

# NESDIS User Engagement

NOCCG Seminar  
22 June 2022

**NOAA**  
National Environmental Satellite,  
Data, and Information Service

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NESDIS User Engagement/ Pathfinder Initiative Lead

# Overview

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- ❑ NESDIS User Engagement redefined
- ❑ UE Efforts working across NESDIS UE supporting NOAA's Service Delivery Framework and the User Engagement Policy
  - ❑ UE and Mission Planning
  - ❑ Pathfinder Initiative and Value Studies
  - ❑ NESDIS User Engagement Council (UEC)
  - ❑ Translation and Traceability
- ❑ Short-term opportunities and actions
- ❑ Opportunity for discussion

# OSAAP and UE

*Key activities in FY22-23 to support enterprise user engagement*



1. **Develop baseline information gathering (curation) and assessment for five areas**



1. **Conduct an internal assessment of decision-makers' needs within NESDIS/NOAA**



1. **Gather business needs for an all-NESDIS user information collection and handling system**



1. **Stand up liaisons/User Engagement Council**

1. **Establish an integrated structure for user engagement with products and services in the area of wildfire as a test case**

# Coordinating User Engagement

User engagement is a discipline that helps us to learn about the needs, challenges, and working environment of those we serve so that we can provide the most useful, usable and used products and services



- UEC and UE Guidance
- Mission planning and coordinating efforts with the Service Delivery Model
- NOAA Pathfinders Initiative
- Value Chains Value Studies
- Translation and Traceability

# User Engagement Council and UE Guidance

- User Engagement Council (UEC) is an advisory body within NESDIS that helps provide guidance and support for user engagement efforts across NESDIS by connecting the dots to data, people inside and outside NOAA
  - Optimizing data products and services
  - Trace uses to decisions
  - Communicate awareness, access and availability in society
    - “Meet the User” NESDIS User Engagement Speaker Series
    - Pathfinder Value studies



## Maximize Value



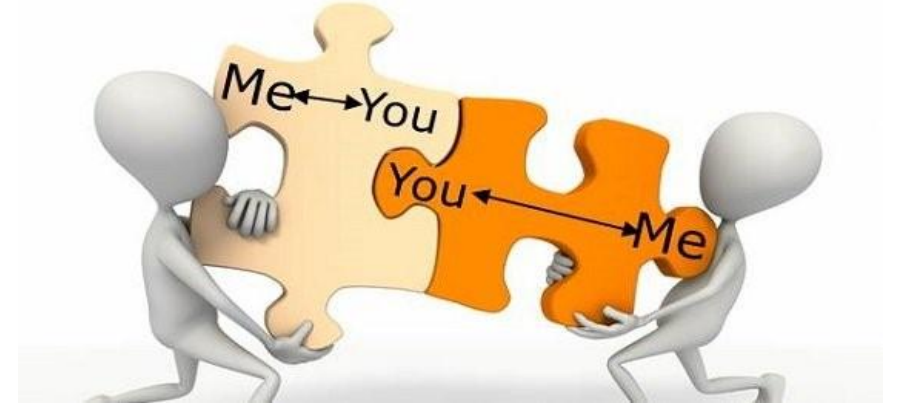
*Time, information, resources  
and relationships*

## UE Liaisons



*Workorkforce of the UEC (thematic and LO coordination)*

## Leverage Relationships



*The Scale of the UE matters.  
decisions, people and perspectives*

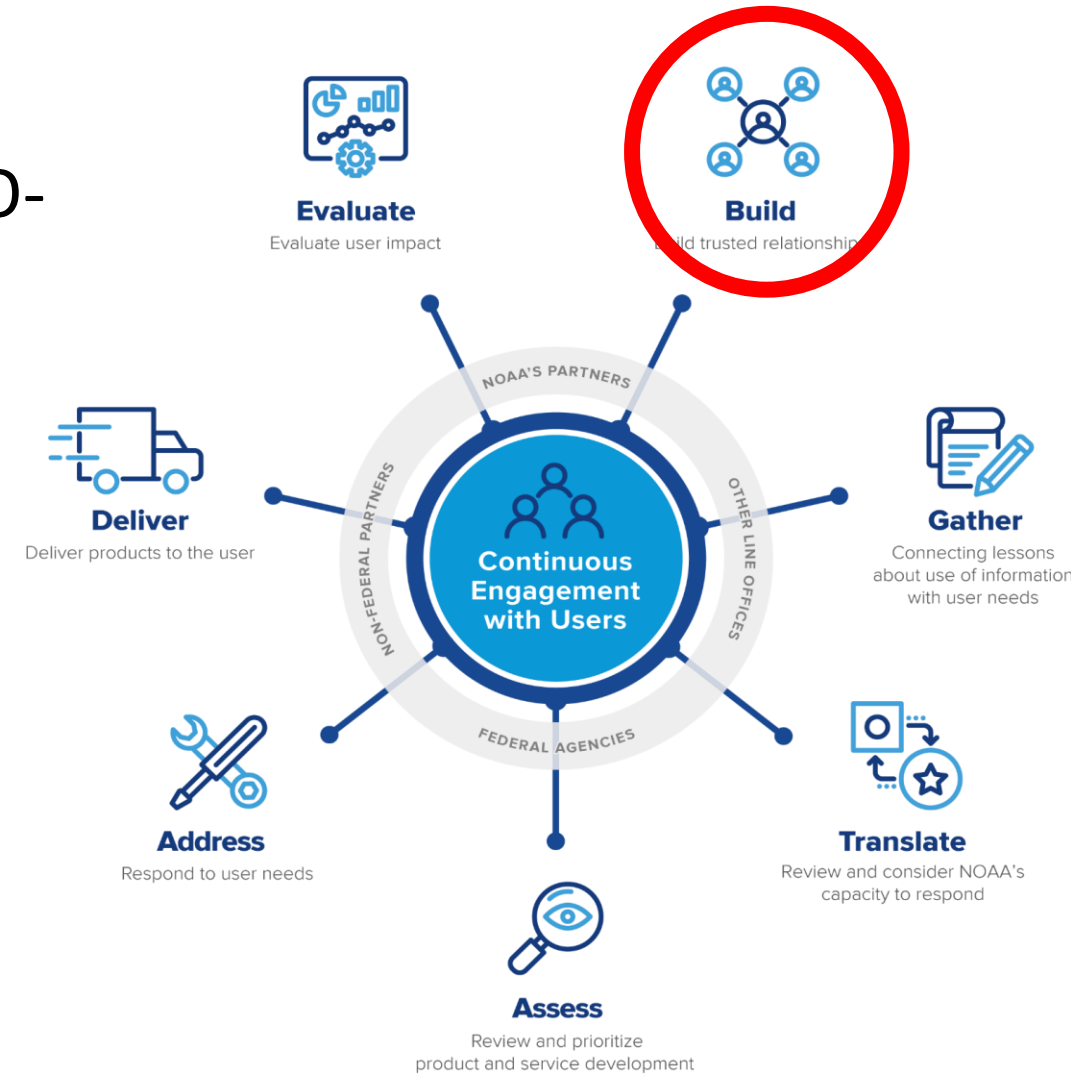
# Sample of UE Products used for guidance

