

Wildfire Science & Technology Commons

Open Collaborations for a Wildfire Resilient Future

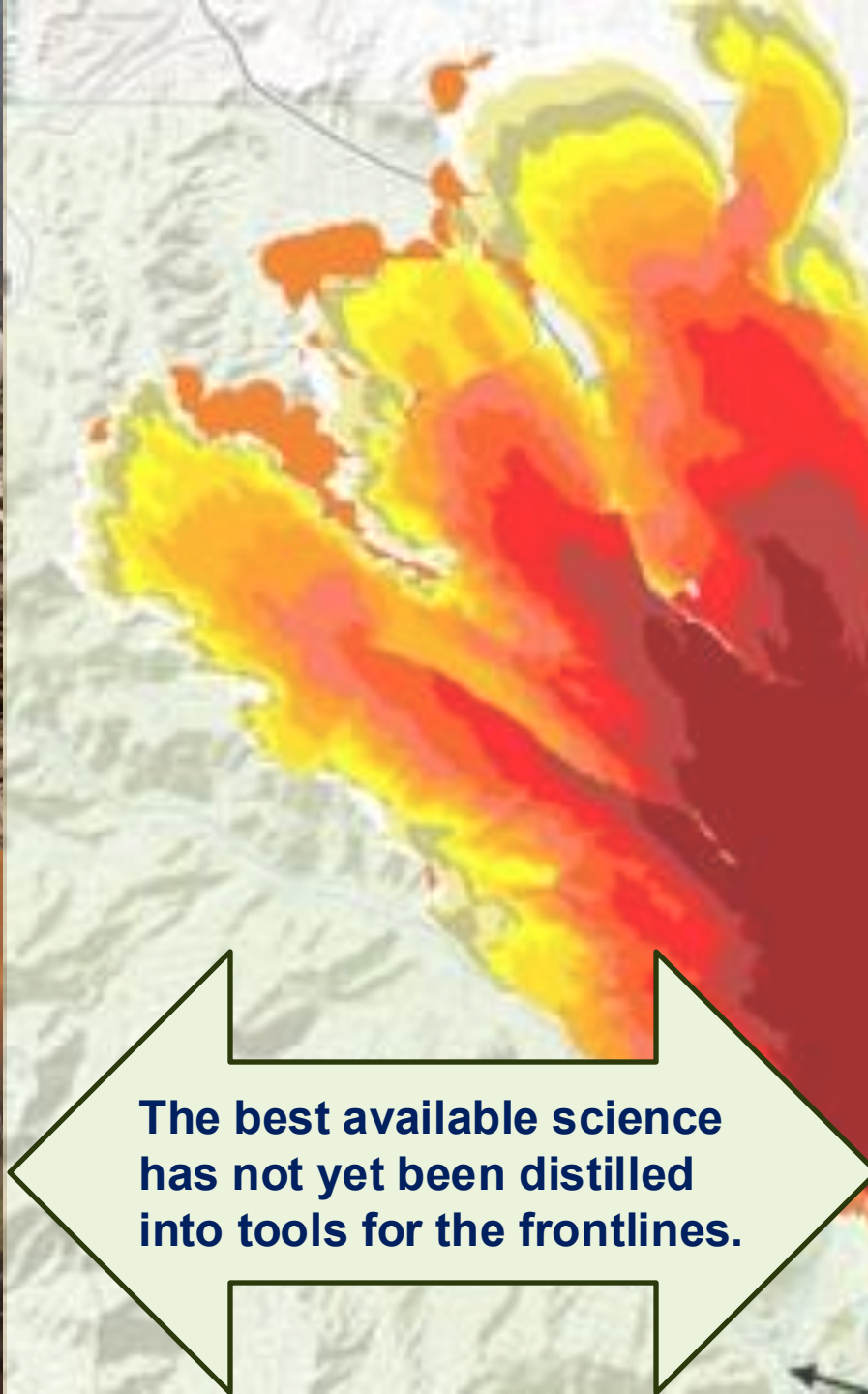
NIST

UC San Diego

SCIL

Societal Computing
and Innovation Lab





**The best available science
has not yet been distilled
into tools for the frontlines.**



Developing FireTech is complex!

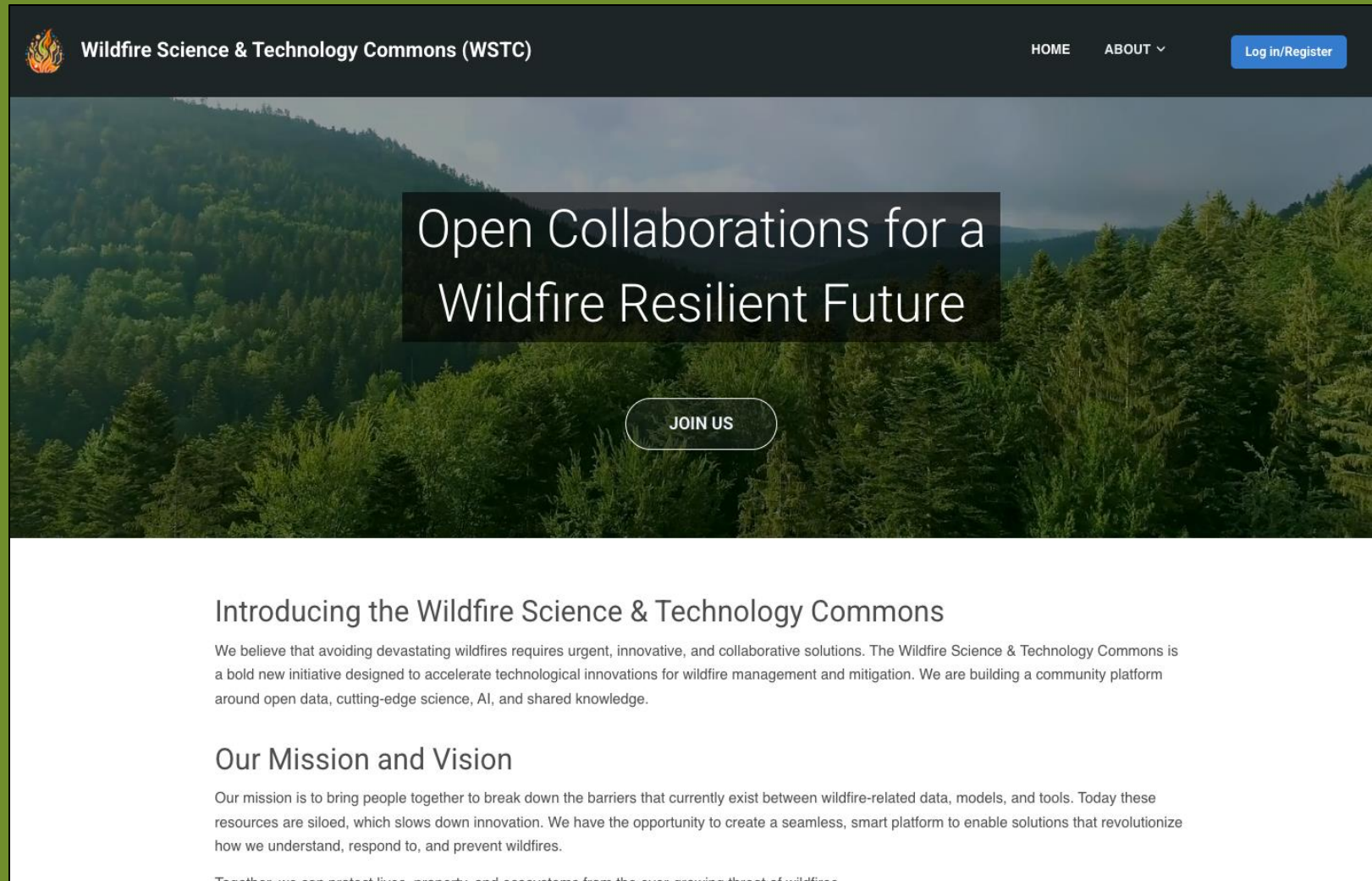


Fragmented
access to
data and
models

Lack of
shared
standards
and
practices

Barriers to
evaluating
and adopting
new tech

Introducing the Wildfire Commons



<https://www.wildfirecommons.org>

An aerial photograph of a mountainous landscape. A river flows through a valley. A specific area of the forested mountain is highlighted in green, indicating a focus of study or a specific region of interest. The text is overlaid on the left side of the image.

