs such as for a verification and validation system, interim products such as diagnostic outputs, and final forms of data products. Information to be communicated includes data access, provenance, quality control, protocol decisions, and other relevant metadata. Data is seminal to the UFS in that it supports numerous critical operations and activities including data assimilation, verification and validation (V&V), post processing, and so on.

Data is expected to be generated by multiple organizations and working groups, which raises a host of implications. A data policy needs to be developed and documented; sample items to consider are included in Appendix C. Policies for data sharing will be developed by the Governance Working Group, and overseen by the UFS-SC in close consultation with the Infrastructure WG.

2.7 Training Materials

Training is a means to enrich, broaden, and deepen the community that supports the UFS in reaching its goal of developing a state-of-the-art UFS, and to make it more effective and efficient in reaching this objective. Training is a very broad and varied category that includes both informal elements (or perhaps passive ones), to more formal activities that involve, for example, activities with curricula and instructors. It must also be tailored to the needs internal to the core UFS community (e.g. staff member at NCEP), as well as to people further removed (e.g. a student at a university).

A non-exhaustive list includes a mix of: training manuals, user guides, developer's guidelines, speaking presentations with notes, and quick reference guides. It may also include things such as use cases and workflow descriptions. Training comes in many forms, i.e. written, video, audio, verbal/help desk, and responsive Q&A (or FAQ), and it is disseminated through a variety of channels, including social media. For software training programs, hands-on access to the code/scripts on operational-like platforms may be needed. Training materials will need to be accessible for particular system components, specific applications, and the overall UFS. At some level all of those involved in the UFS (even if it is passive) will be involved in creating training content through their subject matter expertise.

The UFS-SC and UFS WGs, working with NOAA management, will need to ascertain how best to develop, support, and sustain the training. Initial training of operational forecasters and other end users will be especially important in the development of productive relationships between developers and users. As the UFS evolves over time, this need will continue or even increase. Existing resources, such as the Model Evaluation Group (MEG) through the Environmental Modeling Center (EMC), NWS training resources at NWS field offices (e.g. Science Operations Officers (SOOs)), and external resources such as the ®COMET Program will be used for this purpose. Additional resources should be sought out as needed.

2.8 Calendars

To foster engagement, openness, clarity, and collaboration, a readily available and dynamic master calendar is needed. The calendar will include all relevant community events, and especially working group and UFS-SC meetings. Entries should include dates and times, access information (locations, teleconference numbers, etc.), links to agendas, and should be available to the community via web and collaborative (VLab) pages. This will facilitate internal coordination across the working groups and encourage and enable cross-working group interactions/participation. All members of the UFS community, though especially WG and Committee co-chairs, are expected to maintain the calendars in a timely fashion and keep them up-to-date. The Infrastructure Working Group and associated web-gurus can help to create the required calendars on the suitable websites.

2.9 Glossaries

The UFS community is comprised of many specialized sub-communities (e.g. data assimilation, atmospheric science, hydrologic science), each with their own nuanced vocabulary, some of which use exactly the same terms or expressions to mean completely different things. Glossaries (a brief dictionary; an alphabetical list of words/items with explanations) help to clarify and translate vocabularies and so are essential to the functioning of the UFS. Several groups have already generated glossaries for key documents, including the System Architecture working group. Glossaries may be generated by specific sub-communities, or if they represent a master reference, coordinated by an overarching team like this Communication & Outreach group. All documents should include a glossary or glossary reference.

3. Communication Channels

A communication channel is a medium through which information content is conveyed. The channel affects how effectively the content is communicated. Various communication mechanisms have different characteristics, including whether or not people can see or hear each other; whether or not images can be easily conveyed; whether or not messages can be viewed simultaneously; whether messages are limited in size; whether formatting is fixed or not; whether the mechanism is open to all or not; and many other factors.

Redundancy is an important concept when considering communication channels; individuals respond to (absorb, understand, learn) different modes of communication in different ways. Thus by communicating information redundantly, over multiple channels, the maximum number of people will be reached. It is a matter of effectiveness and thoroughness.

Below are five primary channels of communication identified for the UFS.