Decision/ Milestone	Product Name	UE Challenge being addressed (Dr. Steve Volz "Ask")
Instrument Selection	<b>UE Thematic</b>	Identifying external user needs, use of products, formats and tools that impact decisions
	<b>Tableau Database-gaps, tools and needs</b>	Visual assessment of gaps and trends of user needs. Survey data is analysed and all users engaged by GeoXO are stored here
	<b>Thematic User Database</b>	Awareness of the user relationships with people, organization. Helps ensure we are engaging with all "the right people" in each thematic area. Aims to reduce user exhaustion.
	<b>Use Needs Thematic Surveys</b>	Aims to look at needs by thematic areas and consolidate needs, challenges and solutions by topic as opposed to product or mission.
	<b>User Needs Table Designation</b>	Addressed the "owner" of thematic user needs. Leverages the user data collected and allied the information across data, products and services. Aims to reduce repetitive user engagement and increase/update the user knowledge in NESDIS user data sources.
	<b>XORWG Instrument Value Studies</b>	Essential to explain applications and benefits, particularly for new instruments. Source material for briefings, website, other outreach
	<b>UE Needs translation table</b>	Provides translation and traceability. Specific language the looks at a user need from the perspective of the user, the scientist and the mission/instrument scaled solution. The table translates a thematic need to a geophysical requirement and a GeoXO solution (if applicable/possible).
	<b>NOAA Pathfinder Initiative</b>	SMEs from society that help provides traceability from an observation to a user decision to help quantify impact. An expert user community that is willing to work with the mission to identify benefits, needs, readiness, training and value. A user that will integrate new products and services ahead of others and communicate challenges and benefits.
	<b>User Engagement Plan Framework (AGU Poster)</b>	A summary of the UE Framework and lists activities recommended for each phase of the UE life cycle in support of a mission KDP and Milestones.
	<b>GeoXO UE Mission Plan Outline</b>	A framework that outlined the key topics of UE across the mission life cycle.

Decision/ Milestone	Product Name	UE Challenge being addressed (Dr. Steve Volz "Ask")
SRR/Mission Budget Justification	<b>User Value Chains (6)</b>	Provides traceability from user impact to the instrument and products responsible for the information. Also provides the chain of users involved from the acquisition of data to the use of a product or service.
	<b>NOAA Pathfinder Initiative</b>	SMEs from society that help provides traceability from an observation to a user decision to help quantify impact. An expert user community that is willing to work with the mission to identify benefits, needs, readiness, training and value. A user that will integrate new products and services ahead of others and communicate challenges and benefits.
	<b>User Value Studies</b>	A study that traces realized benefits from society to the instrument(s) responsible. This
User Readiness	<b>Pathfinder Use Cases</b>	Specific studies developed from Pathfinder experiences to help define/prioritize products and delivery methods
	<b>User Group Identification (Personas)</b>	User groups characterization created for individual themes to define/prioritize products and delivery methods
	<b>Fire Pathfinder Tabletop ex</b>	An environment where products and services can be exchanged in user driven scenarios. Provides an environment to discuss test products, address gaps/challenges for future integration.
	<b>Anecdotal Data Portfolio</b>	Provides quick references to user support. Quick look up table to user quotes stating "why" information from NOAA is useful.
Expanding/Coordinating User Engagement Knowledge	<b>*NOAA/NASA Socioeconomic Solicitation</b>	Addresses the impact and user value of individual use cases from a mission agnostic perspective. Provides the opportunity to look at big picture impacts across all satellite observations.
	<b>*User Data Map</b>	Uncovers where user data lives and how to access it.
	<b>*Mission Program UE Planning Guidance</b>	Communicates plans and expectation of UE efforts for Geo/Leo and SW
	<b>*UEC Strategic Plan</b>	Communicates how the UEC can be used as a resource for optimizing UE efforts
	<b>Performance Planning</b>	Performance plan language that can be used to justify more UE support
	<b>*UE Speaker Series</b>	Increases the NOAA User relationship value. Presents use cases and user that use NOAA data and seek to connect with NESDIS for more products and services.

# Sample Products and Service Delivery

- Focus on building relationships with the GEO-XO user base
- UE Council: looking at the determining the right Service Delivery steps for the right Programs/Offices
  - Different needs and goals for Missions in advance of flight that in real-time or retrospective product delivery





# Sample Products and Service Delivery

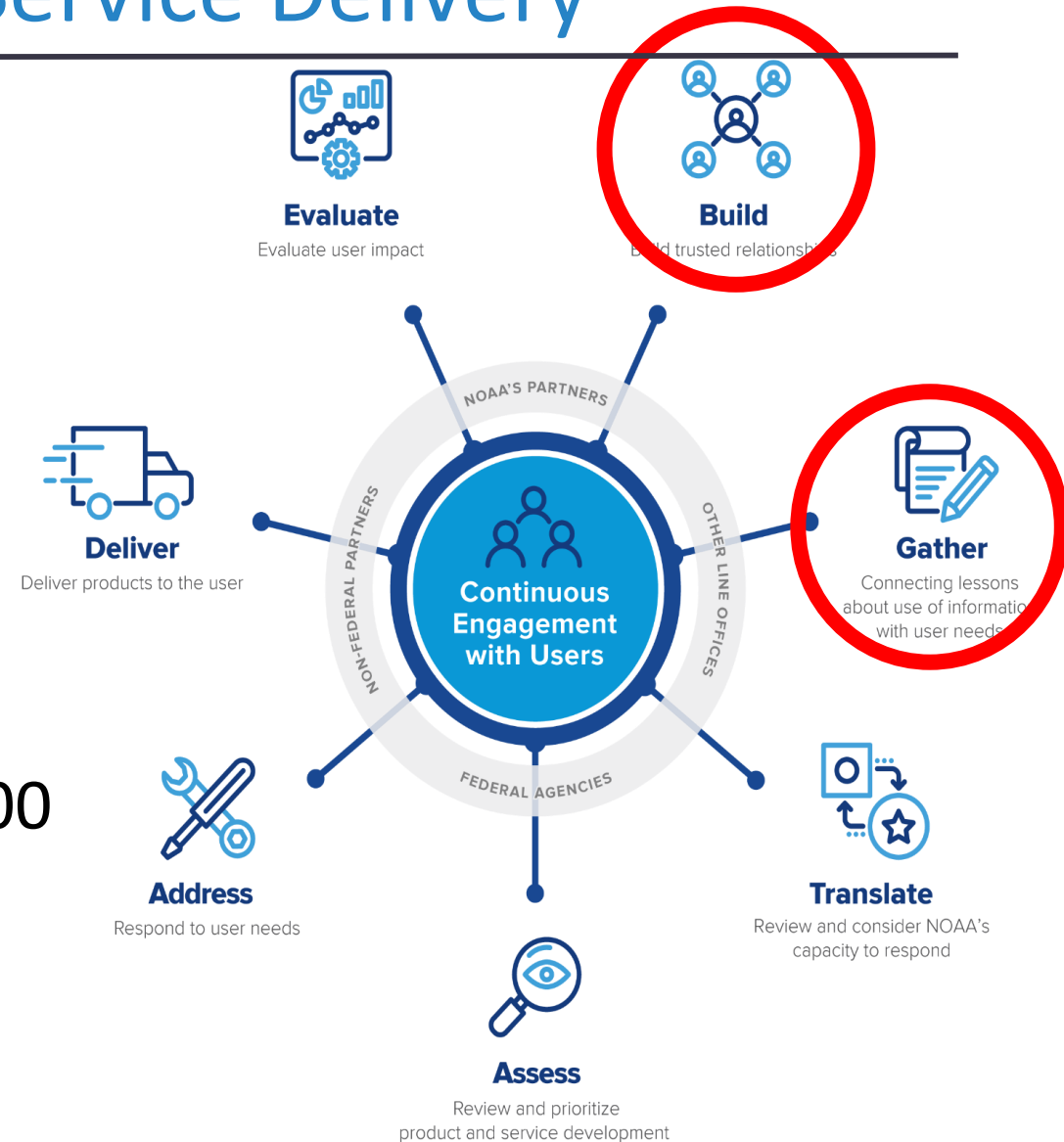
## Build:

- NOAA Pathfinder Initiative
- Fire Pathfinder Tabletop Exercise

## Gather:

- UE Thematic Workshop Reports
- Tableau Database gaps - tools and needs
- Thematic user database developed - 3,000 usernames for GEO-XO to date
- User database
- User needs table designation