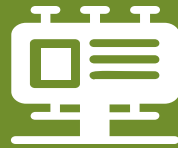
Wildfire Science & Technology Commons!

The **Wildfire Science & Technology Commons** is a bold initiative designed to accelerate technological innovations for wildland fire.

Wildfire Science & Technology Commons



Expert
Network
Tool

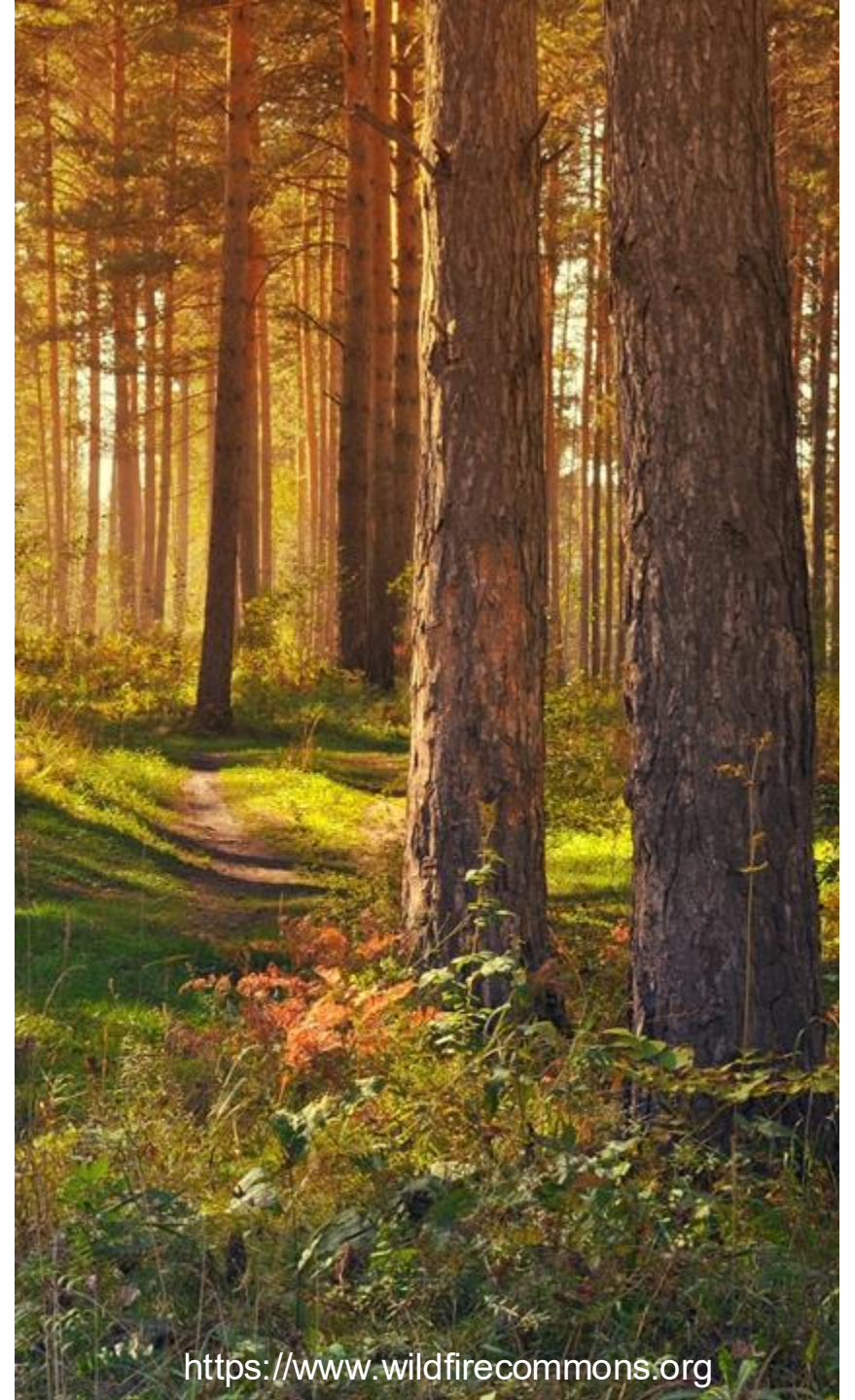


FireForge
Platform



Community
Marketplace

A Community-Driven Commons!



