

NWS Partner Engagement Event

Sunday, January 12, 2025





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Agenda



Session 1: Weather.gov 2.0 – *When Every Word and Every Minute Matters*



Session 2: Improving api.weather.gov – *A Collaborative Vision*



Session 3: NWS Transformation – *IT Re-Architecture*





Session 1

Weather.gov 2.0

When Every Word and Every Minute Matters



Background on Weather.gov 2.0

Effort to streamline and improve Weather.gov began in 2022

External experts from GSA's 18F began to assist in 2023

Audience

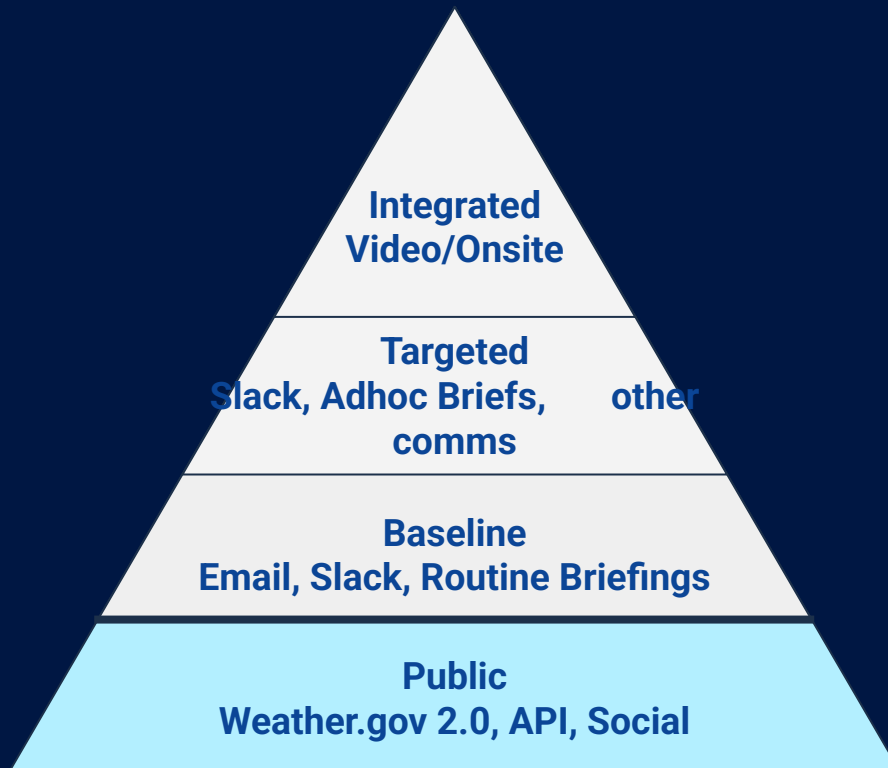
- *Prioritizing the most common needs of the public and partners first.*

Design

- *Many pages on Weather.gov were designed by meteorologists.*
- *Now led by experts in Product Design, Content Strategy, and User Research.*

Weather.gov 2.0 and its Place in NWS Services

We're focusing Weather.gov 2.0 on serving public and partner "general" decision making needs.





Vision, Values, and Methods for Weather.gov 2.0



Anyone can understand the impact of impending weather and actions to take, especially when **every word and every minute matters**.



- *User-centric vs. organization-centric*
- *Accessibility*
- *Local expertise*
- *Discover, prototype, build, and iterate*
- *Decisions made at the lowest level*



Milestones for Weather.gov 2.0

-  **Minimum Viable Product (MVP) - May 2024**
A simple user experience, functioning architecture, basic governance, user validation
-  **Initial operating capability (IOC) - Oct 2025**
The product has sufficient functionality, data, and content to reliably demonstrate its value and purpose, while another product is the primary source. More feedback/better product.
-  **Full Operating Capability (FOC) - Oct 2026**
The product has a complete set of functionality, data, and content to reliably take over as the primary source.

What excites you about Weather.gov 2.0?

 30

Refreshed look and scalability

 20  0



More user friendly, scalability and adaptability

 13  0



Improved user experience

 9  0



What concerns you about Weather.gov 2.0?

Harder to get to experimental features/special interest information

 7  1



Why will it take so long?