## Anecdotal Data Portfolio



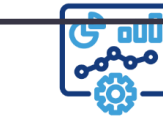
# Sample Products and Service Delivery

## Translate and Assess:

- User needs translation table

## Address and Deliver:

- User Engagement Plan Framework (AGU)
- UE Mission Plan Outline
- Mission Program UE Planning Guidance
- UEC Strategy
- UE Speaker Series



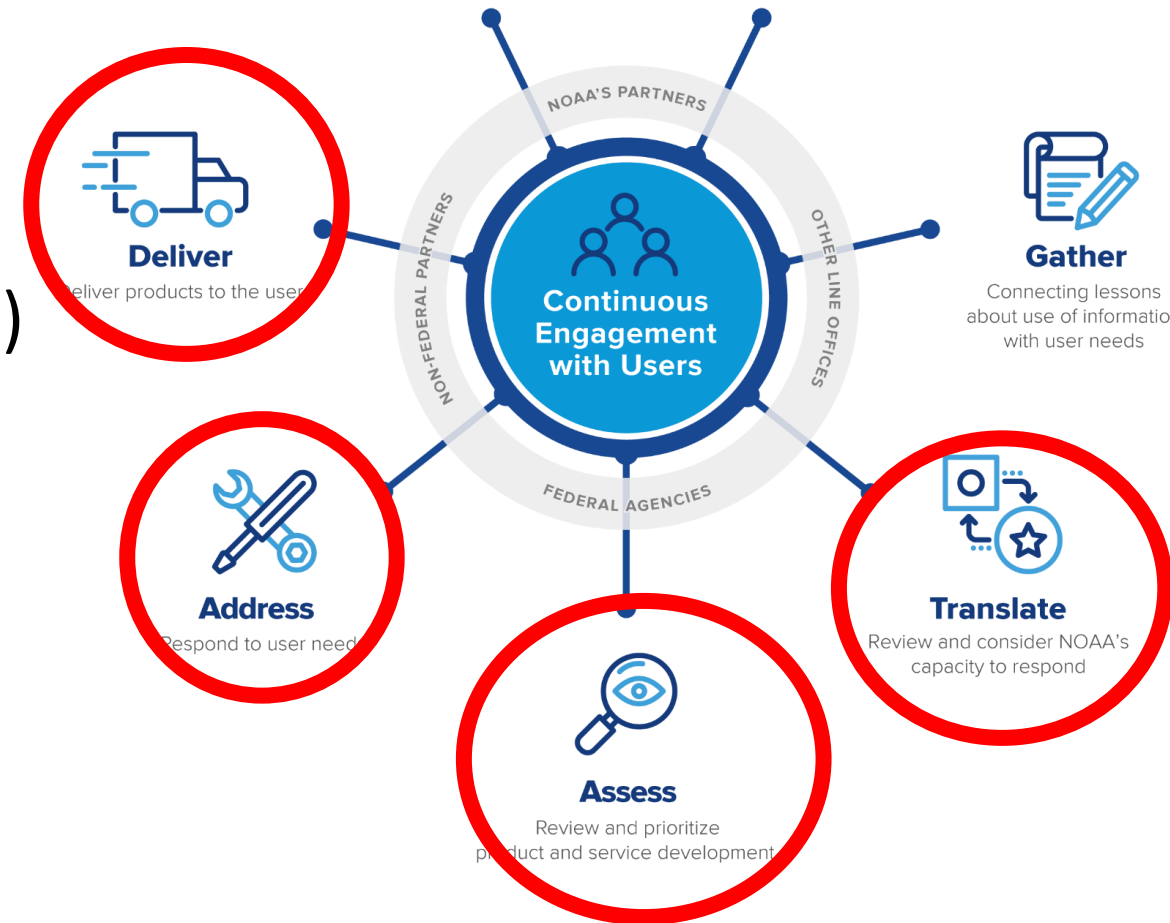
**Evaluate**

Evaluate user impact



**Build**

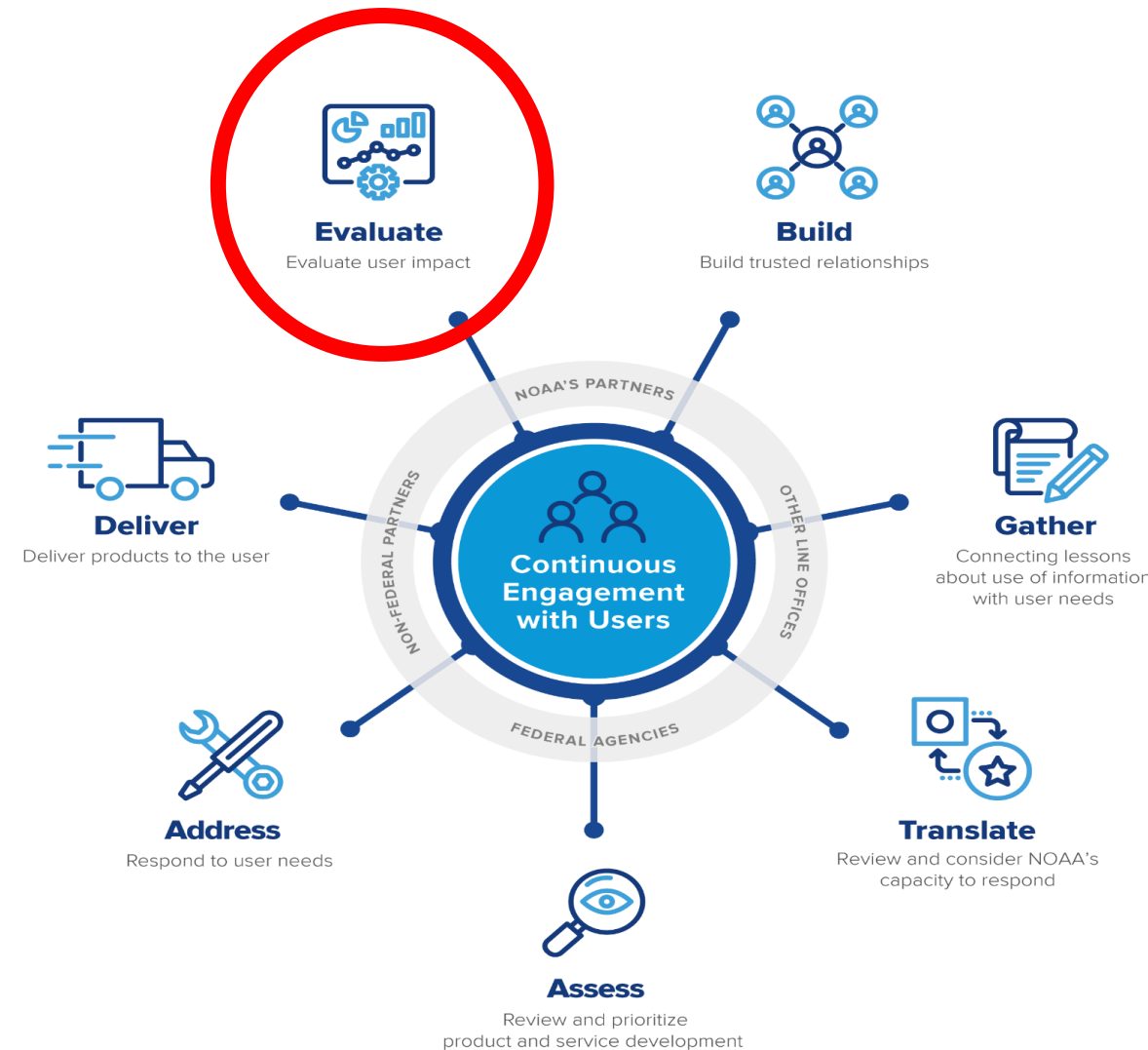
Build trusted relationships



# Sample Products and Service Delivery

## Evaluate:

- GEO-XO User Value Chains
- User Value Studies
- Anecdotal Data Portfolio



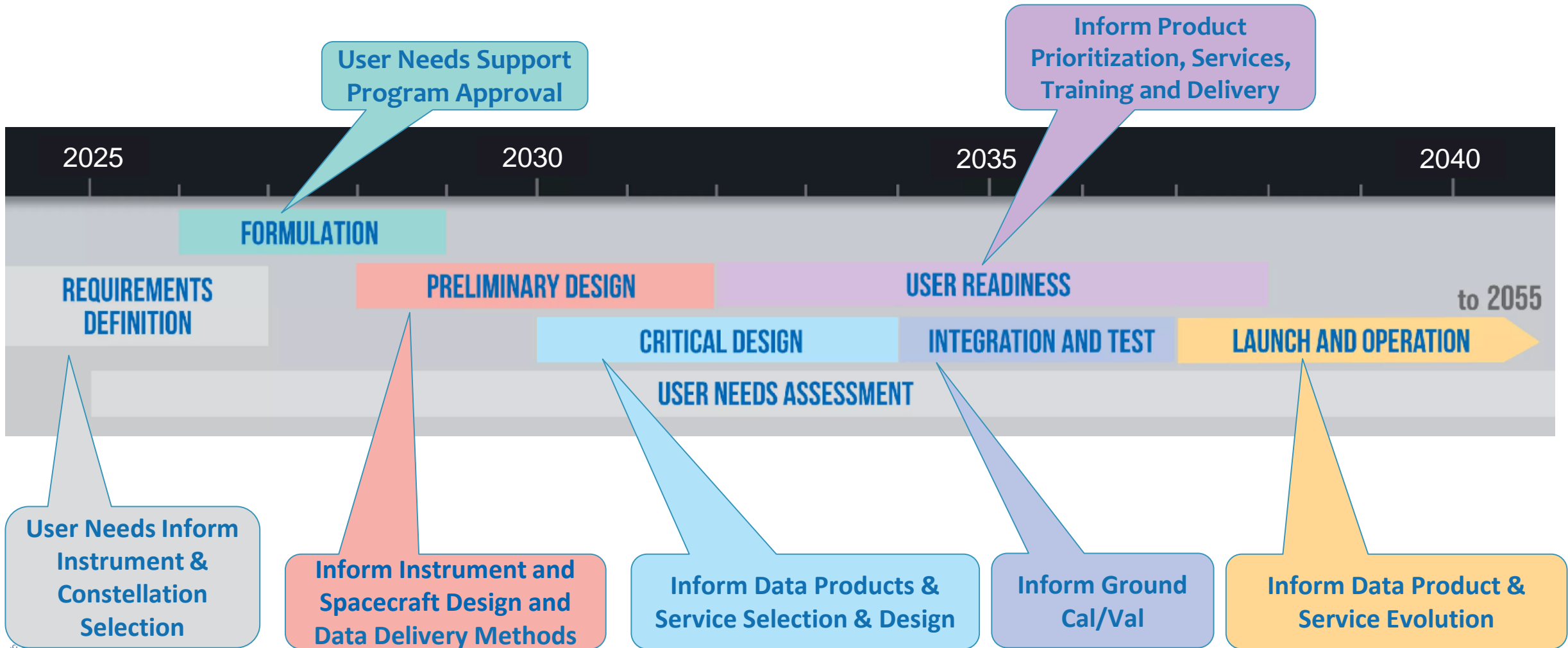