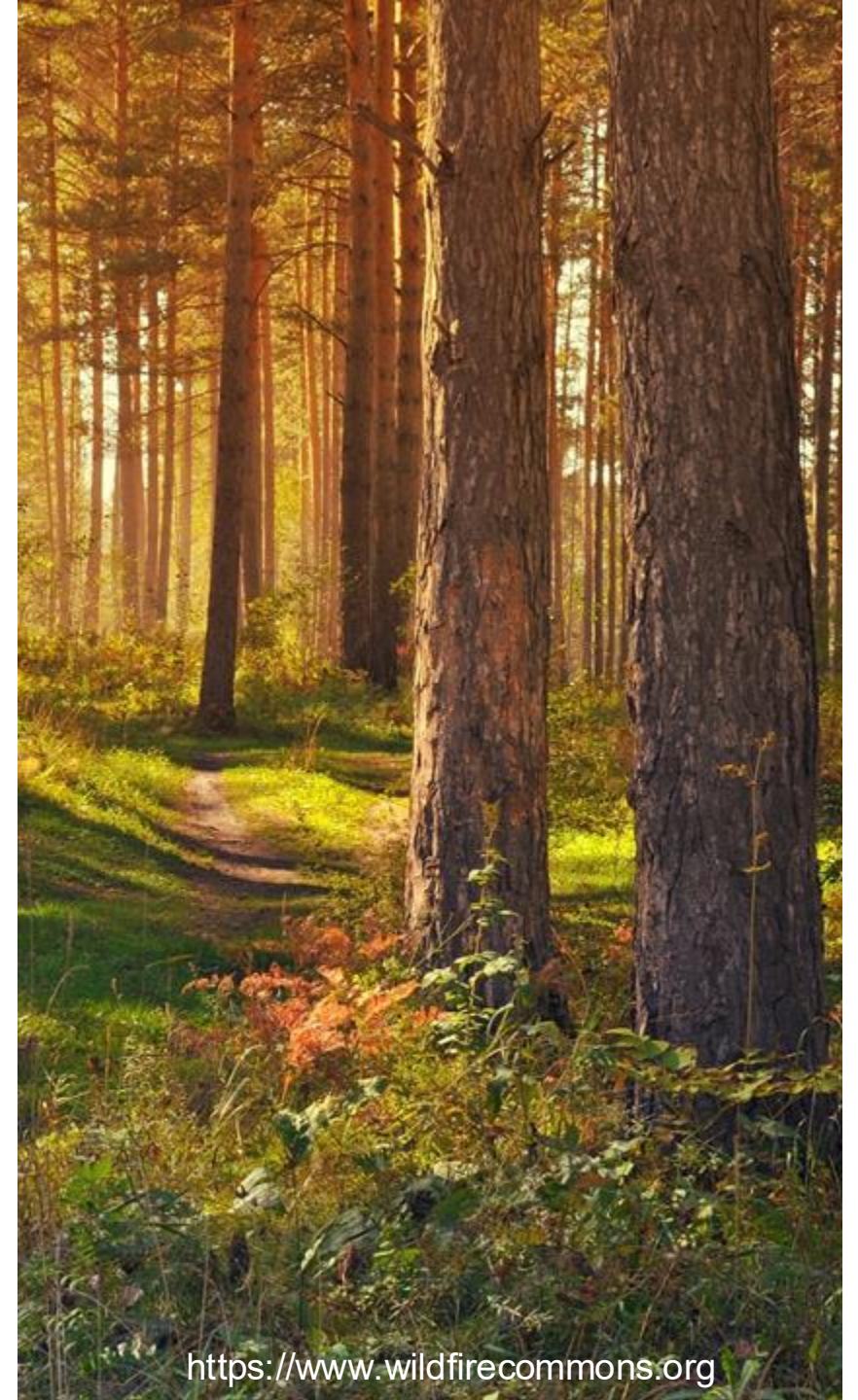
<https://www.wildfirecommons.org>

A Community-Driven Commons!

01

Working Groups

- Opportunity Assessment
- Standards
- Community Marketplace
- Scale and Sustain



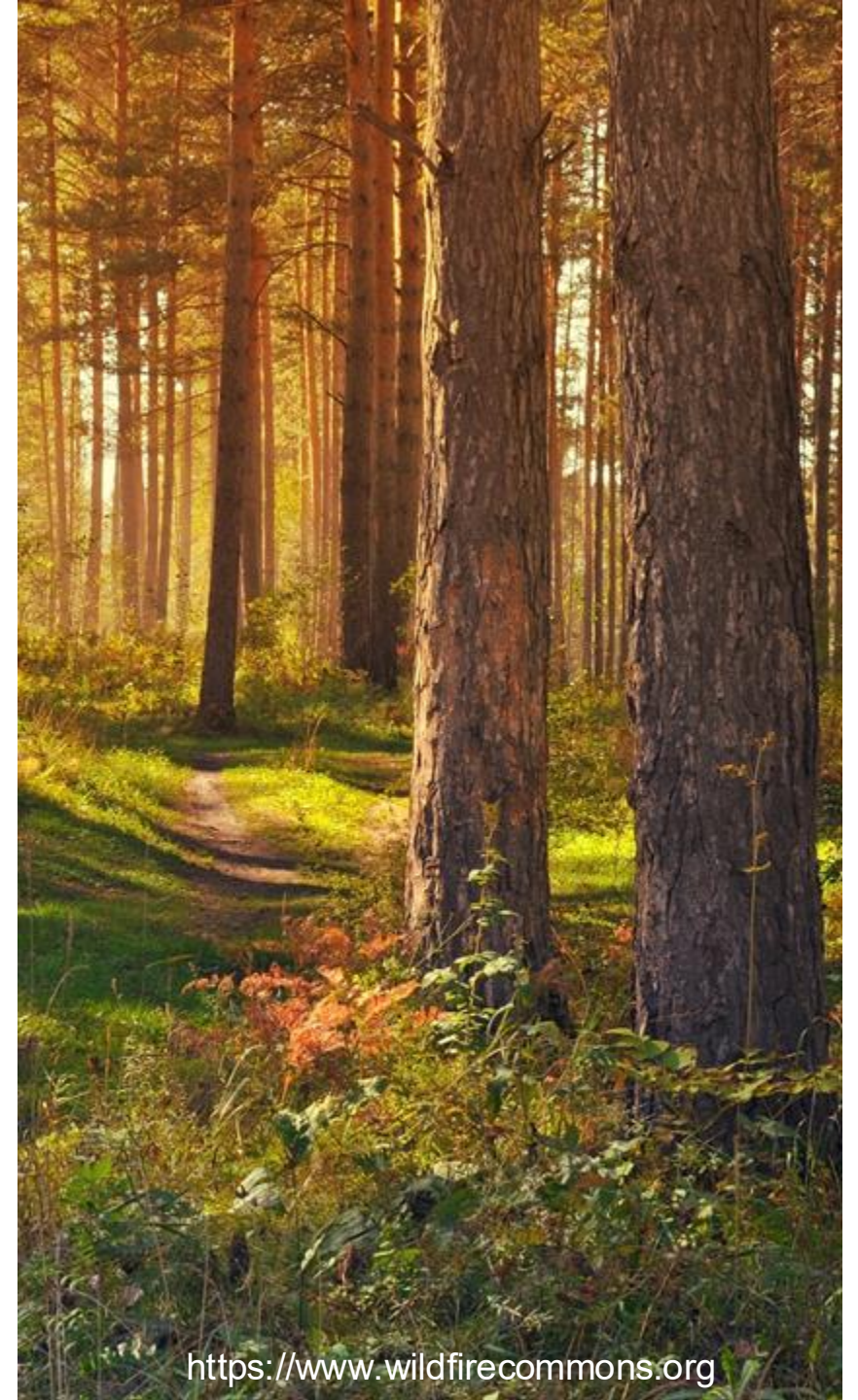
A Community-Driven Commons!

01

Working Groups

02

Pathfinders



A Community-Driven Commons!