 5  0



Bureaucracy getting in way of innovation

 4  0





Session 2

Improving api.weather.gov – *a collaborative vision*





Agenda



1. What exists today



2. Problems to solve



3. A vision for the future



4. Our roadmap





Agenda



1. What exists today

- Who uses the API?
- What do you use it for?



2. Problems to solve

- What problem should we solve?



3. A vision for the future

- How should we define success?



4. Our roadmap

- What is your top priority?





Strong opinions. Loosely held.





What exists today



What exists today



api.weather.gov provides the most common and critical weather information the enterprise needs.



- Alerts - watches, warnings, advisories
- Gridpoint forecasts
- Station observations
- Zone observations / forecasts
- WFO text products
- Aviation-specific products
- Station Terminal Aerodrome Forecasts (TAF)
- Radar status





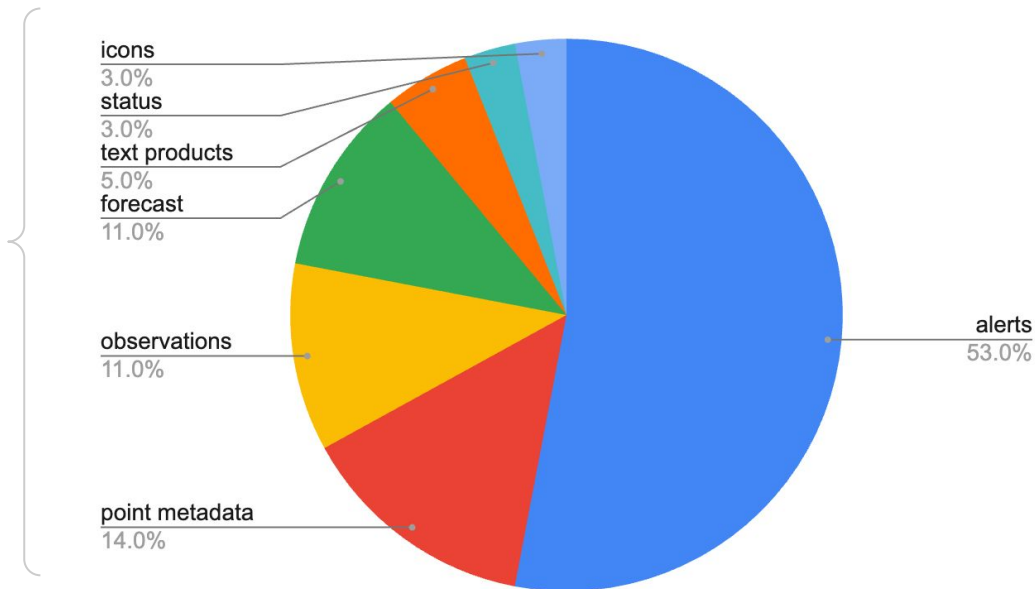
What exists today

The API is an operational service.



6.9B

hits in Dec '24





What exists today



We spoke to an initial group of users to get a sense of what, why, how they use the API.



13 user interviews

- 3 federal government
- 1 local government
- 3 national, private industry
- 1 national, non-profit
- 5 individual developers



Recruitment method

- Existing relationships of known users of the api services
- Active contributors in the Github repo





The weather enterprise already relies on it for their critical, production systems.