3.1 Websites

Since the UFS will be a central activity at NCEP/EMC, its web presence will be closely allied with the NCEP/EMC web presence. For the purposes of the UFS, Websites are broken into two related but distinct communication channels as described in the *NCEP/EMC Website Reorganization Plan* developed in 2016:

1. Asynchronous Websites: The EMC website that topically covers “products” (section 3.1.1)
2. Community Development Websites: for outreach, collaboration and development, tentatively hosted on VLab, which is discussed below in (section 3.1.2)

These two sets of websites will collect, collate, organize, and reference all information on complementary websites (such as the NGGPS Program pages, collaborator’s pages, related

institutions, etc.). The websites should be developed in concert with a Communication Focus Group or similar entity.

3.1.1 Asynchronous Websites

Websites are a routine, effective channel for communication because they can be made highly accessible to all, are easy to organize and update, and support asynchronous communication. There are likely to be a network of sites associated with the UFS, including existing websites dedicated to each forecasting application (e.g. FV3-GFS), websites for supporting programs (e.g. Next-Generation Global Prediction System, NGGPS), and high-level websites for the NCEP/EMC organization and the UFS community. This network will need to have clear primary entry points.

3.1.2 Collaboration Environments

Collaboration environments as defined here are web-based software packages with an integrated set of tools –wikis, repositories, fora, etc.– that support distributed, collaborative processes. Use of a collaboration environment will support the UFS development community. This is a place to facilitate and foster interaction, the sharing of “work in progress” (data, figures, draft documents, and the like).

The Community Development Website would be hosted on a web-based collaboration environment, VLab (https://vlab.ncep.noaa.gov/web/environmental-modeling-center/home). However, the need for and/or potential use of other related wiki-like environments (such as CoG; Github) should be considered, and a policy needs to be articulated to guide their use, proliferation, management, and so on.

3.2 Meetings, Focus Groups, and Panels

Various gatherings of people, be they in-person, teleconference, video conference, or some combination thereof, are foundational. A short-list (likely not exhaustive) of the types of meetings under consideration here includes

- Annual in-person community meeting(s)
- Regular meetings of the UFS governing bodies; UFS-SC and Executive Board
- Regular co-chair meetings
- Regular WG meetings
- Coordination with the NOAA Unified Modeling Committee (esp. Communications Sub-committee)
- Focus groups, defined here as a collection of users who do not contribute to code development directly who participate in the conception, design, and implementation of aspects of the UFS. Focus Groups are generally forward looking in their outlook

- Various panels can be used to provide unbiased feedback and or reviews (such as for code and/or documentation review, etc. Panels are typically focussed on the state of things as they currently are
- Ad hoc and other unique meetings

The nature and frequency of some of these meetings may be suggested by governance body.

UFS needs to give some thought to supporting (resources) the mechanics underlying meetings: support for scheduling, coordinating, announcing, taking minutes, etc.; common teleconference and videoconference (e.g. GoTo Meeting, WebEx, or similar) and other virtual resources; and for large meetings, support for registration, logistics, and facilitation (as needed). In some instances some consideration of travel support may be needed as well.

3.3 Email Lists

A workhorse of communication, there are several categories that fall within the Email Lists channel:

- Email - this is the general Email discourse within the community; Emails intended for targeted messages and specific people
- Email lists - for broadcasting messages and notifications of both specific (two-way dialogue) and general interest (one-way communication)
- Listservs - for open and logged (recorded) dialogues and dealing with clearly defined topics (threaded, issues focussed)

Furthermore, these can be divided into two types:

1. Open: All members of group can post to it (facilitate dialogue)
2. Restricted: For official news/info with limited access (official)

Types of Email lists:

1. At the outset, each body or group or subgroup associated with the UFS should have an email list for intra-group dialogue: Working Groups, the Steering Committee, Executive Board, and others TBD
2. There will be also be the need for general Email lists for the community at large: subscriptions for general updates, program news, etc.

Types of Listserv should be defined organically, as needed. There will be a spectrum of listservs, ranging from those of broad interest to the very specific (such as “cumulus parameterizations”).