01

Working Groups

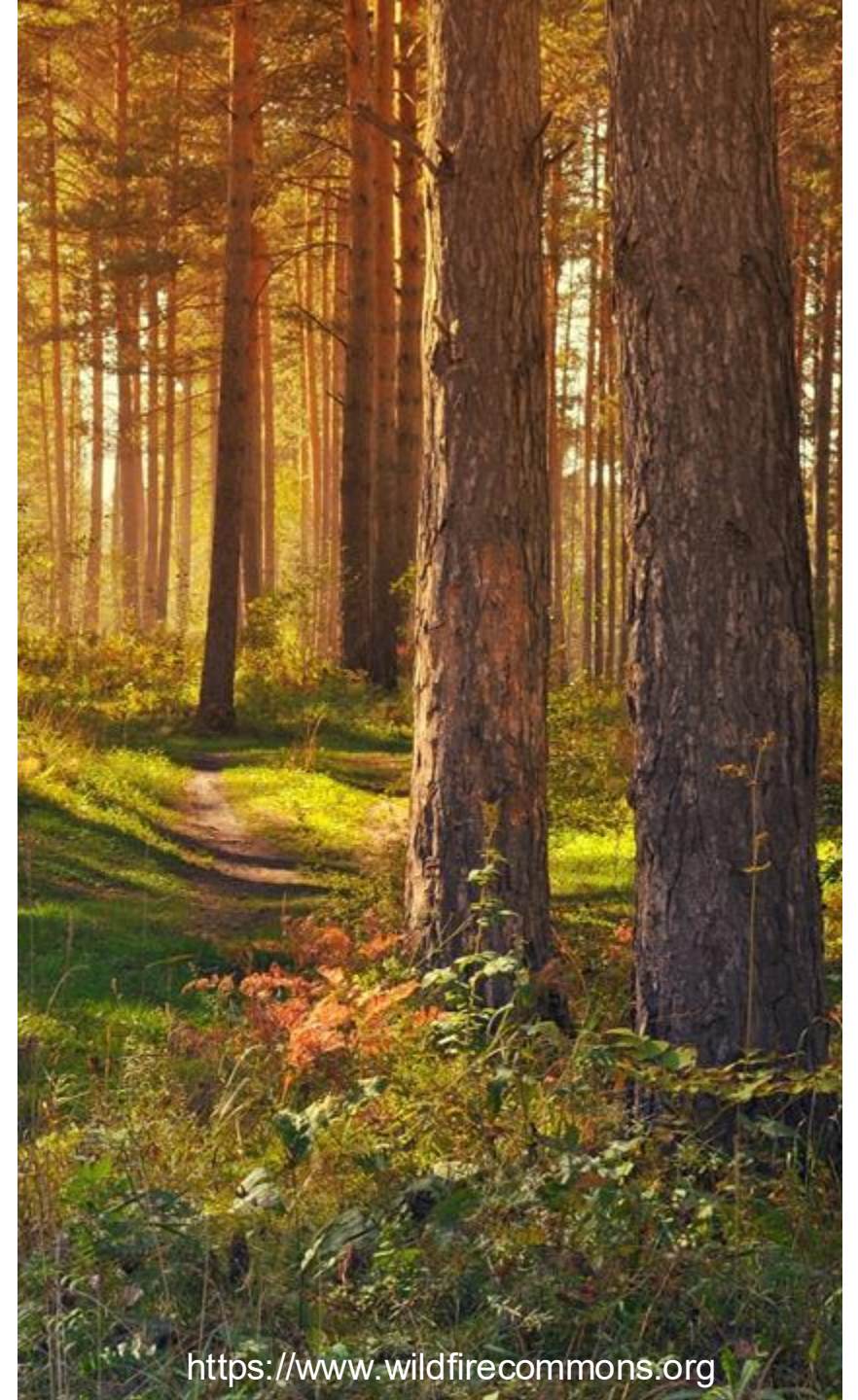
02

Pathfinders

03

Case Study Communities

- 4D Fuels, Fire and Smoke Modeling for Prescribed Fire Applications
- Digital Twins for Wildland Fire Decision Workflows
- And more!



A Community-Driven Commons!

01

Working Groups

02

Pathfinders

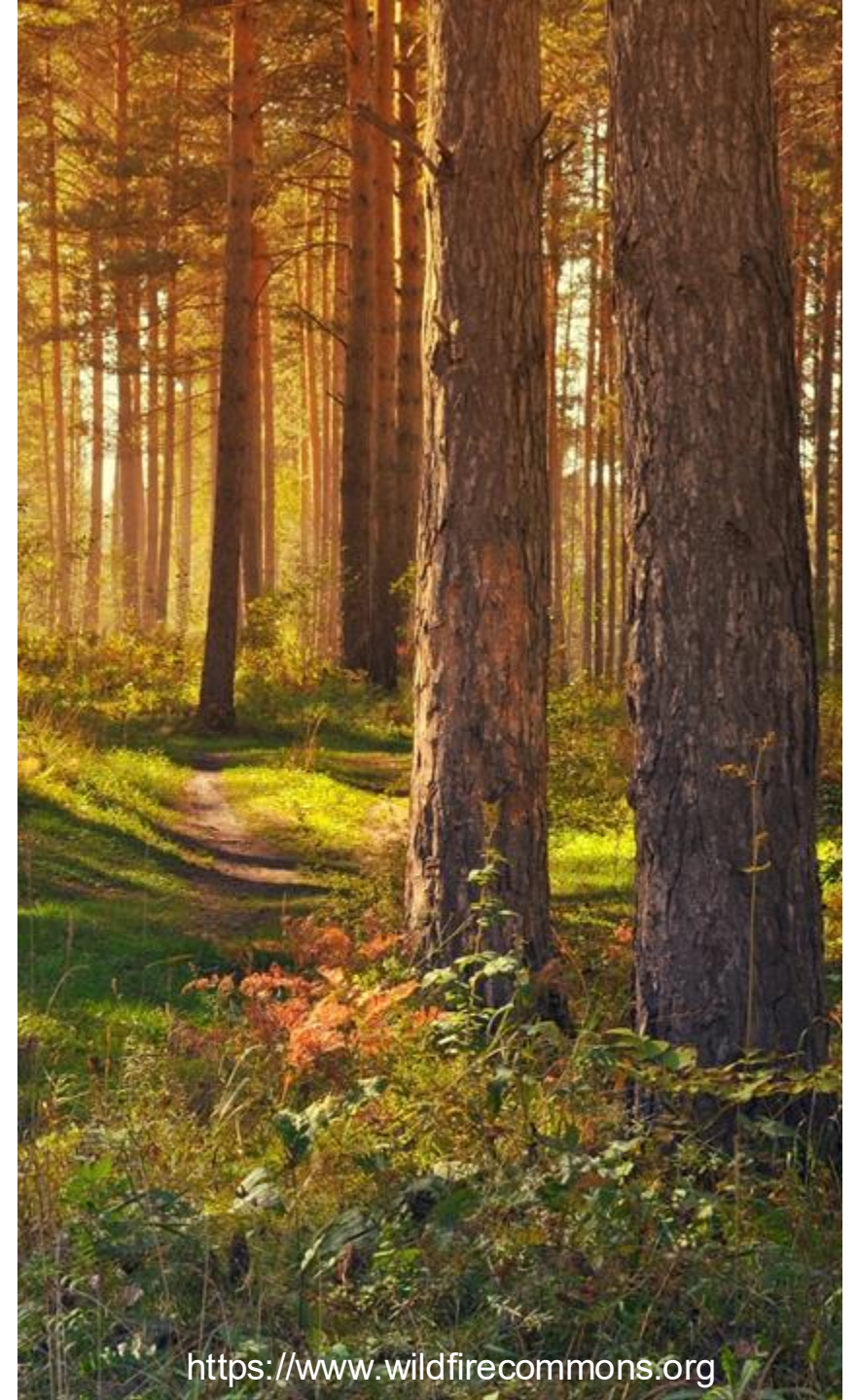
03

Case Study Communities

04

Data Challenges

- Fire-Ready Forests (past)
- Shrub-Wise (Oct 1)
- And more!!



A Community-Driven Commons!