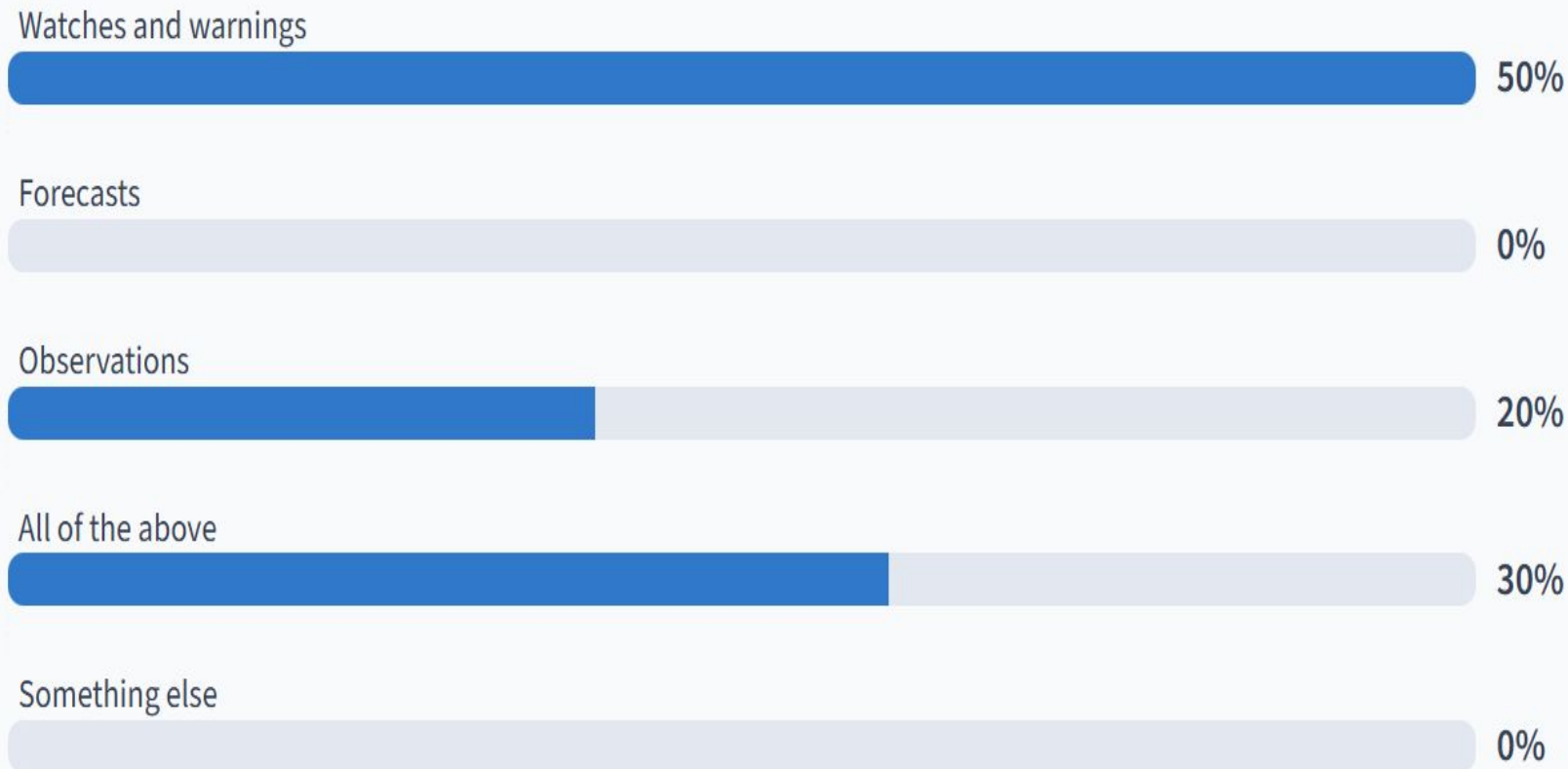
- **Major apps and platforms** send alert notifications to millions of users via their apps or site
- **Data distributors** collect and process alerts for energy, mining, and freight industries for life-or-death decisions about their employees' safety.
- **An energy company** uses alert data to rapidly charge home batteries in preparation for local storms
- **A wind farm** feathers their turbines during high wind gusts



Who uses the API?



What datasets do you currently use from the API?





Problems to solve



Problems to solve

The developer experience



Which service should I use?

Is the service and data reliable and timely?

When there's a change how will I know?

When I have an issue, will it get fixed?

When I have a request, will it get prioritized?





Problems to solve

The developer experience



Which service should I use?

Is the service and data reliable and timely?

When there's a change how will I know?

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When I have a request, will it get prioritized?

There are many NWS public facing services and it's not obvious which is best.





Problems to solve



The developer experience



Which service should I use?

Is the service and data reliable and timely?

When there's a change how will I know?

When I have an issue, will it get fixed?

When I have a request, will it get prioritized?

Data isn't clear or consistent.





Problems to solve



The developer experience



Which service should I use?

Is the service and data reliable and timely?

When there's a change how will I know?

When I have an issue, will it get fixed?

When I have a request, will it get prioritized?

It's hard to stay on top of changes.





Problems to solve



The developer experience



Which service should I use?

Is the service and data reliable and timely?