Both email and listservs will require consideration of definition (purpose), guidelines for participants, stated code of conduct rules, and will require regular maintenance and updating, and archiving as a part of implementation.

3.4 Media

There are two types of Media that must be considered: (i) the traditional "news" media, including print (newspapers, magazines, etc.), radio, television, and digital news outlets; and (ii) social media channels (e.g. Twitter, Facebook, Instagram, etc.). Most successful organizations have a small team of people whom are designated to manage one or more media feeds various feeds. NOAA is no exception, for example see

- NOAA Communications: http://www.noaa.gov/NOAA-Communications, and
- NOAA Social Media: http://www.noaa.gov/stay-connected

However the complexity, nature, and visibility of the UFS enterprise, suggests that some specific attention should be paid to the unique media challenges presented by the UFS, while fully leveraging and engaging the aforementioned existing NOAA infrastructure.

3.5 Surveys

As a means to quickly collect information from a representative group of people about a given issue, surveys can serve multiple purposes, including to ascertain the effectiveness or clarity of something, to inform requirements, or to inform the setting of priorities.

Means of conducting, collecting and analyzing survey data should be identified and made available to the UFS Community. The need for, and conduct of surveys should be determined by circumstances and the group(s) that need them. Social science support would lead to more effective surveys, partnerships within and without NOAA should be sought as practicable. It has been noted that too much "surveying" can lead to a variant of 'stakeholder fatigue,' so surveys should be employed with due deliberation and forethought of antecedent conditions.

4. Outreach Strategy

Outreach can be viewed as a subset of communication; a window to and from the many interested publics. Thus for the purposes of this document, outreach is a focused and considered effort to provide a means for publics not directly involved in the UFS efforts to learn about and engage the UFS and its working community. This outreach will aim to create greater and broader understanding, serve as a portal to additional information or offices/individuals, stimulate interest, and foster a form of "brand" identity both within and beyond the UFS working community. The tone and content of the outreach (e.g. friendly, easy to understand, professional, accurate) should reflect community values of transparency, timeliness, and accuracy and clarity of information.

More specifically, this outreach will target several key publics, including potential collaborators and users of UFS software and data products, non-technical members of the public with

interests ranging from commercial applications to curiosity about the ability to predict environmental conditions, students, teachers, and journalists. Consequently, crucial elements of this outreach are 1) information on how potential collaborators can participate in the UFS community; 2) user interface design aimed at keeping communication barriers low by conveying information in convenient, concise, and visible ways; and 3) enabling easy communication by users with members of the UFS community.

5. Implementation

5.1 Guiding Principles

There are three principles that guided the development of this plan, and are essential to its successful implementation.

The first is that entrainment of community expertise is the highest priority because it is critical for developing tools to produce the best possible forecasts. The second is easy access to information, as security considerations allow. Third, ensuring clear/transparent processes is essential. All of these principles are vital in achieving community engagement and buy-in.

5.2 The Communication Organization

The UFS is a software system with millions of lines of code, developed by thousands of people, and the products it generates will be used by virtually everyone in the U.S. There is a tremendous amount of information and communication required to support effective development and broader engagement. This Plan must be executed by a communication organization that integrates both new and existing positions.

The anticipated UFS organization includes two main parts: a Communication Core Team and a Communication Focus Group. The Communication Core Team will include an overall lead (UFS Communication & Outreach Director) and leads/owners of all communication channels (e.g. community and product websites, social media channels, mailing lists). Although this team is not expected to be entirely under line management of the overall lead, it will need to coordinate closely. Its functions will include implementing and maintaining channels of communication, coordinating the development and implementation of guidelines, acquiring content and ensuring that it is communicated through the appropriate channels.

Focus groups are routinely used by organizations to develop communication strategies and test their effectiveness. The Communication Focus Group membership will be broadly representative of stakeholders. At all stages of channel and content development, the Communication Focus Team may offer feedback, recommendations, and reviews.