01

Working Groups

02

Pathfinders

03

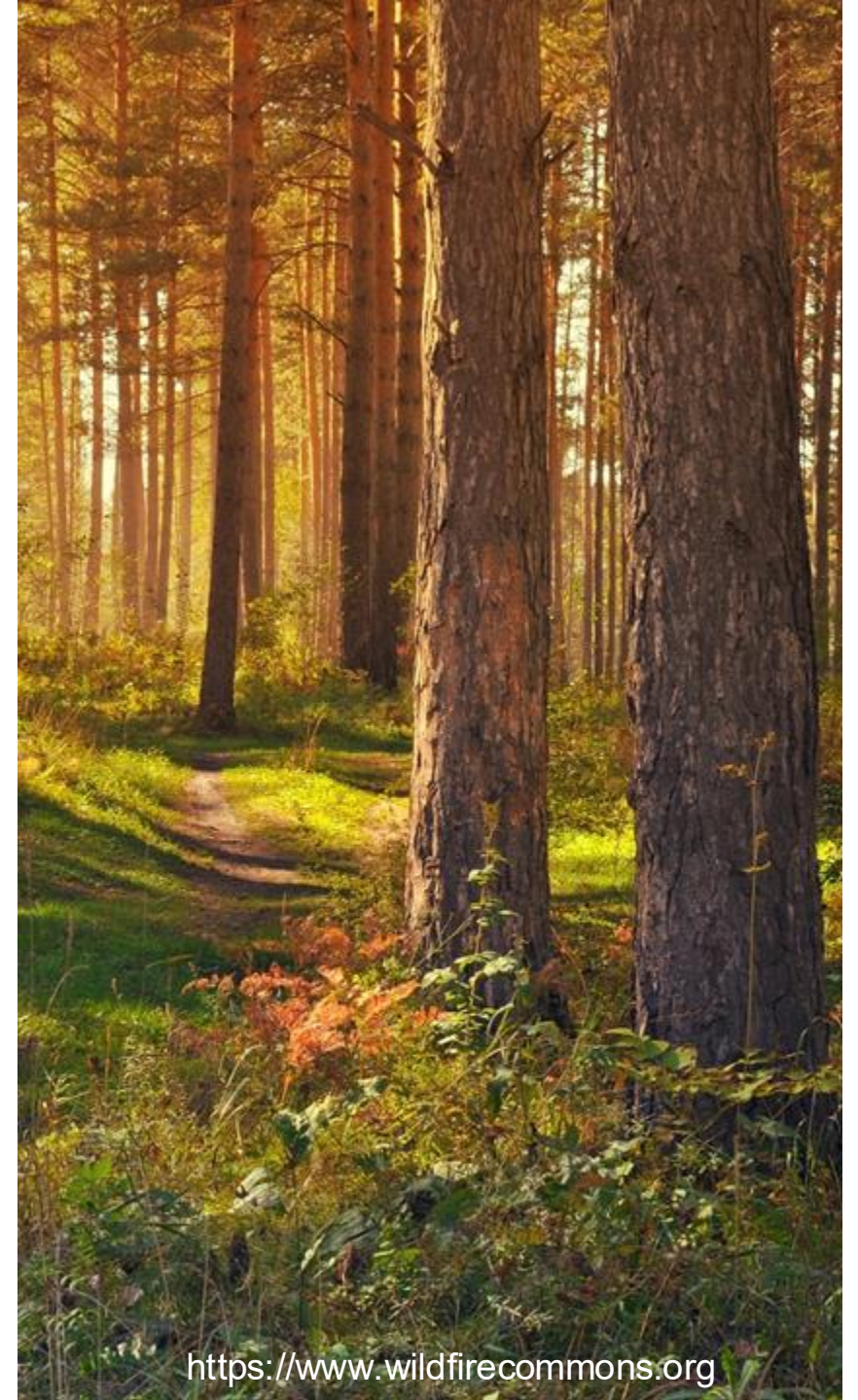
Case Study Communities

04

Data Challenges

05

Community Forum



Today is a Call for Action

Create a
profile to
share your
expertise

List a
pathfinder
project

Try out the
FireForge
platform

Participate
in a case
study

Create a
data
challenge

It is time to use and grow the Wildfire Commons!