When there's a change how will I know?

When I have an issue, will it get fixed?

When I have a request, will it get prioritized?

Fixes are slow.

There is a growing list of improvements that must, should, could be made.





Problem statement



The public-facing API services put a significant onus on customers to understand the data it provides and manage changes to it. Challenges and confusion around the data often come up, leaving customers scrambling to resolve and ultimately jeopardizing their own performance or reputation.



This has led customers to question its maturity and reliability as they serve millions of people with life and property-saving information on behalf of NWS.





Problems to solve



“We have to make a lot of decisions ourselves and it puts us in a difficult situation. For example, if I’m under a tornado warning and the alert is cancelled and reissued right away, couldn't we just hide the cancelled alert behind the reissued and active ones. That’s official information from the NWS, so we display everything and it confuses our users. If NWS published best practices then we can say we’re adhering to best practices and we don’t have to play a guessing game.



Our app is free and we want to help people in low income, but when our users have a bad experience with our app they delete it because **they think we don’t know what they’re doing, but we *do* know what we’re doing** and getting that through is hard.”



– Program Manager,
National non-profit



Using 1 word, what problem do you think we should solve?





Improving api.weather.gov



A vision for the future





A vision for the future



Any developer can rely on the authority and breadth of the National Weather Service, especially when every millisecond matters.





A vision for the future

Our near-term strategy is simple – improve the existing services.





A vision for the future



Our near-term strategy is simple – improve the existing services.



We will

- Prioritize users that build or manage mission-aligned services
- Clarify how to use the API
- Monitor how it's used and operating
- Improve governance and procedures for API development and use





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We will

- Prioritize users that build or manage mission-aligned services
- Clarify how to use the API
- Monitor how it's used and operating
- Improve governance and procedures for API development and use



In order to

- Decrease time to production
- Increase usage of *all* services
- Increase reliability (availability, response time, error rate)
- Earn trust





A vision for the future

Then monitor usage and improvements to provoke our long-term strategy.





A vision for the future



Then monitor usage and improvements to provoke our long-term strategy.



We will **not** (yet)



- Prioritize machine learning applications and data brokers that require extensive data sets
- Provide access to all NWS data
- Significantly change which data sources to use, how that data is ingested and processed, and where it's hosted





Then monitor usage and improvements to provoke our long-term strategy.



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- Prioritize machine learning applications and data brokers that require extensive data sets
- Provide access to all NWS data
- Significantly change which data sources to use, how that data is ingested and processed, and where it's hosted



In order to

- Optimize for speed
- Increase usage of all data



Using 1 word, how would you define success for this initiative?





Improving api.weather.gov



Our roadmap





Our roadmap



We're leveraging the Weather.gov 2.0 milestones to provoke our own roadmap.



Nov 2024

Oct 2025

Oct 2026



...



Weather.gov 2.0
IOC rollout

Weather.gov 2.0
FOC rollout

Continuous
improvement





Must (by October 2025)

- Improve reliability and ease of use of the API services
- Reduce confusion and breaking changes
- Increase visibility into performance and errors
- Increase development velocity
- Add missing, high-priority data





Should (by October 2026)

- Decrease latency (especially for alerts)
- Add missing, medium-priority data
- Support Spanish translations
- Turn off redundant services





Could (after October 2026)

- Integrate with a centralized data source
- Improve access to model or user-defined data
- Support additional languages



What is your top priority?

Take the best of private sector and NWS to put forth a much better product

 8  0



Reliability and ease of use

 8  0



One-stop shop to get data

 4  0





T-hanks!





Session 3

NWS Transformation

IT Re-Architecture





Our goals today.

Inform.

Solicit insight and ideas.

Who are you?