# User Engagement Council and UE Guidance Next Steps

The guidance for User Engagement is still developing!

- Socialize efforts and gather feedback
- Define success criteria for UE products
- Finalize the UEC Strategic Plan
- UEC road show to share what we do, how to get support and explore coordination

# UE Effort Guidance

*Aligned with Mission UE plans and life Cycle*



# Mission Planning and UE Guidance



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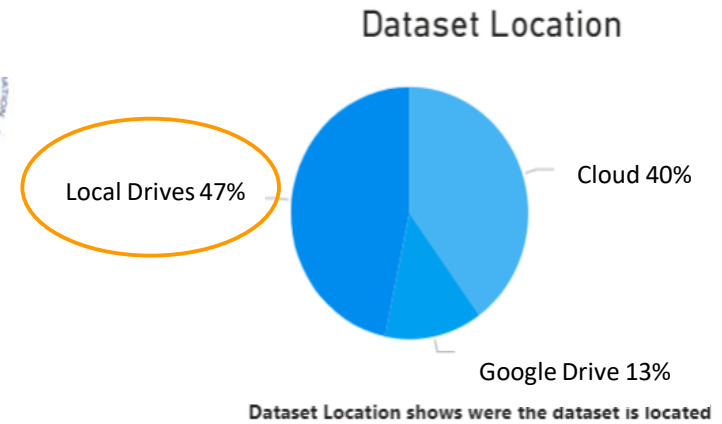
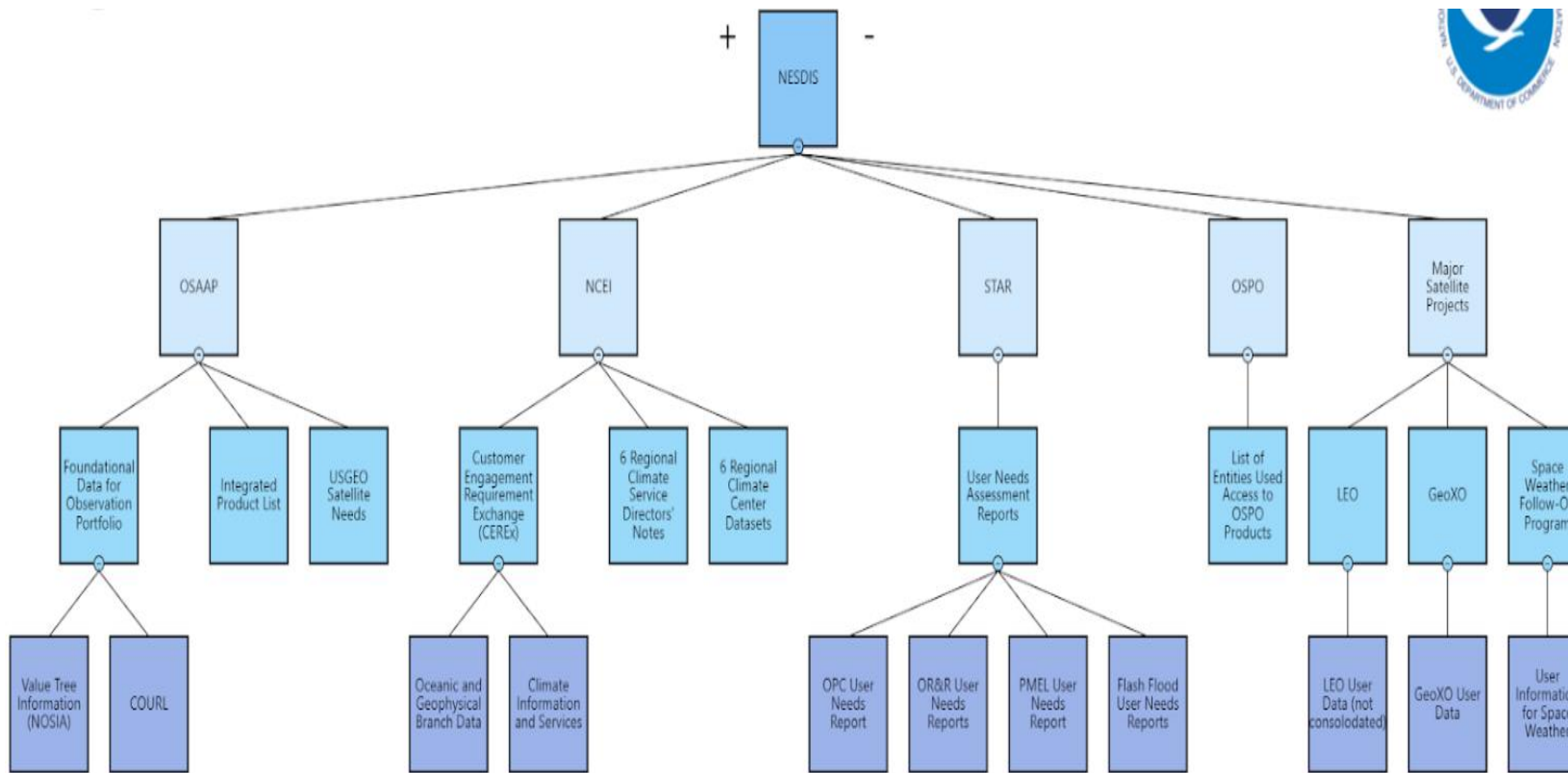
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*Draft Plans submitted for review at SPM*