Wildfire Science & Technology Commons



Expert
Network
Tool

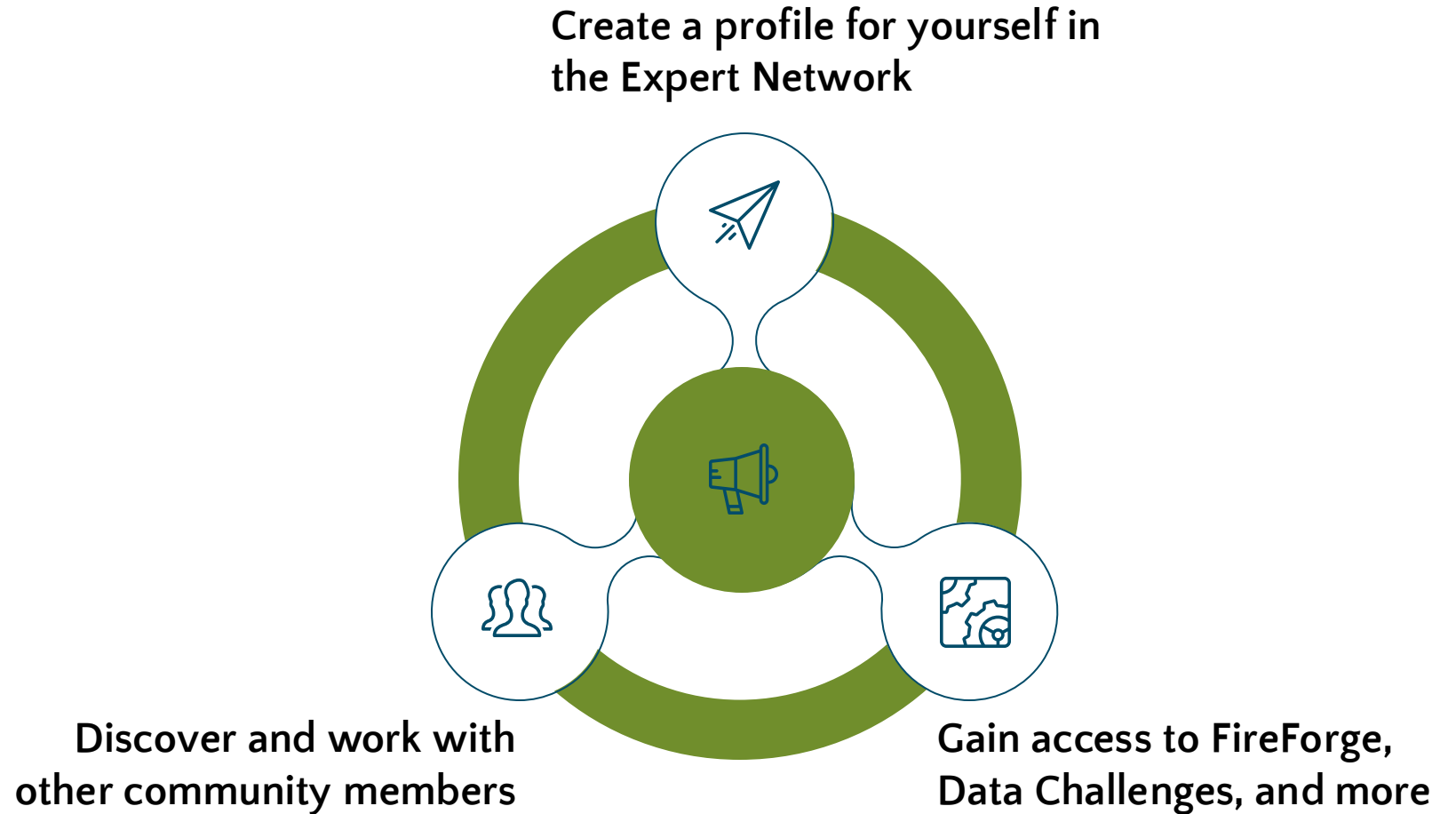


FireForge
Platform

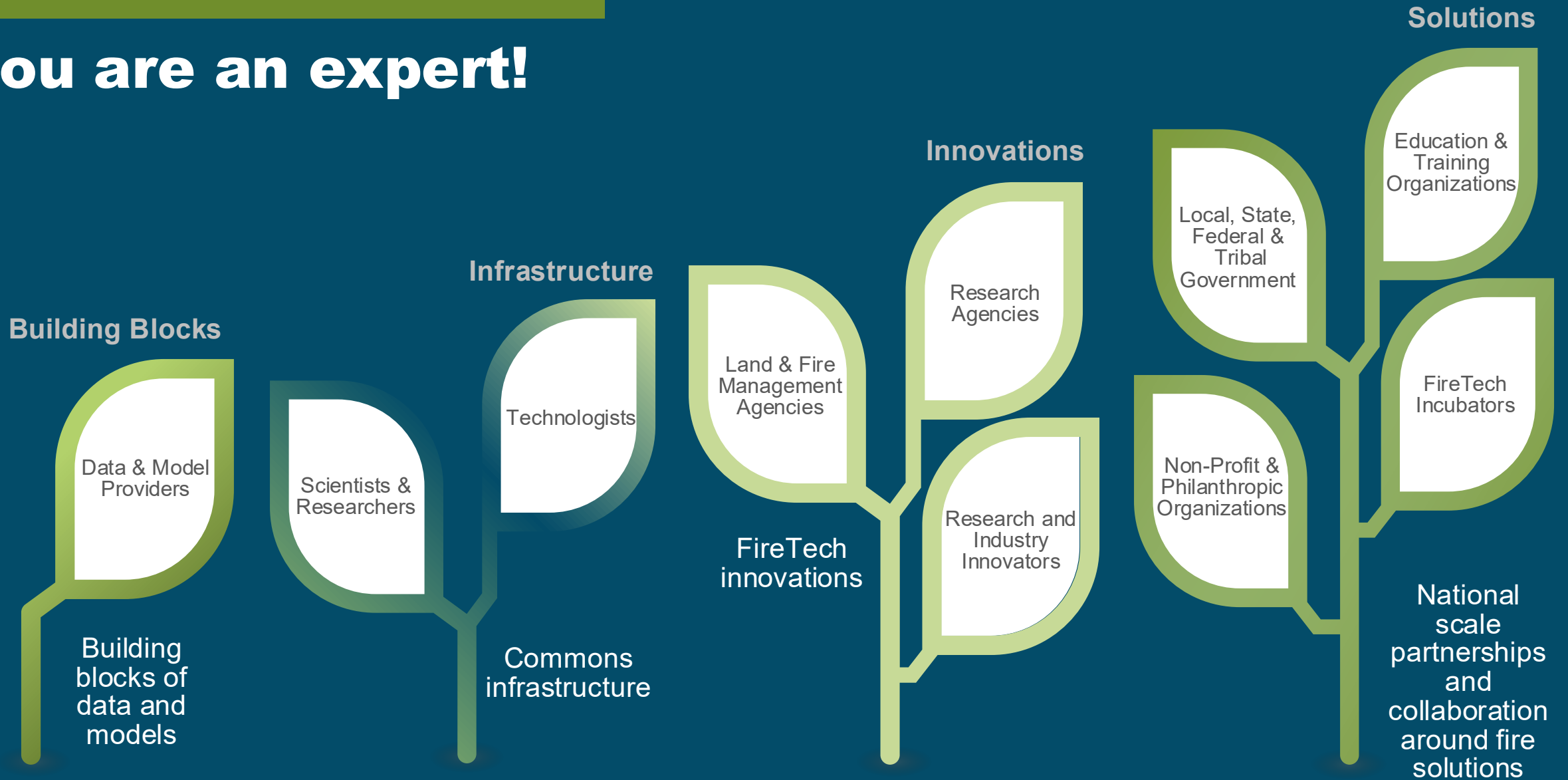


Community
Marketplace

Join the Expert Network



You are an expert!





Principles of Community

- Collaborate with the expert network
- Support common vocabularies, standards and practices for smooth collaboration
- Sustain open data and open science
- Defend data sovereignty and ethical conduct through all community practices

Code of Conduct: <https://www.wildfirecommons.org/get-involved/code-of-conduct>



Expert
Network
Tool
in Action

Register

<https://www.wildfirecommons.org>



Wildfire Science & Technology Commons

[HOME](#)

[ABOUT](#) ▾

[COMMUNITY](#) ▾

[MARKETPLACE](#)

[HELP](#)

[Log in/Register](#)



Introducing the Wildfire Science & Technology Commons

We believe that avoiding devastating wildfires requires urgent, innovative, and collaborative solutions. The Wildfire Commons is a bold new initiative designed to accelerate technological innovations for wildfire management and mitigation. We are building a community platform around open data, cutting-edge science, AI, and shared knowledge.

Our Mission and Vision

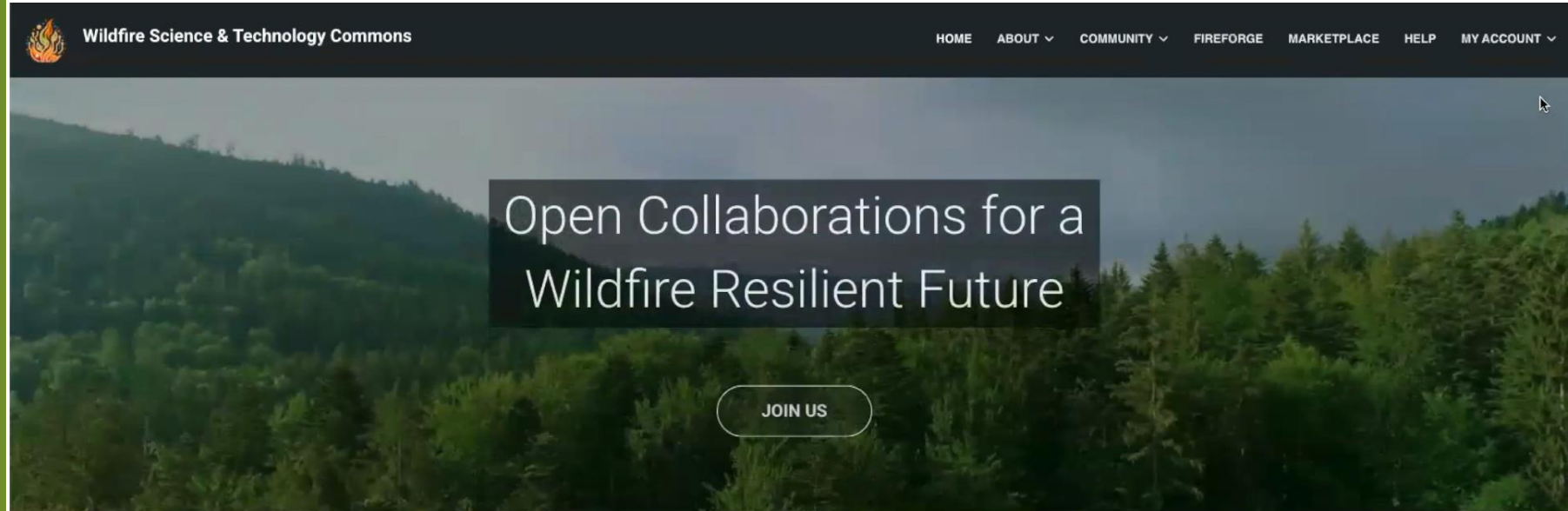
Our mission is to bring people together to break down the barriers that currently exist between wildfire-related data, models, and tools. Today these



Expert
Network
Tool
in Action

Edit Profile &
Search

<https://www.wildfirecommons.org>



Introducing the Wildfire Science & Technology Commons

We believe that avoiding devastating wildfires requires urgent, innovative, and collaborative solutions. The Wildfire Commons is a bold new initiative designed to accelerate technological innovations for wildfire management and mitigation. We are building a community platform around open data, cutting-edge science, AI, and shared knowledge.

