

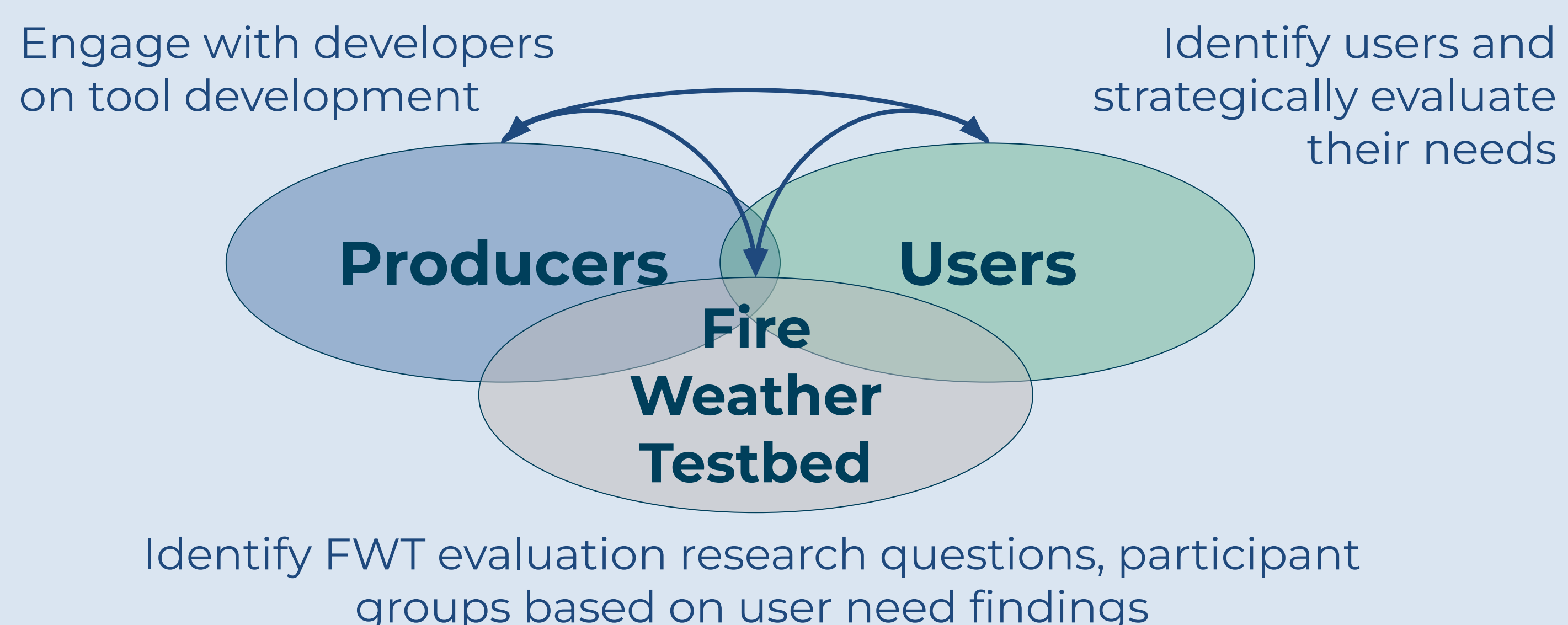
What is a NOAA Testbed?

Motivated by operational questions that necessitate research, NOAA Testbeds are collaborative spaces where researchers, forecasters, and other users work together to evaluate weather products and services. In testbed environments, collaborators may integrate new observing systems into models, test and streamline data assimilation methods, test model improvements, and strategize developments for the benefit of the public and NOAA's partners. **Testbeds help transition research into operations and vice versa.**