# Where does UE data live at NESDIS? access, awareness and availability



# NOAA Pathfinder Initiative

Home / Next Generation Satellites

## NOAA Pathfinder Initiative

### Science Working for Society

The term early adopter refers to individuals, businesses and organizations who use new products or technology before others. Companies rely on early adopters to provide feedback about product deficiencies and challenges and to have topical samples for how the information is applied in different areas of society.





# Pathfinder Initiative Overview

- Started in 2021 with GeoXO
- front line of sophisticated users; they are the community of early adopters of satellite information
- develop value studies for the *future applications* of mission data products shortly after launch.
  - feedback should not wait until after launch
- societally relevant use of mission data products in decision making activities
- bridge the R2O needs
  - NASA Early Adopters
  - Enterprise Proving Grounds
  - Products and Services
  - Customer experience



# The Role of the Pathfinder

## Engage and exchange

- Have a clearly defined application for data/products
- Identify how to best enable integration of mission data after launch
- Work with the mission user engagement lead to identify impact/benefits metrics prior to launch;
- Partner with mission scientists and participate in meetings, topical workshops, and related activities.

## Benefits to Pathfinders

- Direct connection to the mission science and product development teams;
- Access to early release data such as simulated mission data products, pre-launch calibration and validation (cal/val) data from field campaigns, modeling, and synergistic studies.; and
- Advocacy and awareness of how the Pathfinder and NOAA are working together to demonstrate impacts to society



# Bridging Knowledge with OCX

- Pathfinders provide continuity of observations to NASA Early Adopters

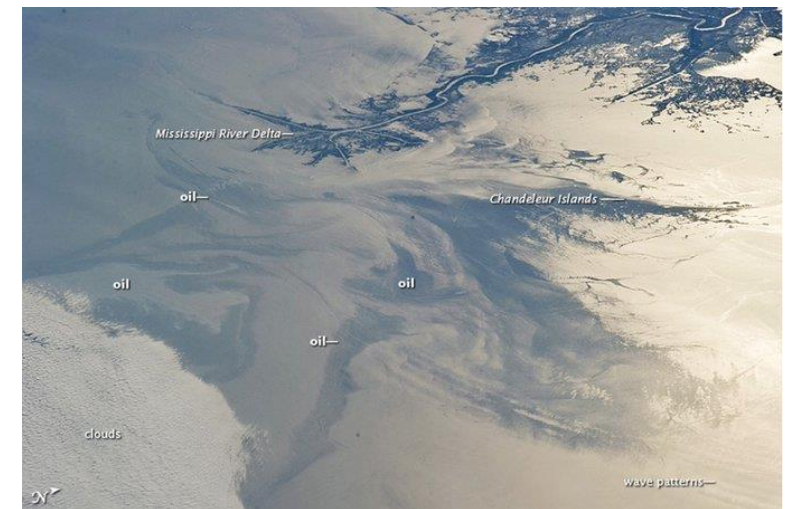
## Addressing the *HOW* and *WHY*

- How is information used?
- Why is it important?
- How can we (NOAA) help?
  - Access, awareness and availability
  - Training and traceability