Our Mission and Vision

Our mission is to bring people together to break down the barriers that currently exist between wildfire-related data, models, and tools. Today these resources are siloed, which slows down innovation. We have the opportunity to create a seamless, smart platform to enable solutions that revolutionize

Wildfire Science & Technology Commons



Expert
Network
Tool



FireForge
Platform



Community
Marketplace

The FireForge Platform



Catalog

Data, models, and tools available for discovery and exploration



Workspace

Collaborative community spaces to drive innovation development



CollabStudios

Cloud-compatible exploration & prototyping environment

FireForge Platform

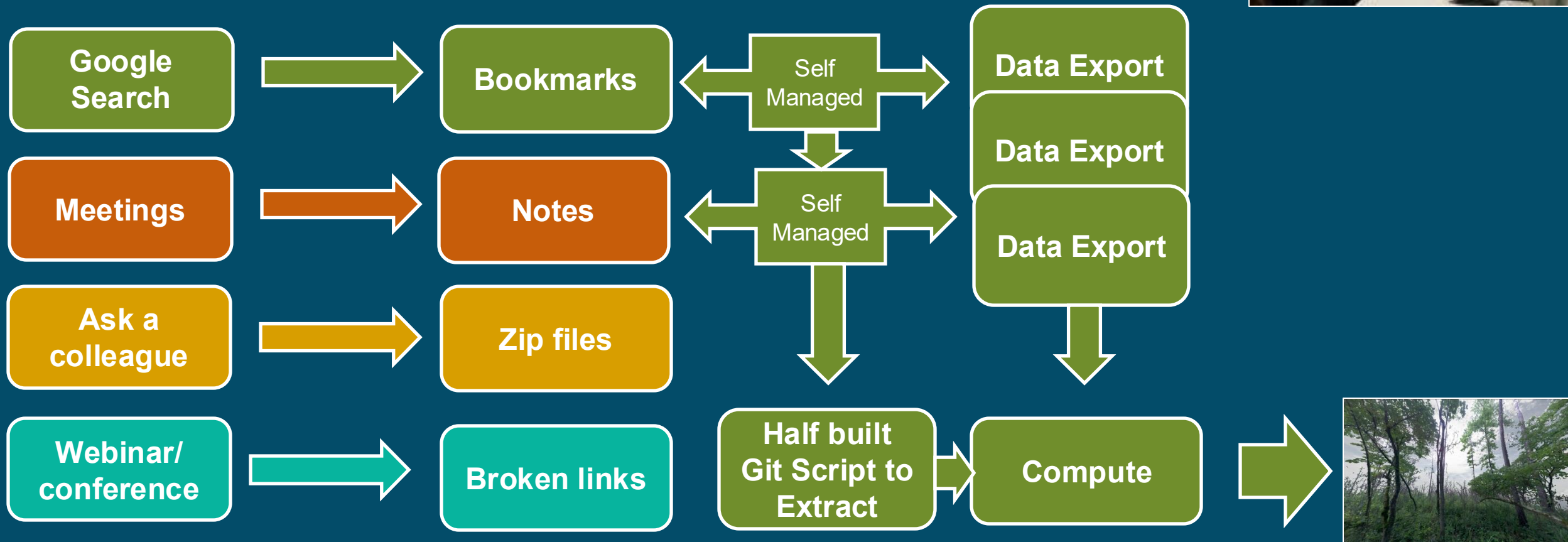
Collect

Curate

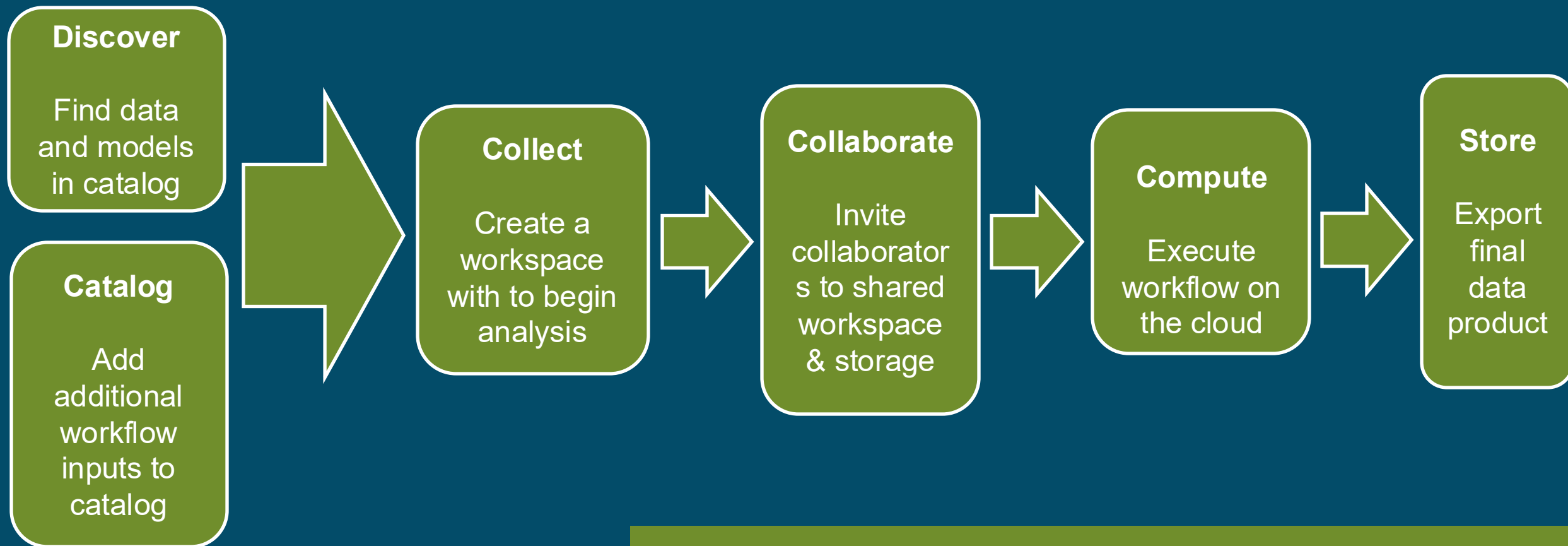
Integrate

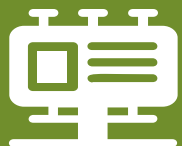
Explore

Working with wildfire data and workflows can be frustrating!




FireForge Flow of Capabilities





FireForge Platform Interface

<https://www.wildfirecommons.org>



Wildfire
Commons
FireForge

My Dashboard

My Hub

Catalogs

Education Hub

Endpoints

My Hub

+ New Workspace

+ New Curated Catalog

+ New CollabStudio

Workspaces

Curated Catalogs

Projects

Data Challenges

Classrooms

A Workspace is your private area to organize and work with data, models, and services. Think of it like a personal lab — you can attach specific datasets, build models, and experiment freely. It is not shared by default.

Claire's Workspace

Launch

Datasets

FIA Database - California

Observed Field Data for UC Climate Action Seed Project: Scaling Science-Driven Vegetation Treatments for a Wildfire Resilient California

Models

No models!

Scripts

https://github.com/pramonetivega/sprint_1_a.git

Go to JupyterHub

WSTC JupyterHub Server Options

Available resources page

Region

Any

Zone

Any

GPUs

0

Cores

1

RAM, GB

18

GPU type

Any

☐ /dev/shm for pytorch

Select Pre-Built Image (Pre-Built Image Guide):

Minimal NDP Starter Jupyter Lab

Or Bring Your Own Image (JupyterLab Compatible):

Enter your custom image URL, here, including the tag. For example: jupyterl-notebook:latest

Timeout (in seconds): once a server has been successfully spawned, time to wait until it actually starts

1200

Edit Datasets

Your Datasets

Terrestrial Solar scans (TL...)

Facilities tree data for fac...

California Wildfire 6...

Annual Biomass Data (200...