Fire Weather Testbed UNAT Objectives

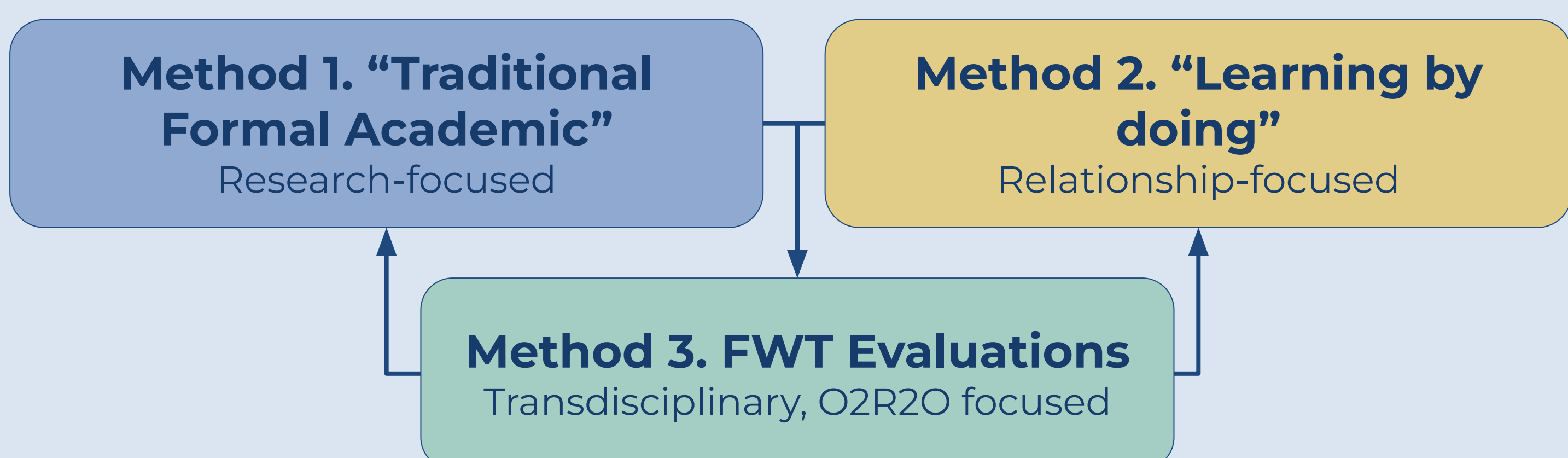
Skillful forecasts and effective communication of weather information supports safer, more effective management of wildland fire. NOAA's goals include developing tools that minimize negative impacts of wildfire on life and property while promoting the reintroduction of beneficial fire to fire-adapted ecosystems.

By leveraging existing and new technology, modeling capabilities, and communication techniques, **the Fire Weather Testbed will accelerate the operationalization and provision of improved fire weather information through an iterative process** of needs assessment and product evaluation.