Private Weather Enterprise Partner



Cloud Service Provider



Technology Support Partner



Government



Other



Objective of NWS IT Re-architecture

Improve infrastructure to be resilient and reliable

Implement cloud-based solutions for NWS data and applications

Improve access to all NWS data

Accelerate infusion of new science and technology into operations and DSS

For more information:

Session 13A Environmental Information Processing Technologies

Thursday 8:30 – 10:00 AM in Room 352 (Convention Center)

Which objective appeals to you the most

Improve infrastructure to be resilient and reliable

39%

Implement cloud-based solutions for NWS data and applications

34%

Improve access to all NWS data

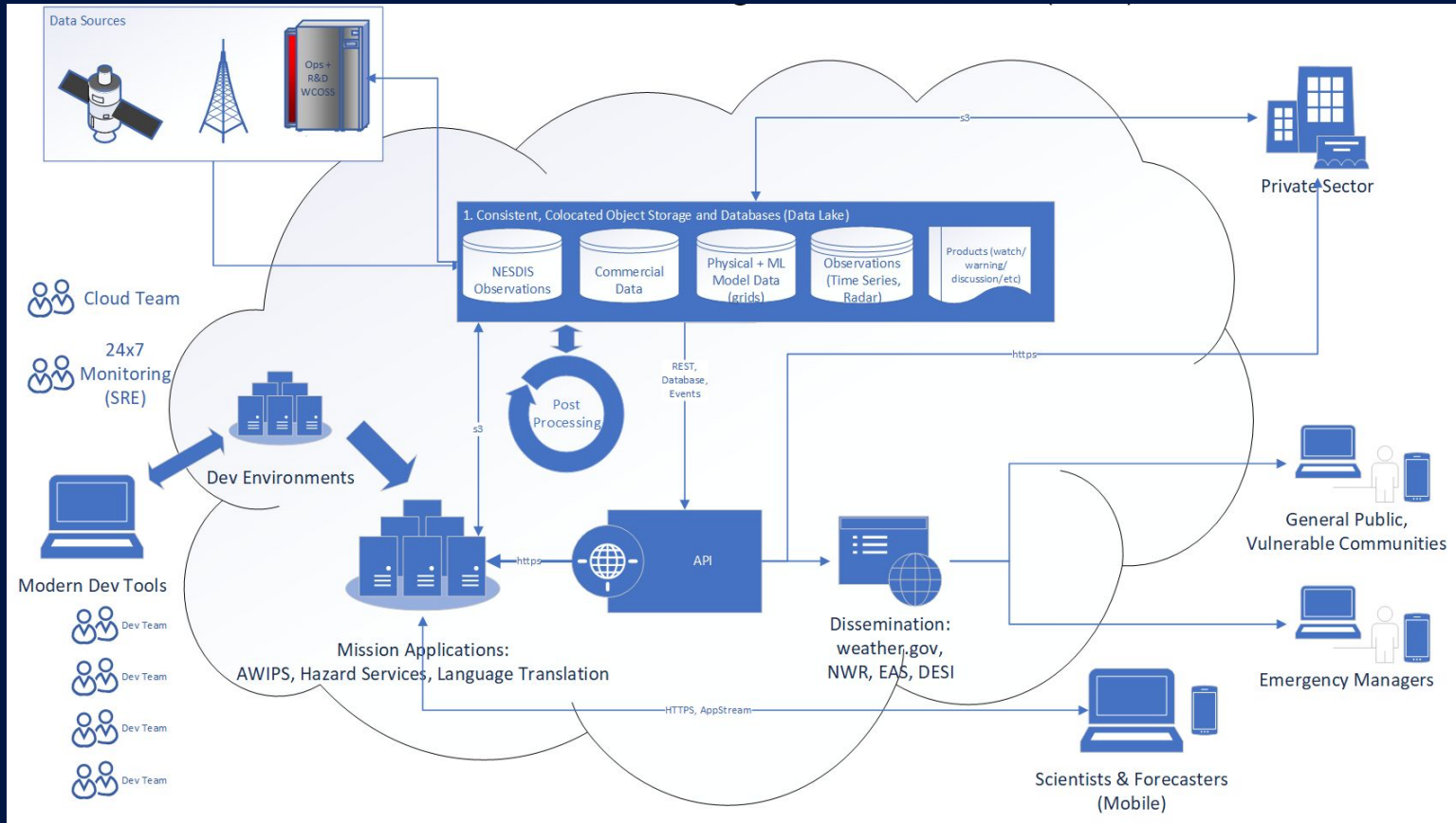
5%

Accelerate infusion of new science and technology into operations and DSS

22%



NWS Notional Target 2034 Architecture



How are you feeling about this future architecture?