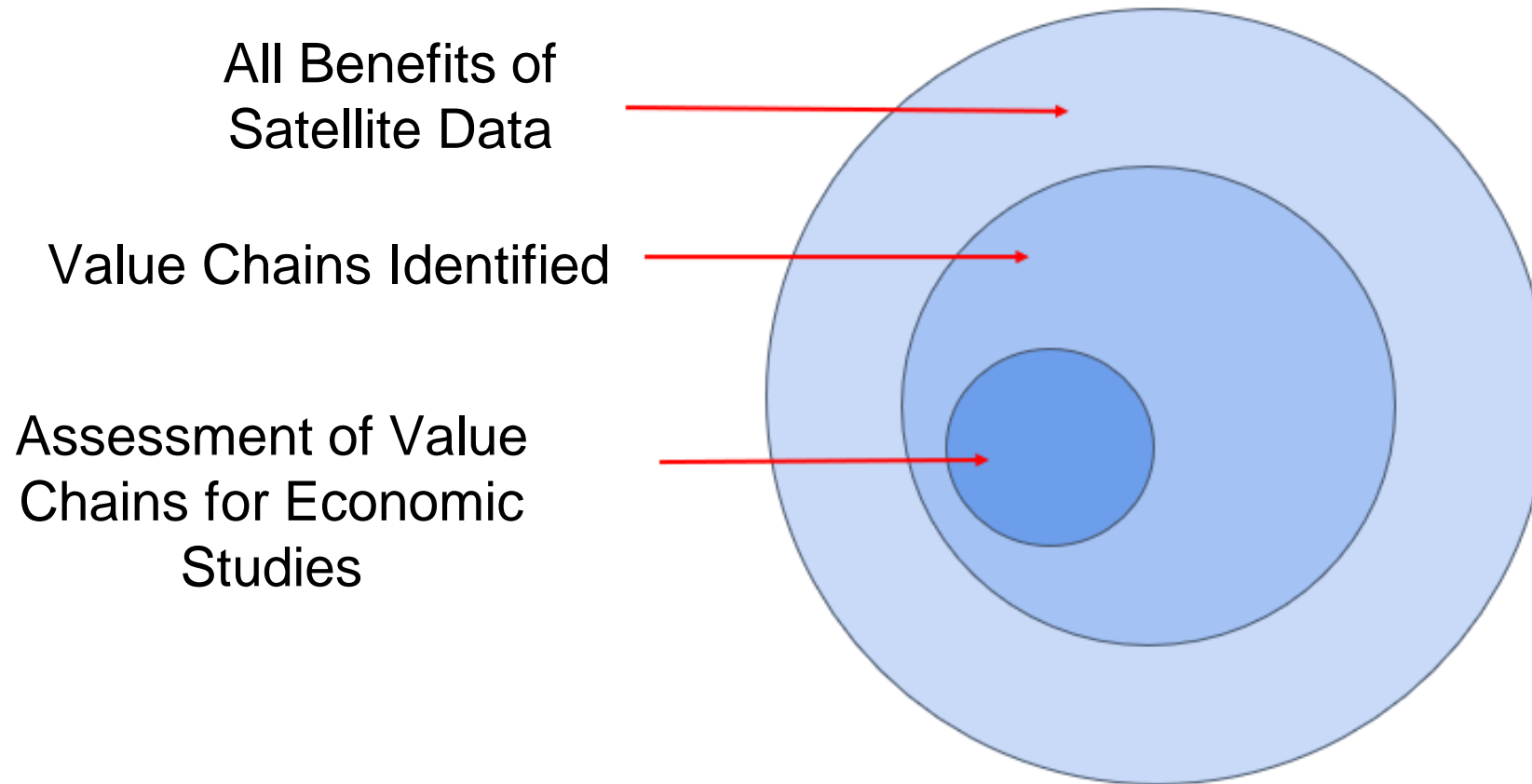


Plankton, Aerosol, Cloud, ocean Ecosystem

NASA GLIMR

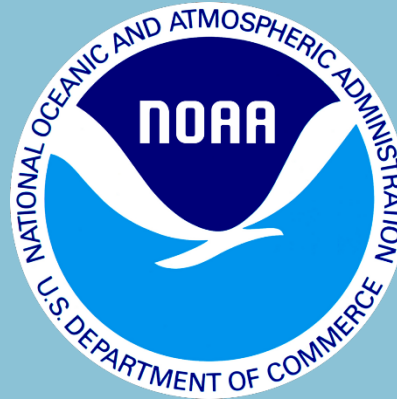
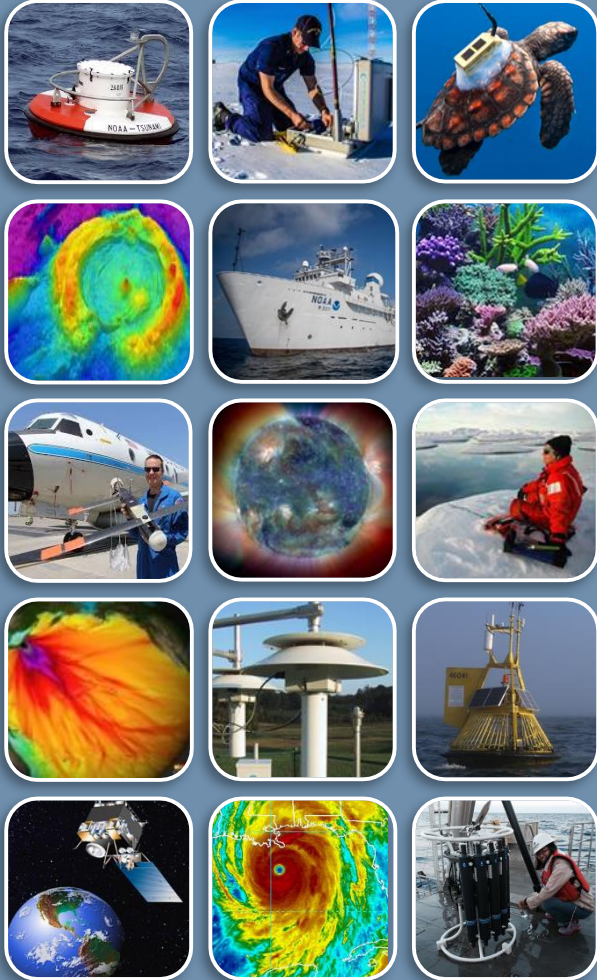


# Value Chains and Economic Value



# Use Cases for Demonstrating Data Usefulness

## Earth Observing Systems



## *Pathfinder Initiative*

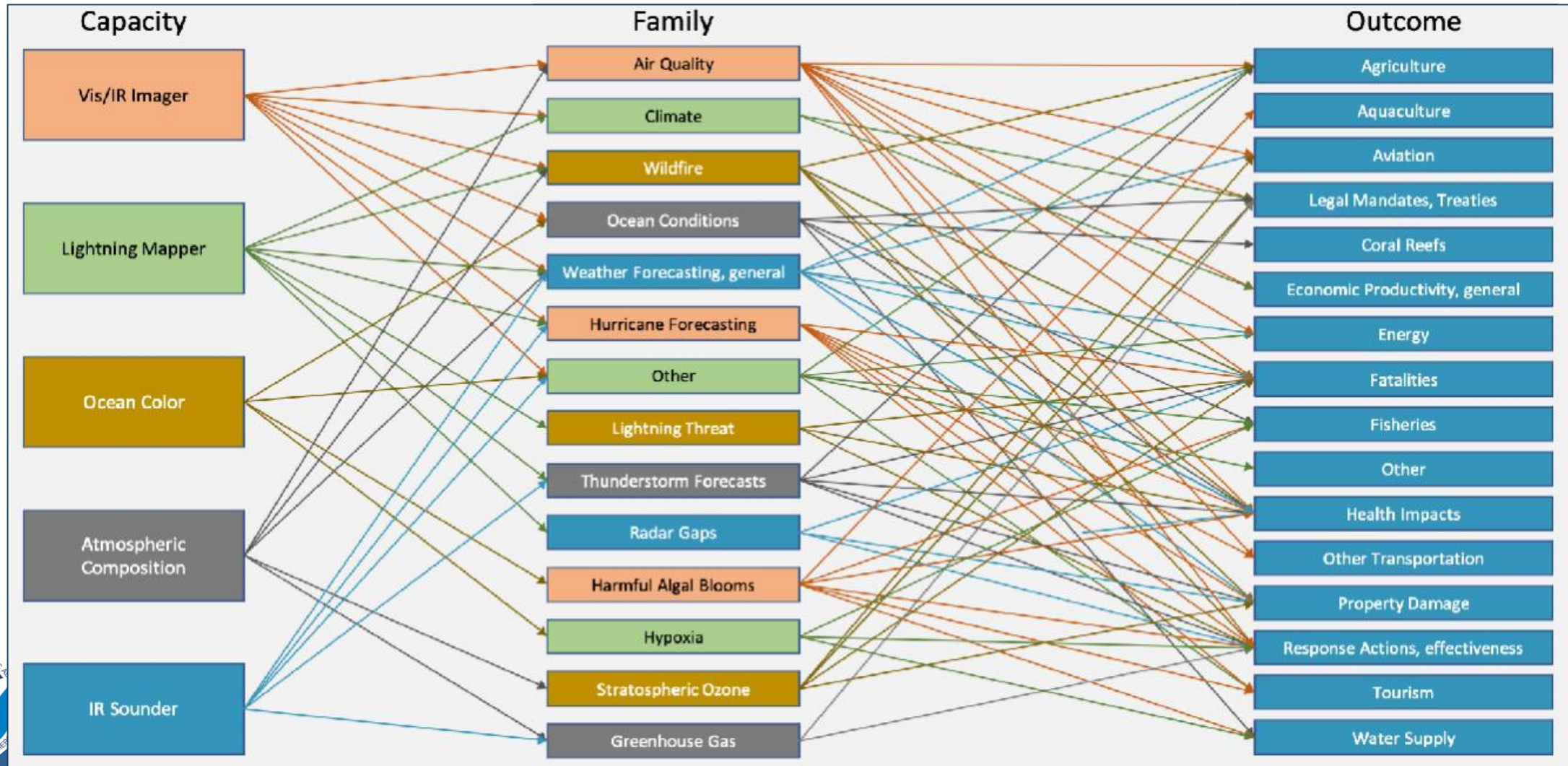
Enterprise Proving  
Grounds  
GEO  
LEO  
Space Weather  
STAR  
NCEI  
OSPO  
OSGS

## Connecting with Decision-Makers in society

Snowfall Impact Index <b>FEMA</b>	Tsunami Warning <b>Emergency Managers</b>	Heating & Cooling Degree Days <b>Energy Sector</b>
Hurricane Tracks <b>Emergency Planners</b>	Coastal Digital Elevation Models <b>Hazard Mitigation</b>	Solar Activity/Sun Spots <b>Power Distribution</b>
Annual State of the Climate Reports <b>Decision Makers</b>	Global & U.S. Climate Summaries <b>Numerous Sectors</b>	Temperature & Precipitation Outlooks <b>Agriculture</b>
IPCC & National Climate Assessments <b>Gov't Policymakers</b>	Billion \$ Disasters, Climate Extremes Index <b>Insurance</b>	Climate Normals <b>Construction, Infrastructure, Agriculture</b>



