RECOMMENDATIONS CONCERNING THE NOAA CLOUD STRATEGIC PLAN ACTIONS

PRESENTED TO THE NOAA SCIENCE ADVISORY BOARD
BY THE SAB DATA ARCHIVING AND ACCESS REQUIREMENTS WORKING GROUP

MARCH 15, 2021

SAB DAARWG Recommendations concerning the
NOAA Cloud Strategic Plan Actions

The Data Archiving and Access Requirements Working Group (DAARWG) of the NOAA Science Advisory Board (SAB) is grateful for the opportunity to comment on "NOAA Cloud Strategic Plan - Draft V3 1/2021" (hereafter "the Plan"). WG members were instructed to focus primarily on the Actions listed under each Objective starting on page 6, because the Goals and Objectives were previously published in the NOAA Cloud Strategy (https://nrc.noaa.gov/Portals/0/Final%20Cloud%20Strategy.pdf).

DAARWG applauds the desire to increase use of the Cloud by NOAA. The Goals and Objectives are generally good. The Actions have specific target dates and responsible parties, which is a plus.

Some of the Actions in the Plan are fundamental and should be focused on, notably:
- Action 1.1.4: Establish an exploratory environment, with guardrails, for cloud service tests and trials.
- Action 1.2.1: Establish a Community of Interest, composed of skilled cloud project managers.
- Action 1.3.2: Create an environment where "smart failures" are perceived as a positive outcome
- Action 2.4.3: Create a pilot project for a cloud development environment that moves both the processing and developing test data to the same cloud environment.

Although Goal #1 is to "Enable Innovation through Rapid Adoption of Cloud-Based Services," many of the actions in the Plan seem likely to stifle innovation and to slow adoption: Establish a policy, develop dashboards, develop a plan or a model, develop an intranet, etc. NOAA programs should be given more opportunity and encouragement to experiment and to establish pilot projects in the Cloud. There should be a way to allow people to try or prototype approaches before a refined, public-facing solution is developed. Of course there must also be monitoring of costs and appropriate IT security controls, but this Plan seems overly focused on cost and security rather than actually deriving benefit from the cloud. In general, the Plan seems bureaucratic and cautious rather than agile.

Recommendation 1: Highlight and prioritize key Actions relative to all the other actions of varying importance.

Recommendation 2: Consider how to quickly establish an exploratory environment (Action 1.1.4) as soon as possible.

There are a very large number of actions - 37 in FY2021 alone, 31 in FY2022. A prescriptive plan with many steps is the opposite of Agile.
Recommendation 3: Reduce or consolidate the number of actions.
Recommendation 4: Indicate how the plan can be adjusted during execution for greater agility.

Training is critical. Action 5.1.1 says "provide access to cloud training resources by the CSPs [Cloud Service Providers] for project managers," but this is not sufficient. Rank-and-file software engineers need training, and should be permitted to spend work hours and project funding on taking training classes. It would be helpful to recognize the varying levels of comfort with and understanding of the cloud within the target audience for training, and enable staff to customize their individual training curriculum. See, for example, recommendation #2 of the NOAA SAB DAARWG report "Preparing for a Cloudy Future" (2019).
Recommendation 5: Provide a greater emphasis on training for diverse constituents.

The current strategy seems to be looking at a transition to the cloud mainly as an IT/infrastructure alternative, but the potential of the cloud is much larger than that, including the ability to create a new paradigm for conducting research and innovation by removing barriers to experimentation. The Plan does not clearly identify some of the potential benefits of using the cloud for NOAA and users of NOAA data, such as being able to compute directly on high-volume data stored in the cloud without moving the data, or using vendor-provided managed services to reduce cost and implementation effort. Furthermore, although the Plan does mention other agencies in terms of possible lessons learned, best practices, and talent pool (which is good), there is no indication of whether NOAA will coordinate with other federal agencies that have other <u>data</u> of relevance -- in particular, co-locating NOAA, NASA, USGS data in the cloud could have huge benefits.
Recommendation 6: Include discussion of how NOAA might leverage the more unique benefits of the Cloud beyond mere infrastructure.
Recommendation 7: Indicate whether collaboration on data co-location with other agencies would be desirable and possible.

It is not clear how the impact and success of this Plan will be measured.
Recommendation 8: Indicate what constitutes progress or success for NOAA in its Cloud adoption.

Additional comments:
- There is no mention of using the lessons learned through the existing Big Data Project (BDP). This could be used as an opportunity to prototype solutions or test new approaches for NOAA to operate in the cloud.
- NOAA should explicitly seek to leverage existing open-source solutions. For example, Action 1.1.1 says to "develop a ticketing system" yet existing ticketing software (e.g., Jira) could doubtless be used instead of developing a new one.
- Objective 2.1 says "Develop a NOAA cloud strategy implementation plan" -- is this document not the Implementation Plan?
- Several actions are duplicated (e.g., both under 5.2 are "cross-referenced" to others). Suggest streamlining by only mentioning each once. If necessary, modify Objectives to avoid overlapping scope.