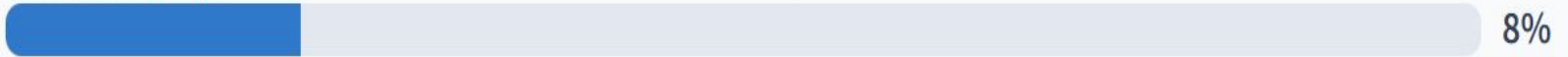
1 - Not at all excited



2 - Meh



3 - Sounds okay



4 - I'm very interested



5 - Super excited!



Which aspect of target architecture excites you the most?

Data centralization

 1  0



Data Lake & API

 1  0



Replacing antiquated systems

 0  0



How can we get there?






PHASE 0: Organize for Transformation

PHASE 1: Deliver IT Transformation

PHASE 2: Optimize IT Transformation

PHASE 3: Leverage Future Technology

 Objective:	<p>Align transformational IT initiatives and accelerate in flight activities; enhance workforce and optimize existing systems which pave the way future developments</p>	<p>Establish beachhead for new IT architecture</p>	<p>Exploit future IT architecture delivering high performance and reliability</p>	<p>Accelerate future science and technological advances</p>
 Deliverables:	<p>Enhanced IT workforce with modern dev/ops tools, IT Governance, Network, and endpoint roadmap</p>	<p>Data lake, network, dev/ops, cloud AWIPS, and probabilistic tools, mission application space, JEDI, Non-physics (AI/ML) operational models</p>	<p>Full migration of dissemination applications into cloud, zero trust, identity management, integrated enterprise monitoring</p>	<p>RADAR next, Future modeling suite, Rapid DA</p>
 Enables:	<p>Robust, responsive infrastructure tailored to future integrations and improvements created by modernized workforce</p>	<p>Full real-time remote access for NWS Environmental Forecast Centers to probabilistic tools, all NWS expertise for IDSS and eliminates local data centers</p>	<p>Fully distributed production of forecasts and warning and eliminates Boulder and College Park Data Centers (reduce legacy system dependencies)</p>	<p>Reduces barriers when collaborating with partner and other leading agencies in the government and worldwide</p>