These UFS teams must be coordinated with communication team in other areas of the NOAA organization and at partner organizations. This may include resources within the NOAA (NOAA level Line Office (NWS, OAR, …) level) Communications, Outreach, Press, and Web functions. The new NOAA Public Affairs person at NCWCP, who will support all NOAA orgs in that facility (NCEP, NESDIS/STAR, OAR/ARL, etc.), will be a key point of connection. There is a hire in process as of 7 September 2017.

5.3 Implementation Strategy

This implementation plan represents significant changes in the way that NOAA operates, and will need to unfold over time.

Phase 1 will establish a *foundation for communication*, by forming a communication organization, defining an identity for the UFS enterprise, and establishing a common vocabulary. Formation of a communication core team will include establishing the lead, incorporating existing roles and responsibilities, and filling critical gaps. This phase will also include forming the Communication Focus Team.

Phase 2 will involve *identifying and setting up major channels of communication*, such as a community website. It will be critical to have an owner and plan for operating and maintaining each channel. Early priorities are ensuring that WGs have effective communication channels, that broad community channels are in place, and that mission, vision, and values are communicated. Prioritizing and acquiring additional content and assessing its effectiveness will be a continuous process.

Phase 3 will implement a dynamic process for improving the quality of content and communication processes over time. This will involve collaboratively developing guidelines for content and implementing them. While there is an implied sequence in the phases, it is not strict, and tasks in different phases may overlap.The implementation plan in the next section outlines these steps in more detail.

5.4 Implementation Plan

PHASE 1: Establish a foundation for communication

These objectives support all of the goals articulated in Section 1. P2-OBJ4 explicitly addresses Goal 4.

P1- OBJ1: Define a communication core team that will implement this Plan.

- Identify existing roles and resources applicable to the Plan, including existing communication plans at NOAA. Look at communication processes in successful organizations.
- Define an organizational structure and roles and responsibilities for a UFS communication core team, taking existing roles and resources into account.

- Define the relation of this core team to individual Working Groups and the UFS-SC. ~~This~~ activity should fall under the responsibilities of reside the UFS-SC or equivalent as proposed within the Governance Plan.
- Hire or initiate new positions and implement the core team. Two new positions are anticipated: 1) A "UFS Communication and Outreach Director[3]" (full time position) person to create and manage high level content, route information, develop reports/documents, field and route issues (problems), schedule and facilitate meetings, etc. Ideally this person will have a social science background as well as scientific exposure. This person is the touch point for the Working Groups and the Steering Committee and a public face; and 2) A technical person to manage content, tools, and mechanisms, and to manage the Community Development Website (section 3.1.2). This person is envisioned as having an "IT" skill set with "science" (Meteorology) background to focus on the online community presence; and to complement and support EMC and NGGPS web people.

P1- OBJ2: Form a Communication Focus Group

- Identify key publics (graduate student, layperson, operational meteorologist, research scientist, product ser, and others).
- Identify who the “opinion leaders” are in this community, and seek to engage them. We also have to help people to see how they fit into the big picture (based on “diffusion of innovation theory.”
- Invite and implement the Communication Focus Group, creating a schedule for their participation in design and implementation efforts.

P1- OBJ3: Provide and promote a common vocabulary for the UFS community

- Put an initial master glossary on the Community (VLab) page and have it reviewed for clarity and completeness. This may start with a glossary from a System Architecture Working Group document.
- Have each working group prepare their own glossary and/or add entries to the master glossary.
- Have focus group review the glossary.

P1-OBJ4 - Establish an identity for the UFS enterprise

- Develop statements of mission, vision, and values that define the UFS identity working with the Governance WG.
- Develop an iconography for the UFS, including a logo, and develop guidelines for its use.

PHASE 2: Implement channels of communication and provide basic content

The objectives in this phase relate most directly to Goal 1, and enable Goal 3. P2-OBJ5 addresses Goal 4. (new version of goals)

[3] Proposed title.