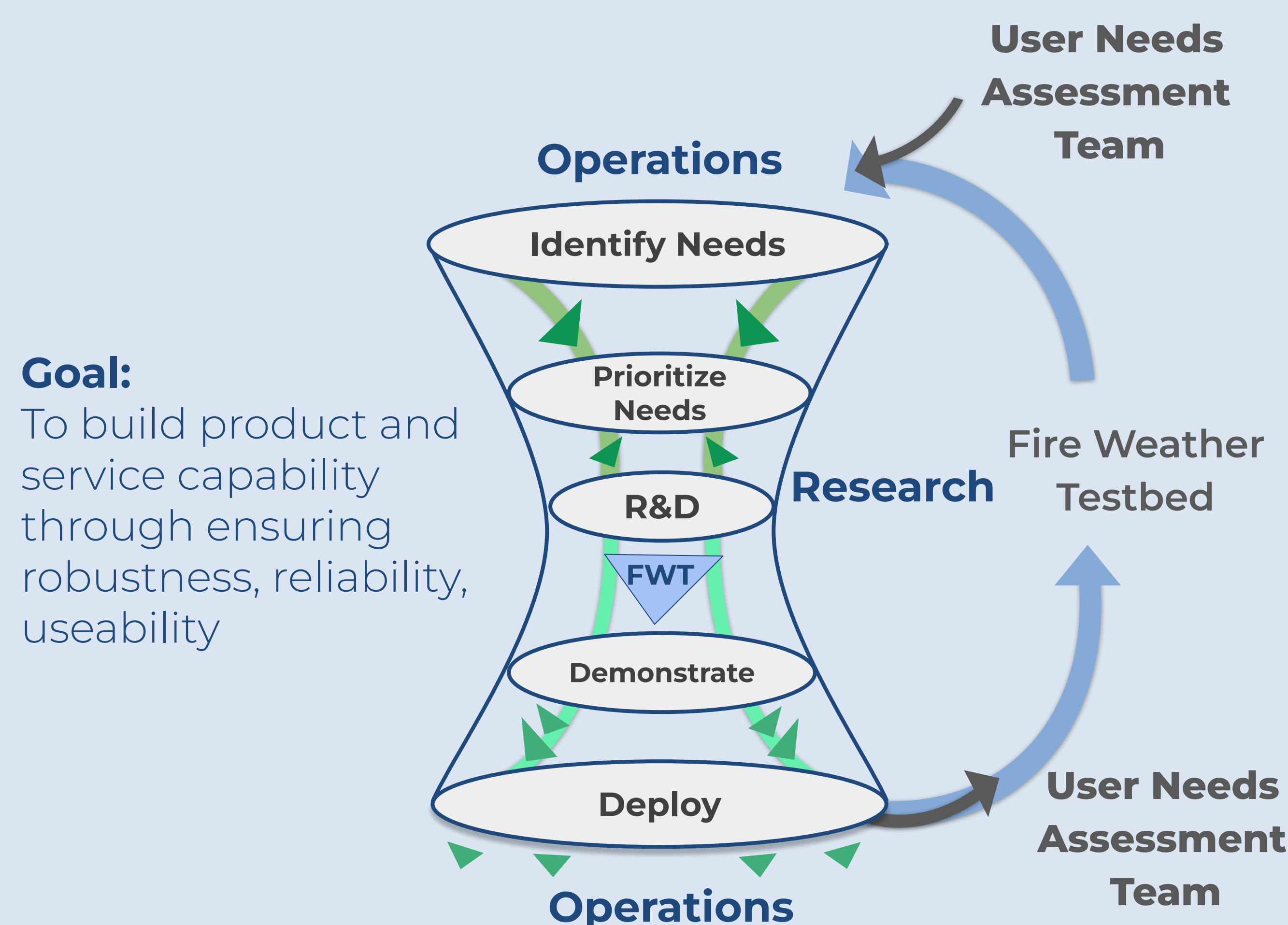
Methodological Framework

UNAT is developing a methodology to systematically define, characterize, prioritize, and communicate the total spectrum of fire weather user needs. The problems and prospects of wildland fire transcend political boundaries. The FWT UNAT **intends to engage and support all partners and communities** involved in wildland fire, from community to federal levels using the following framework:



Operations-to-Research-to-Operations

Fire Weather Testbed research and evaluation activities **blend** social and behavioral science with physical science to continuously and iteratively **identify** the weather-related information **needs** across and between wildland fire communities and **evaluate** the capability of new and existing products and services to **meet** these needs.



First Virtual FWT Evaluation

The FWT performed its first virtual evaluation of the NSSL **Warn-on-Forecast Smoke (WoFS-Smoke)** product. Seven NWS IMETs convened with WoFS-Smoke developers for training and evaluation activities of **fire weather scenarios** (before, during, and after fire). Participants engaged in a **focus group discussion** to provide developers with insights on product improvement and how well the product met user needs (Hatchett et al., 2024).

First In-Person FWT Evaluation

The first in-person FWT evaluation coalesced NWS fire weather meteorologists and state fire management partners to evaluate the use and utility of i) the Next Generation Fire System, an **automated satellite-based fire detection** capability developed by NOAA's National Environmental Satellite, Data, and Information Service using text message-based hotspot notifications disseminated by NWS meteorologists to partners, ii) the **Integrated Warning Team (IWT) approach** to tactical fire response and iii) the extended IWT approach to collaboratively issuing **Fire Warnings** between NWS and partners.