Completed by FY26

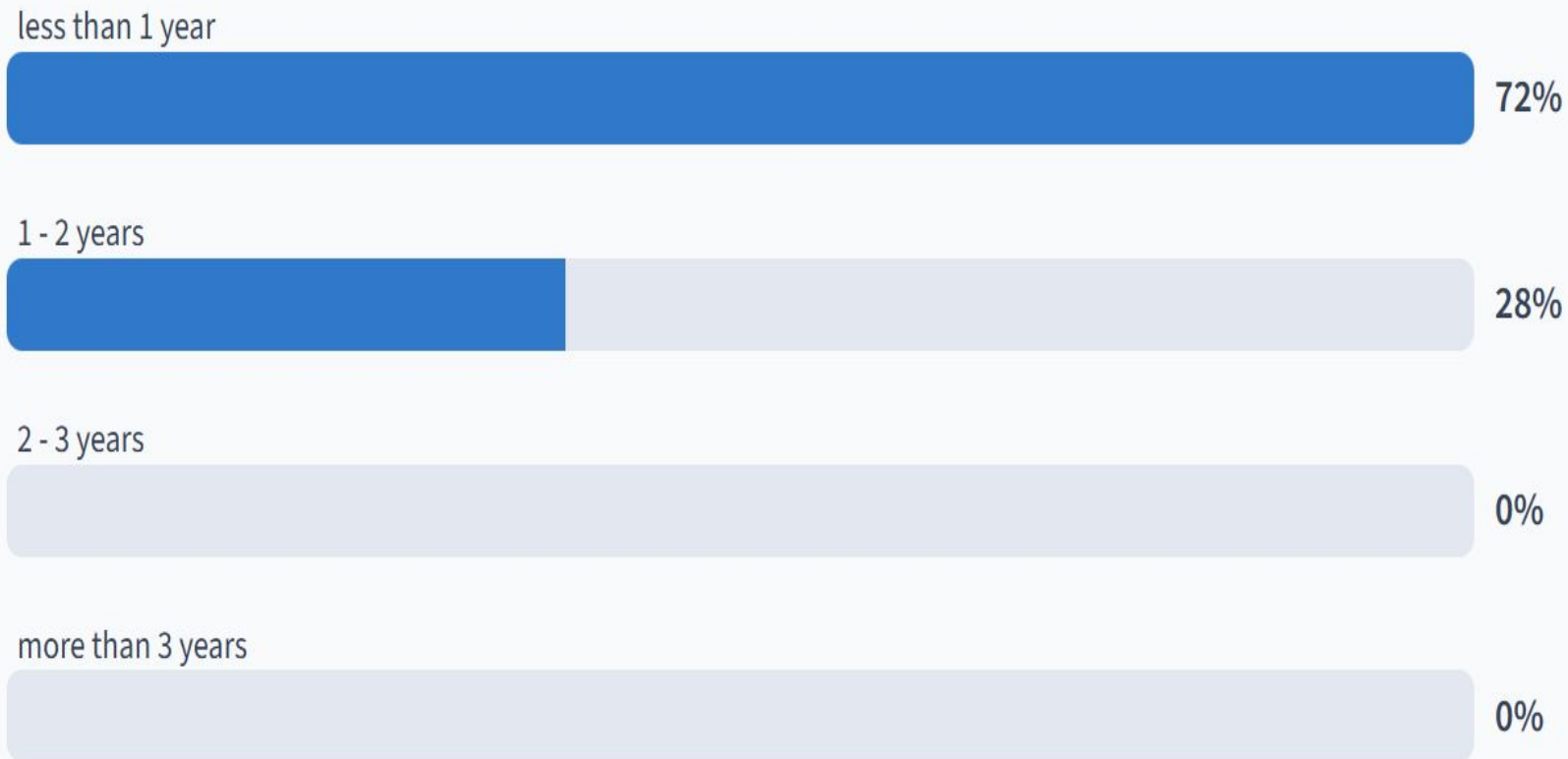
Completed by FY28

Completed by FY30

Beyond FY30



How much time would you need to adapt to the new architecture?



Are there any problems we need to fix right away?

Reliability

 1  0



Always having critical files / data available

 1  0



Performance

 1  0



Cloud Migration Goals

Goal 1: People as Priority Always!

- **Implement** a Cloud Computing focused training and development plans.
- **Build** a collaborative, one-NWS IT community
- **Recruit and Retain** a diverse and highly skilled workforce

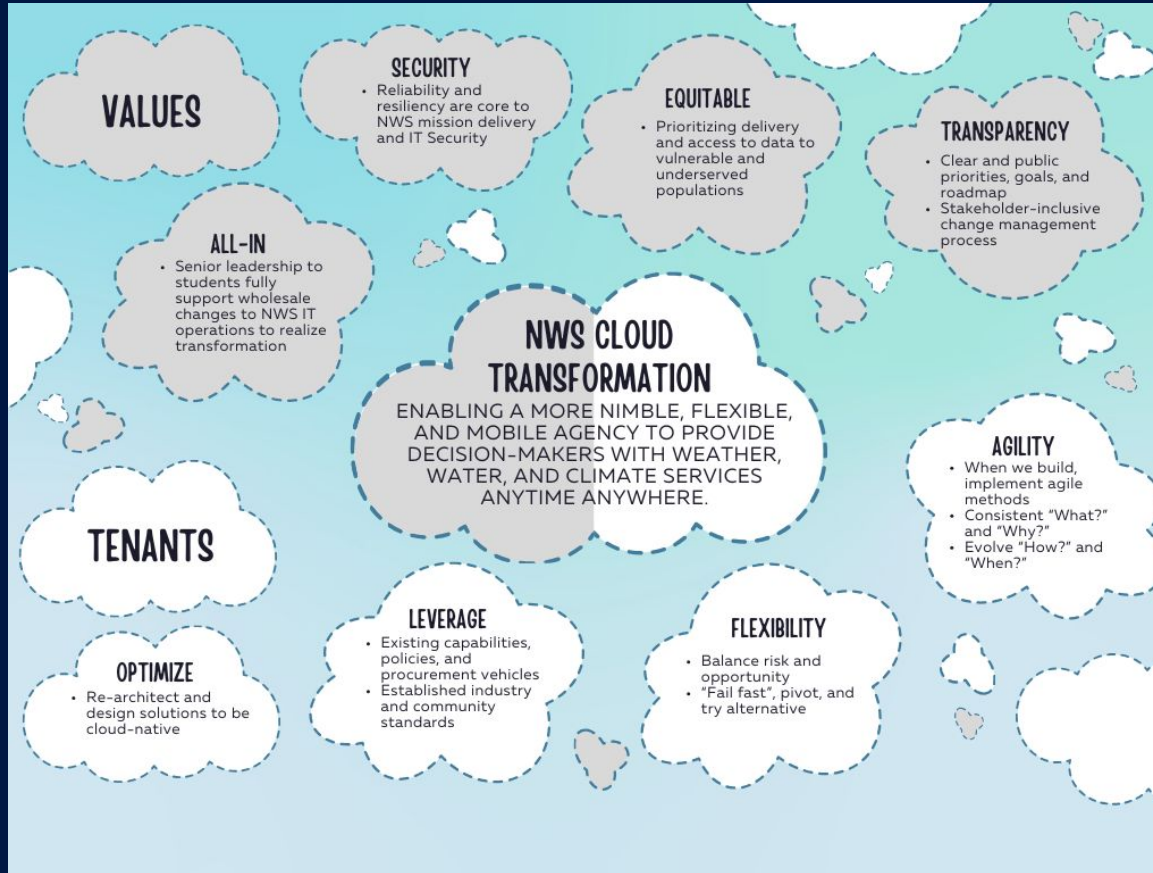
Goal 2: Build and Support Resilient and Reliable IT Solutions- 24x7x365!