P2-OBJ1: Establish channels to facilitate robust communication within and among all Working Groups

- Establish ownership of mailing lists. Define and communicate a process for adding and removing members. Develop a plan for periodic review of the lists (e.g. merge, remove).
- Establish a protocol for adding members addresses to any list.
- Create appropriate email master lists by WG as well as a large, composite master list.
- Establish ownership of a Master Meeting calendar. Define and communicate a process for adding and removing events. Consider an opt-in notification capacity from within the calendar to allow for event notifications.
- Create a Master Meeting Calendar easily accessed so that all phone and other meetings can be seen by all. Ensure that there is a routine and well-understood schedule for in-person WG and cross-WG meetings.
- Select a wiki space for each WG, with public and private areas. Establish ownership for these areas and policies for updates. Include in this area: points of contact and WG leads, terms of reference, meeting schedules, news.
- Develop and document process guidelines that support decision making, prioritization, and what's communicated and how. A starting point is included in Appendix C. Present these strategies to WGs.

P2-OBJ2 - Establish a Community Development Website

- Identify an owner and maintenance plan for a Community Development Website, as described in the NCEP/EMC Website Reorganization (October 3, 2016). This website will include dynamic content from contributors and its correctness may not be guaranteed. The plan should include a strategy for review and regular updates (frequency determined by the nature of a given page).
- Develop a design and mockups for the website with the participation of the Communication Focus Group in conception and iterative review.
- Develop a plan for prioritizing and assembling content on the community website, including:
    - A software directory that lists and points to further information about EMC products, model and data assimilation applications, components and infrastructure.
    - Documentation of all model and workflow components used by EMC, with links to external documents and sites where applicable.
    - Documentation of all software infrastructure used by EMC, including NEMS
    - Documentation of all requirements, standards, and protocols pertinent to development.
    - Points of entry for requesting access to computer systems, code repositories, issue trackers and other code development tools.
    - Points of entry for user support and user training.
    - Areas for collaborative discussion and analysis.

    - News and announcements.
- Implement and introduce the site to WGs and the broader community.

P2-OBJ3 - Implement channels for broad community updates and announcements

- This is to ensure that this process considers and engages the publics and community members both within and beyond NOAA.
- Early activity for this exercise: identify Public Affairs protocols, contacts, process.
- Identify an owner and develop a plan for frequency and content of posts/announcements.
- Create one or more informational email lists for interested community members.
- Develop and implement a social media strategy.
- Coordinate in-person meetings that the broader community (e.g. not WG members) may participate in, both in conjunction with scientific associations (such as AMS) and as stand-alone meetings.

P2-OBJ4 - Advance the EMC products website

- Identify an owner and maintenance plan for the EMC products website, as described in the NCEP/EMC Website Reorganization (October 3, 2016). This site is comprised of static content provided by NOAA. It is unacceptable to have out of date or incomplete information and broken links. The plan should include a strategy for regular review and ensuring that the website is current and correct.
- Engage the Communication Focus Group in iterative review.

P2-OBJ5 - Communicate the UFS identity

- Ensure that channels implement guidelines for the UFS iconography.
- Use established channels to communicate the mission, vision, and values of the UFS enterprise.

PHASE 3 Improve the quality of content and communication processes over time

The objectives in this phase relate most directly to Goal 2, and enable Goal 3. (new version of goals)

P3-OBJ1 - Collaboratively develop and implement guidelines for technical documentation

- In collaboration with the Infrastructure WG, develop a guideline document that includes the types of documents needed, required content (e.g. dates, authors), review policy, and distribution. Appendix B is a starting point for document guidelines.
- Advance the documentation inventory initiated by the NGGPS Overarching System Team (see: https://docs.google.com/spreadsheets/d/1CLT66uzJrjrsY-um0jB5hU-Gfeh3_VCIJDA4-Ibmu5s/edit#gid=0)
- Collaborate with working group leads and component developers to implement the guidelines.

P3-OBJ2 - Improve information and communication of policies related to data

- A compilation of frequently asked questions about the data availability and policy should be published and updated periodically.
- Develop a policy related to communication of information about data sharing. Items to consider are included in Appendix C.
- NGGPS/SIP should form a Data Working Group to inform and guide NGGPs on data issues. This is for consideration the UFS-SC.

P3-OBJ3 - Improve quality and communication of management records

- As discussed in Section 2.4 *Plans, Schedules, Reports and other Management Records*
- Maintain a public and current schedule of milestones related to the UFS, and supporting plans. A master Gantt chart would be very helpful in this regard.