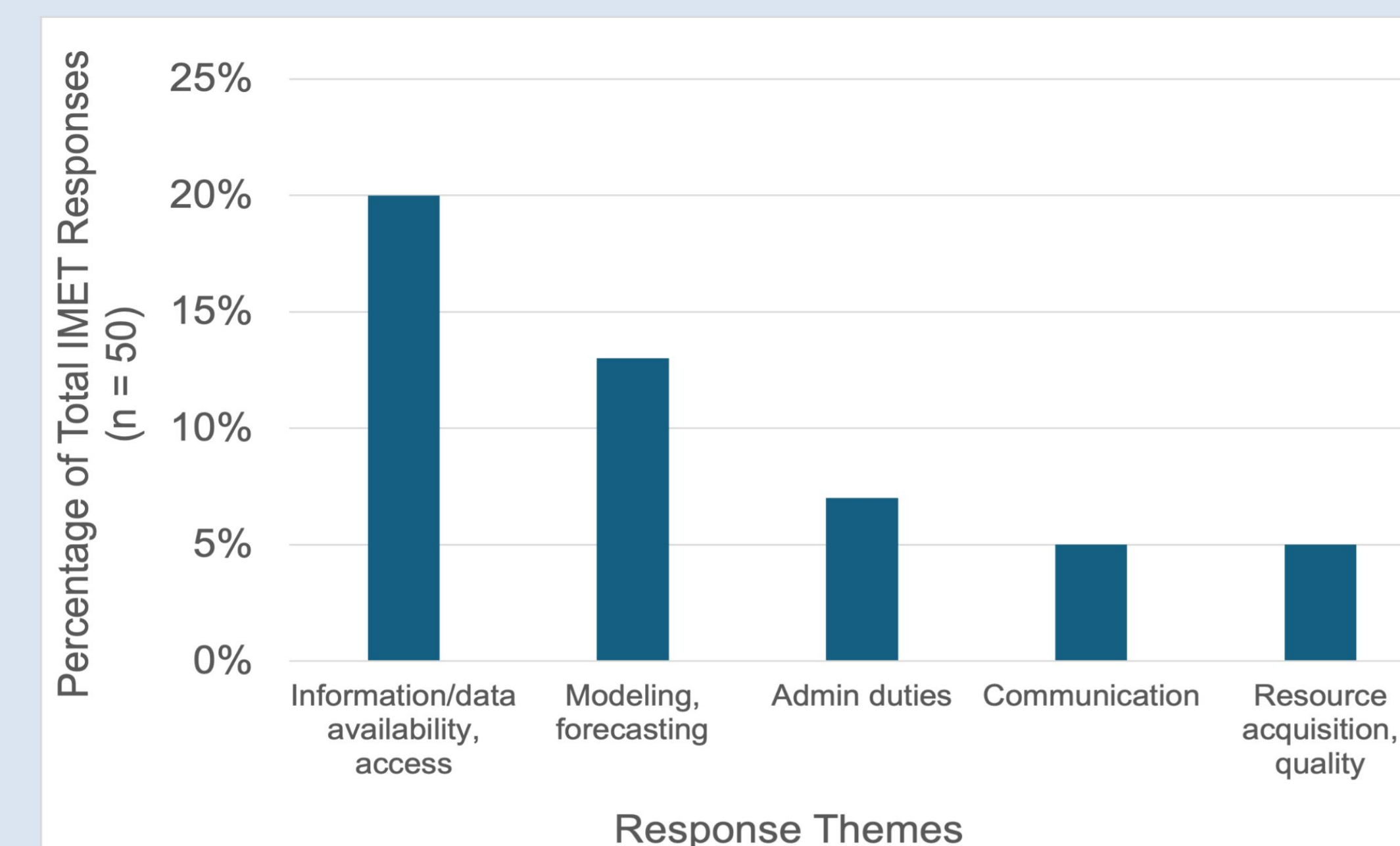


User Needs Assessment: Incident Meteorologists

An example of how the FWT User Needs Assessment Team identifies operational end-user needs includes our ongoing assessment of the **National Weather Service (NWS) Incident Meteorologists (IMETs)**. Since 1928, IMETs have provided on-site weather forecasting expertise to **support frontline wildland fire management**. Today, IMETs commonly integrate into **Incident Management Teams (IMT)**, responding to hazardous incidents—primarily wildland fires (Malingowski et al., 2022).

Currently, there are **124 active IMETs** (88 certified and 36 trainees). IMET trainees attend the annual **Continuation of Excellence Exercise (IMET CEE)** meeting held in Boise, ID to participate in interactive training exercises with certified IMETs to cover their broad job duties: from learning about the latest forecasting models and mountain meteorology to practicing public speaking, using microphones and radios, and fireline safety (Heffernan, 2017).

The FWT UNAT was invited to attend the IMET CEE training in Spring 2024 to observe IMET job requirements and understand their needs. We collected qualitative data regarding the expressed needs of IMETs by asking them them: **"I wish there was a better way to _____"**.



User Needs Assessment: Tribal Climate Health Project

In partnership with the Pala Band of Mission Indians Tribal Climate Health Project (TCHP), the UNAT is conducting interviews with the TCHP Tribal Advisors Board to better understand the climate and weather data and information needs of California-based Tribes.

Future Directions

Future efforts include: (i) establishing **Fire Weather User Needs working groups/steering committees** for primary fire cycle components (before, during, after fire); (ii) producing report-backs in a variety of modalities (e.g., publications, presentations, 2-page briefs); (iii) engaging in field visits, ride alongs to "learn while doing" for observational data collection.

Citations

Malingowski, J., Carlson, C., & Jacobs, L. K. (2022). Embedding Meteorologists and Hydrologists into Emergency Operations. *Homeland Security Affairs: Pracademic Affairs* 2 (1) www.hsaj.org/articles/21125.

Heffernan, R. (2017). Who does what: the roles of scientists in wildland fire weather. *Fire Management Today*, 6.

Hatchett, Benjamin J. et al. (2024). Fire Weather Testbed Evaluation #001: The Warn-on-Forecast System for Smoke. <https://doi.org/10.25923/ind0m-4j95>