# The Value connection of user information to potential benefit areas in society-developing value chains



# Needs into Requirement



# GeoXO Example of Translation of User Needs

User Need	Science Translation	NOAA Action
User Need	Geophysical Requirement	GeoXO Decision
Fire ignitions are not available quickly enough through satellite imagery, which forces response agencies to rely on in situ observations.	1 km resolution on a geostationary Imager 3.9 μm band	The GeoXO Imager aims to have a 3.9 μm with 1 km resolution
Forecasting convective weather over the Gulf Stream is needed.	Hemispheric coverage of total lightning occurrence at low latency	A geostationary Lightning Mapper will provide hemispheric coverage of lightning occurrence
It is difficult to track and forecast Harmful Algal Bloom movement throughout the day.	Frequent detection of Harmful Algal Blooms	An Ocean Color instrument in geostationary orbit allows for tracking of Harmful Algal Blooms

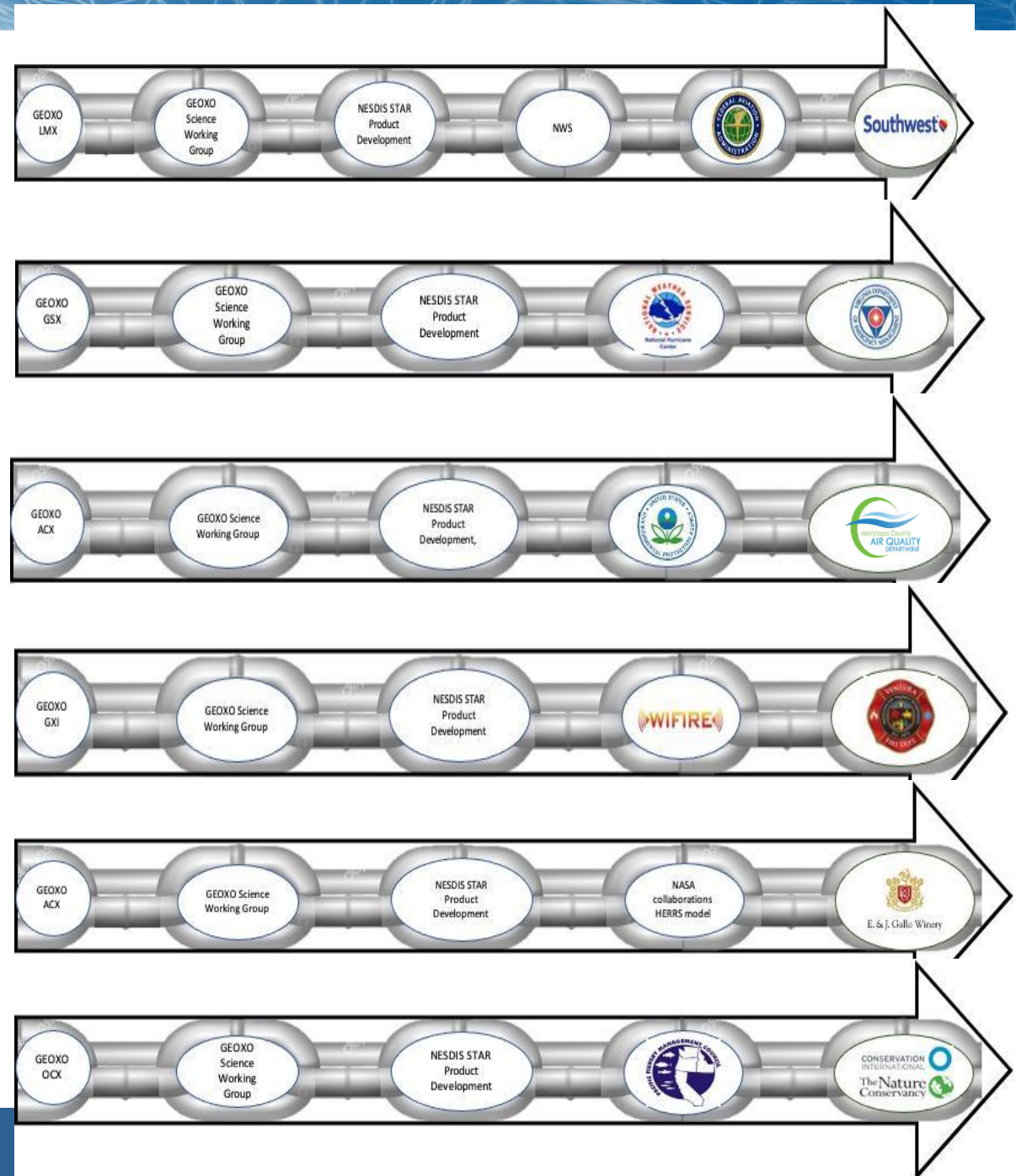
Continuity of Weather Services	Enhancements for Weather Services	Enhancements for Oceans, Coasts, and Climate Services
<ul style="list-style-type: none"> <li>Visible/Infrared Imager</li> <li>Lightning Mapper (LM)</li> <li>Receipt/relay of signals from Data Collection System (DCS) platforms</li> <li>Data rebroadcast using commercial services for DCS, High Rate Information Transmission (HRIT), Emergency Managers Weather Info Network (EMWIN), Imagery</li> </ul>	<ul style="list-style-type: none"> <li>Hyperspectral IR Sounder</li> <li>Day/Night Visible Imager</li> <li>Spatial and spectral resolution improvements for Imager</li> <li>Spatial resolution improvement for Lightning Mapper</li> </ul>	<ul style="list-style-type: none"> <li>Ocean Color (OC) Instrument</li> <li>Atmospheric Composition(AC) Instrument</li> </ul>





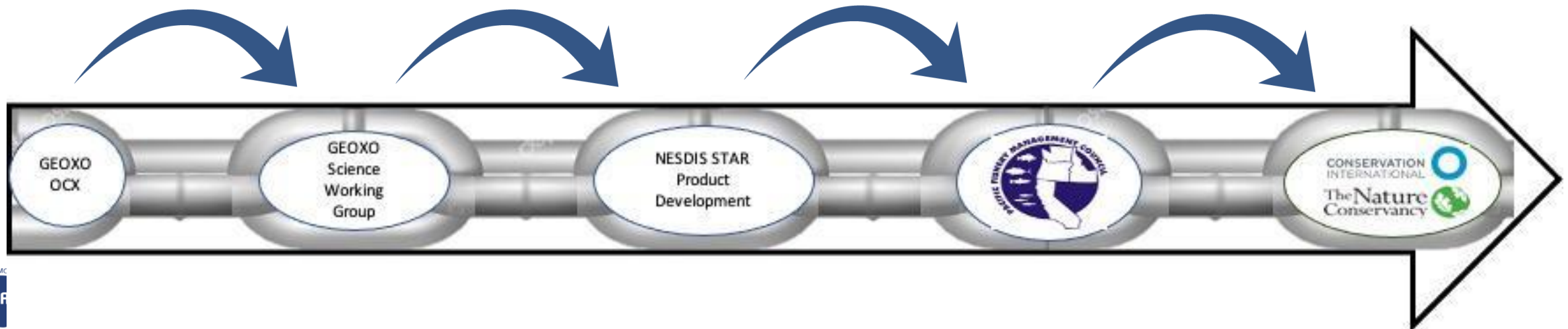
# Existing Value Chains

- GeoXO has developed value studies for the future applications of mission data products shortly after launch.
- A total of 6 value chains were developed with NOAA Pathfinders.
- Value chains traces the GeoXO science into areas of society
- Value Chains and Pathfinder need continued work to get more pointed benefits for User Readiness
- WiFIRE Pathfinder is set up to get funding from Fire Initiative and transition to Enterprise Proving Grounds