5.5 Resources

This Plan is activity is strongly coupled to governance issues. As such, resources will be needed to support and sustain this activity. This includes human (staff), physical (publications - e.g. “glossy plans”), and virtual (web pages, wiki’s, mailing lists, etc.). These resources must be dedicated (focussed on this task) and actively and proactively managed.

5.5.1 Staffing

This plan will require that a person or persons be put in charge of UFS Communication so that the tasks can be assigned and completed and so that coordination with other aspects of governance be well managed and executed.

1. A UFS Communication and Outreach Director. Ideally this is a Federal person, with social science credentials and a scientific background.
2. A technical person to manage content, tools, and mechanisms, and to support the Community Development Website. This person may be a contractor, and would have a unique blend of communications skills and technical (IT) literacy and a science background.

5.5.2 Support

To be successful and effective, this community effort requires sustained support from NOAA. There are significant security, access, and legal challenges in opening the UFS enterprise to a broader community. Specific support needs include maintaining open source software and accessible repositories, and ensuring support for collaboration tools and environments.

APPENDICES

Appendix A. Document Guidance

This is an incomplete proposed listing of guidance principles related to communication for documents.

- All documents should contain dates, authors, and other critical metadata.
- All documents being released publicly should be reviewed at an appropriate level.
- All documents should be announced via distribution lists and posted and announced on well-organized Web fora. This also serves as an archive, and creates a historical record for the program.

Appendix B. Working Group Best Practices

This is an incomplete proposed listing of best communication practices for working groups.

- Document and communicate rules of order and decision making processes.
- Establish an email list.
- Maintain current membership lists.
- All info is public – all group-related (any WG) communications should be shared with all group members (no splinter/side conversations).
- Use report templates.

For working group meetings, all should strive for these basic guiding principles:

- Meetings are *open* to interested participants.
- Meetings should be announced as early as possible, with information on how to participate, who's involved, and published agendas; this information should be included meetings.
- Information should be sent via as many channels (mail lists, on web pages, etc.) as is practicable.
- Every formal meeting should be put in a master UFS calendar (obvious exceptions include, e.g. impromptu, informal meeting (common sense should be exercised).
- Finally while not practical in every case, meetings notes or minutes should be posted.

Appendix C. Guidance on Communication of Data-Related Information

This is an incomplete proposed listing of best practices related to communication of information about data.

- Information must be provided on data that are owned by commercial interests, are copyrighted, or are third-party data sets.
- Datasets should comply with field-specific standards.
- Data resulting from projects supported by NGGPS must be shared through publicly available data repositories with assigned digital object identifiers (DOIs)
- Guidelines regarding the size or scope of such datasets that meet this requirement need to be determined.
- Data policy should comply with the data management requirements increasingly mandated by other leveraged funders and scientific journals.
- Data should be made readily and openly available for downloading through multiple channels (websites, repositories, ftp sites).
- The data policy should specify how and when data should be released and address first right to publish issues.

Appendix D. Contributors

First Name	Last Name	Org
Heather	Archambault	OAR/CPO
Bill	Bua	UCAR/COMET
Eric	Chassignet	FSU
Hui-ya	Chuang	NWS/EMC
Adam	Clark	OAR/NSSL
Cecelia	DeLuca	ESRL/CIRES
Jimy	Dudhia	NCAR
Rocky	Dunlap	OAR/ESRL
Mike	Ek	NCEP/EMC
Kate	Howard	NCEP/EMC
Isidora	Jankov	OAR/GSD
Susan	Jasko	Social Scientist
Daryl	Kleist	NWS-EMC
Sarah	Lu	SUNY
Avichal	Mehra	NWS-EMC
Ricky	Rood	Univ. of Michigan
Tim	Schneider	NWS-STI
Hui	Shao	NCAR
Jennifer	Sprague-Hildebrand	NWS
Cristiana	Stan	GMU
Hendrik	Tolman	NWS-STI
Steve	Warren	NWS/STI
Betsy	Weatherhead	CU