

NOAA
SCIENCE
ADVISORY
BOARD

PUBLIC PRIVATE PARTNERSHIPS (P3) UPDATE

November 30, 2022

Background

- We are developing Public-Private Partnerships recommendations around non-monetary models
 - Traditional P3s focus on financing, such as road construction where a private partner assumes risk of cost overruns in exchange for the revenue stream from tolls
- We identified six types of non-monetary P3 applications available to NOAA
- We heard from a number of speakers and have started developing thoughts that will form the basis of our report
 - We want to share three of those thoughts today to get your feedback



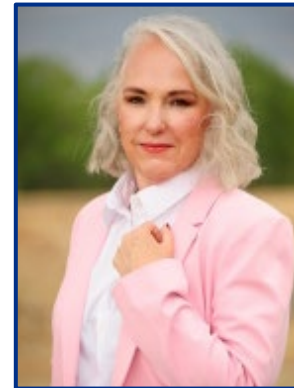
The Subcommittee



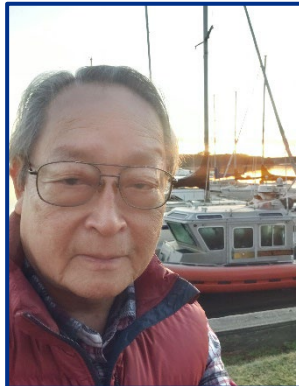
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Non-monetary P3 Models

Shared technology development

Transition of technologies NOAA develops into routine application

Clarifying NOAA's role, empowering private investors to fill available niches

Collaborative data collection

Engagement in public decision processes

Workforce development



Initial Recommendations

Clarify future NOAA directions so investors understand where untapped opportunities exist

Nurture external research or technology development beyond the initial investment phase

Create partnerships to standardize new technologies



Clarify Future NOAA Directions

- The National Academy of Sciences codified the concept of “swim lanes”
 - Consistent adherence to roles provides comfort for potential investors about niches being available (or not)
- NOAA has done well with swim lanes, particularly in the weather enterprise
 - Allowed NOAA to focus on foundational services (observations, models, warnings)
 - Resulted in private investment to build an array of specialized products that make use of NOAA data
- However, there is room for improvement
 - Most of the shortcoming is better defining the future
 - What is NOAA planning to do?
 - Hearing what industry is considering and providing confirmation NOAA is not planning to operate in that space



NOAA Directions Recommendations

- NOAA's should expand role identification beyond weather
 - Climate services, ocean stewardship, coastal management, etc.
- Role identification should not be adhered to with rigidity because technologies, capabilities and needs of end users evolve
 - A more successful approach is to share future plans with the private sector
- There are several avenues for such communication
 - Quarterly public meeting to discuss future plans
 - Annual formal statements of plans
 - Briefings at professional society meetings





Potential Expansion: Climate Services

- The need for climate services is expanding rapidly on a global scale
 - NOAA currently provides some services through its climate toolbox
 - Unlikely that NOAA will be able to respond to all commercial or public needs
- There are opportunities for NOAA to define the services it will provide
 - Will NOAA adapt to higher resolution information?
 - Will NOAA provide detailed block-by-block heat maps for urban or agricultural fields, which are currently being contracted for from academic and private sector sources?
 - Will NOAA provide climate information for areas outside the US, particularly relevant for US entities with global needs?
 - What is the chance that an installation will be flooded more frequently?



Nurture Initial Investments

- NOAA has a number of collaborative relationships to help with the early stages of technology development
 - MOUs, CRADAs, SBIR
- However, those investments don't typically transcend the "Valley of death" for technology adoption
 - NOAA provides resources to get ideas started, but little support for identifying the gems among these investments and helping them shine
- There are actions NOAA can take to provide greater follow-through for innovative technology collaboration