- **Modernize & Simplify**
- **Standardize & Consolidate**
- **Design & Launch** NWS Data Mesh

Goal 3: Transform Governance to support rapidly changing technology - Today, 6 months from now to 2030, and beyond!

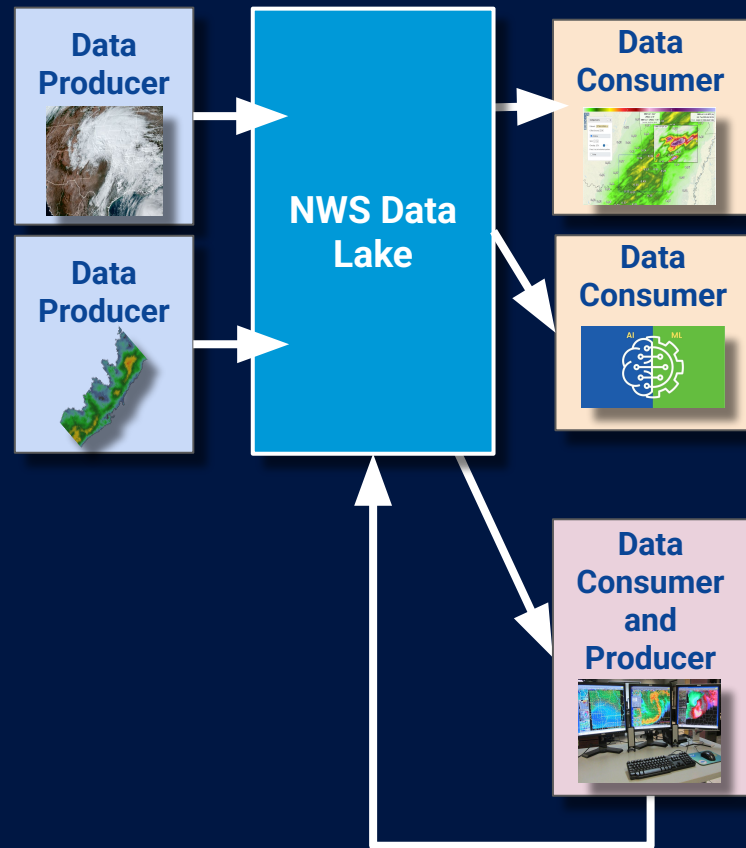
- **Build** streamlined cloud governance from the beginning
- **Define and Mandate** standard development tools and processes
- **Establish Product Owner** led research to development to operations

Cloud Migration Values & Tenets



What is a data lake/mesh?

- **Repository for Data**
- **Scalable**
- **Secure**
- **Cost effective storage of data in the Cloud**
- **Management and governance of data**
- **Notification methods of data arrival**
- **Supports transformation of data**
- **Searchable catalog**
- **Analytics**
- **Democratization of data**





Let's talk about what we've heard.