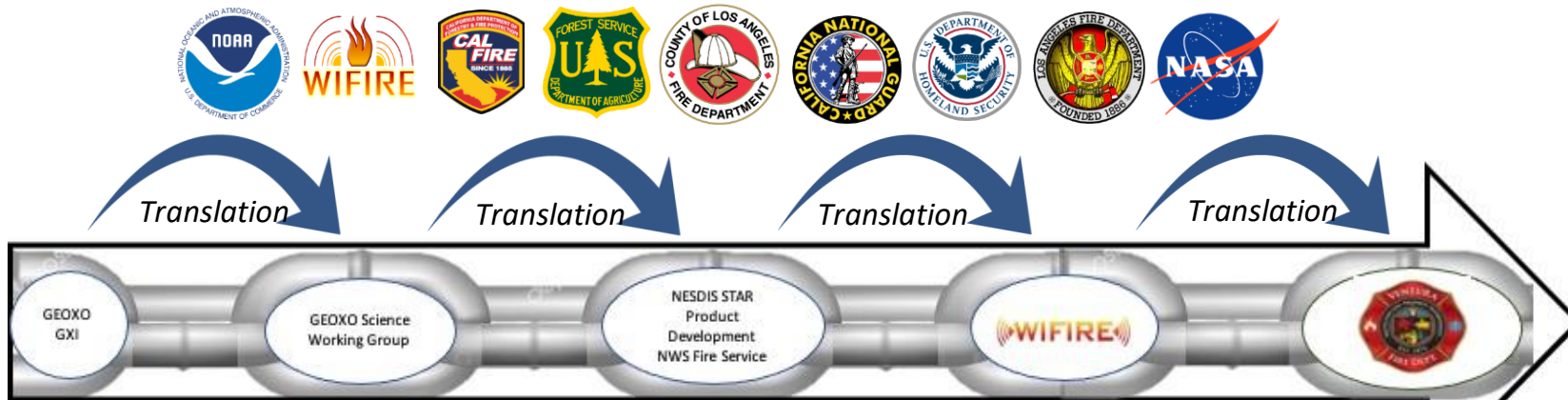


# Translating Value with Pathfinders

- Translation from user to user-beginning with NOAA and the instrument team!
  - User feedback helps with the internal communications related to products and services.
- Understanding the decisions support in each step of the process
- Identifying the quantifiable impacts that demonstrate ROI

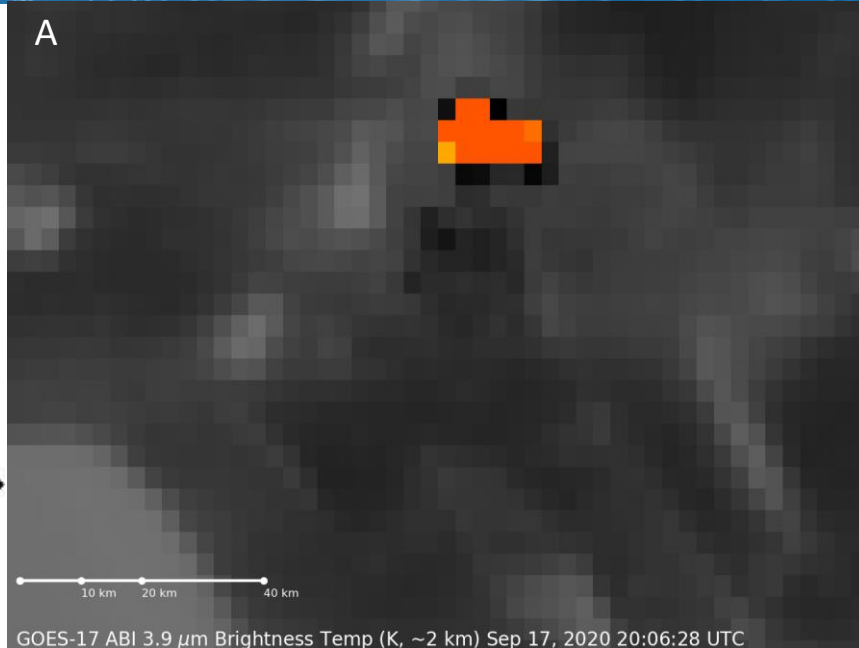
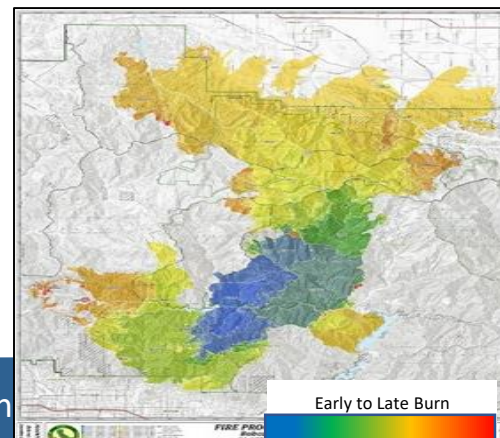
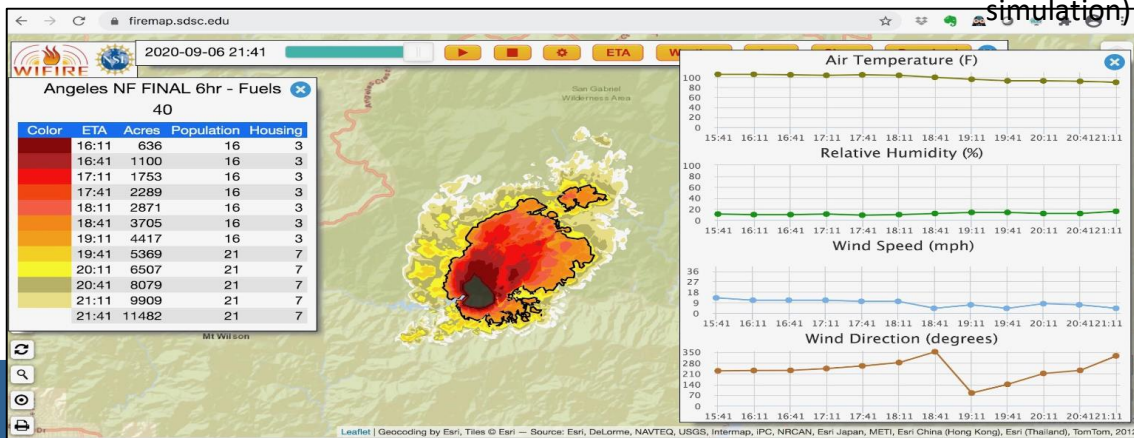


# Fire Pathfinder Tabletop Event



A notional Bobcat Fire scenario to explore fire preparedness, response, and fire-related satellite derived data and products. This scenario looks at the future GeoXO fire detection capabilities

- Forecast from FBANS and IMETS provides prediction for the day
  - Winds accelerate and fire accelerates in 2 directions and New models are run
- Use Satellite to track fire Growth
  - Use the tracking to dynamically re-route trucks in the field
  - Radiative Power from GOES 17 Simulated Animation (compare with GeoXO (B) simulation)



# Summary

User Engagement is a multifaceted effort OSAAP is helping guide for NESDIS.

UE is part of the entire mission life cycle and is designed to provide user perspective for all mission development milestones.

The UEC is a resource hub for helping increase the value of UE efforts, leverage relationships across NESDIS and optimize user information

Pathfinders are used to inform mission development milestones and value chains and help missions connect science to society

Pathfinder value studies are currently in development for understanding how future observations will impact:

- loss of life associated with exposure to poor air quality
- the efficiency of electric power generation
- the cost of weather-related aviation delays
- the cost of hurricane evacuations
- losses from the most destructive wildfires (those with losses exceeding \$1 billion each)
- the cost of fighting wildfires
- HABs and impact to coastal tourism

We are actively looking for ocean Pathfinders to join our community of practice.

NOAA National Environmental Satellite, Data, and Information Service

Please contact [Vanessa\\_Escohar@NOAA.gov](mailto:Vanessa_Escohar@NOAA.gov)



# Thank you!



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<https://www.nesdis.noaa.gov/next-generation/noaa-pathfinder-initiative>