Nurture Initial Investments Recommendations

- Establish an agency focal point (e.g. a champion) for new collaborative technologies
 - That person becomes an advocate for inclusion of their technology in NOAA programs
 - Helps to create shared demonstration projects, hopefully using NOAA staff and facilities
- Hold periodic workshops where grantees present their progress to high-level program staff and others (internal and external)
 - Gives developer (and funders) a feel for whether NOAA sees value in their technology
 - Leads to a conversation about next steps if the answer is yes
- Create sharing opportunities where external investors can learn about early-stage technology development



Nurture Initial Investments Example

- Aviation weather observing systems are needed to support real time safety of flight, emergency operations, commerce and response to climate disasters
- Private investment and development has resulted in several systems fielded internationally and used for government and commercial operations worldwide
- Some private services use novel instruments, algorithms, and services, including augmentations with artificial intelligence, with minimal footprints, equipment installation, training or servicing
 - Capabilities far beyond USG approved weather systems and without human intervention, maintenance/calibration, or observations
 - Intended to reduce flight crew workload and increasing their safety, opening aviation to undersupported communities and locations
 - In flight dynamically adjusted radio messages advise of air traffic and which runways to use
- Essentially functions as an unattended control tower for airports with hundreds of based aircraft
 - However, USG impediments have caused US market exit (USG blockages preclude civil use for IFR, emergency med flights to 4600+ public use airports and 16,000+ private airfields; federal personnel for maintenance; denial of previous USG approvals)
- Recommendations
 - Removal of USG impediments
 - Reduction of large scale technical “Standards” to “mini-Standards” with functional performance specifications with flexibility for enhancements will expand commercial opportunities





Partnerships to Standardize Technology

- Managers are more likely to adopt new technologies or processes after there is scientific consensus about their reliability
 - Part of that is developing standard operating procedures (SOPs) to consistently employ the approach
 - Another part is an accreditation program to ensure the SOPs are being employed correctly
- Much of that standardization occurs outside of NOAA
 - Other federal agencies (EPA has a technology certification program; NIST provides standards)
 - States have their own standardization, accreditation and adoption processes
 - Industry typically relies on these standards for manufacture and development of supplies
- NOAA does a good job of coordinating their research with other federal agencies through National Oceanographic Partnership Program, but can do a better job with other entities
 - Ex. States, Academia, Industry, Certification bodies



Technology Standardization Recommendations

- Create avenues of communication with other entities that will help memorialize technologies
 - Can take the form of workshops to co-create SOPs
- Focus on performance specifications and desired outcomes, rather than just technical details
 - Conundrum: Pushing for SOPs too early can stifle development, but failing to standardize suppresses adoption
 - Key is distinguishing aspects that require standardization for the field to move forward
- Develop a programmatic approach to hand-offs
 - NOAA should be the trusted partner, the facilitator rather than the doer
 - Need to develop partnerships with entities like States that will lead to standardization and adoption



A photograph of several seals on a green boat, with a forested shoreline in the background. The title 'Environmental DNA as a Success Story' is overlaid in large blue font.

Environmental DNA as a Success Story

- NOAA is making large investments in eDNA
 - Tracking biota by measuring the genetic material they slough into the environment
- The technology has matured to the point of scientific credibility, but there are many facets which have not yet been standardized
- NOAA initiated a highly successful workshop to move the field forward
 - Identified the trigger points needed to achieve adoption by States
 - Participation by 8 federal agencies, six states, academia and industry
 - Formed working groups to determine how (and what) to standardize
- Foundations have expressed interest in supporting studies that lead to standardization
 - Plan is to hold a follow-up workshop in two years to hear the outcomes





Next Steps

- The Committee will conduct further interviews to verify and flesh out these ideas over the next two months
 - Pending your feedback today
- We will transition from fact-finding to writing the report in February
- Anticipate a draft report for SAB consideration at our spring meeting





Questions For You

- Are we headed in the right direction?
 - Do these recommendations ring true?
 - Are there critical points we are missing?
- Are there people we should be talking with to help us flesh these ideas out further?
 - Do you know of particularly good (or bad) examples?
- For NOAA leadership: Will the things we are planning to produce be helpful?
 - Any specific aspects of these recommendations you would like us to address?