Search data catalog

wildfire

Search

Clear

1 - 3 of 179 Data Collections and Streams

1 2 ... 60

California Wildfire & Landscape Resilience Interagency Treatments

WildfireTaskForce.org As California works toward ambitious wildfire and landscape resilience goals, transparency and effective planning tools are critical to success. The California Wildfire and Land...

View More

Add

Annual Biomass Data (2001-2021) - Aboveground Live Biomass 2021

Biomass estimates for shrubland-dominated ecosystems in southern California have, to date, been limited to national or statewide efforts which can underestimate the amount of biomass, are limited to one-time...

View More

Add

Ignition Cause - 1992-2020 - Lightning Cause

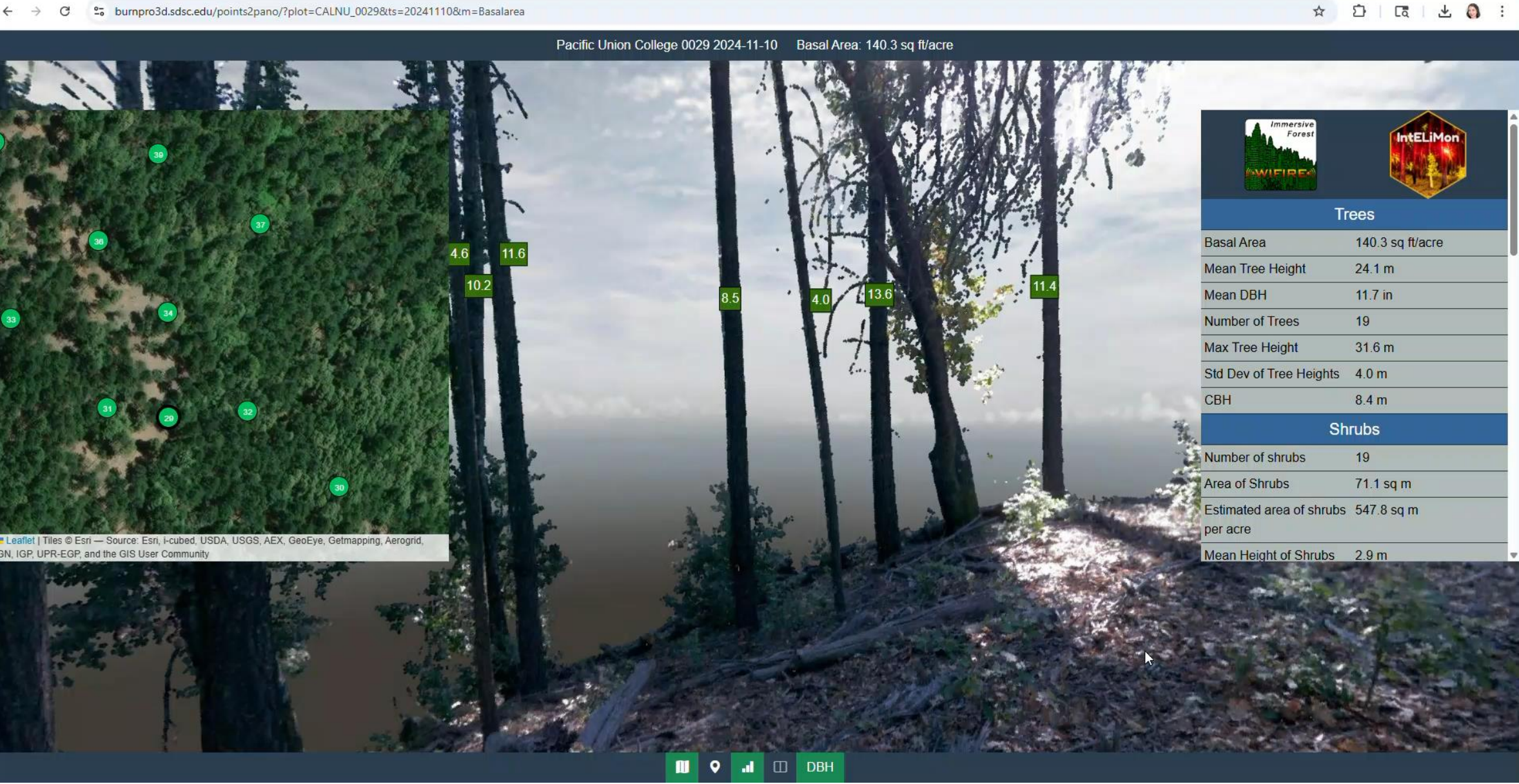
These rasters depict the predicted human- and lightning-caused ignition probability for the state of California. Ignition is regulated by complex interactions among climate, fuel, topography, and humans...

View More

+ Add

Points2Pano app in WIFIRE's Immersive Forest

<https://burnpro3d.sdsc.edu/points2pano>



<https://www.wildfirecommons.org>

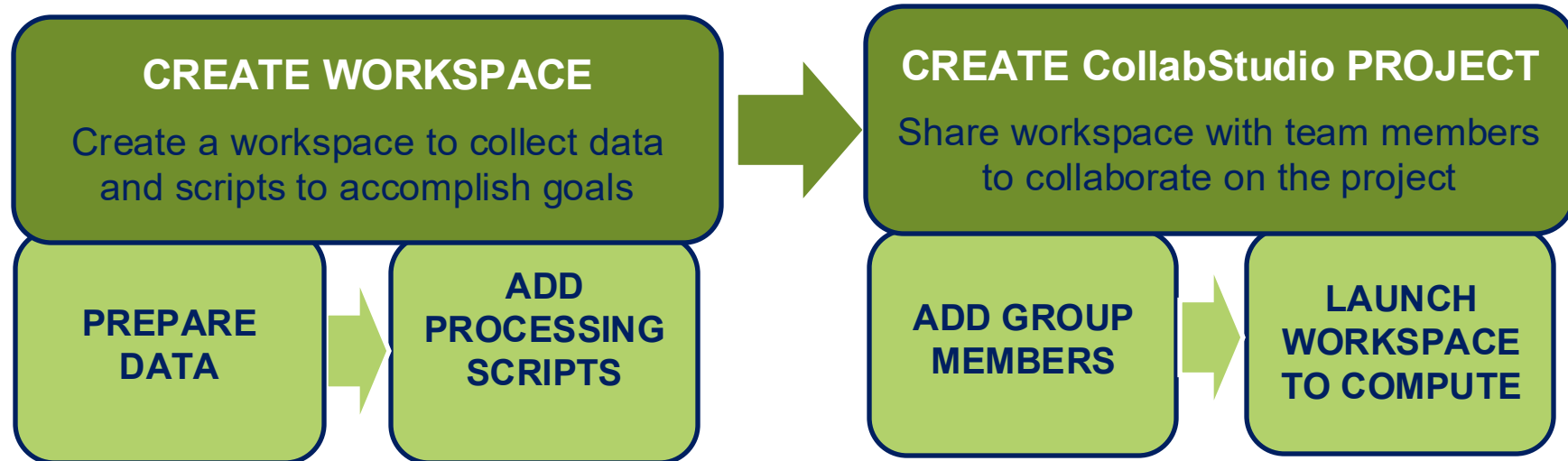
Example:

TLS Processing Workflow Collaboration



Leticia Lee, PhD

OBJECTIVE: Process terrestrial LIDAR scans (TLS) from the USGS IntELiMon program to create visual representations of the scans to push them to data systems that integrate them into the Points2Pano app in WIFIRE's Immersive Forest.



Isaac Nealey

<https://burnpro3d.sdsc.edu/points2pano>

<https://www.wildfirecommons.org>

Step 1:

Prepare data

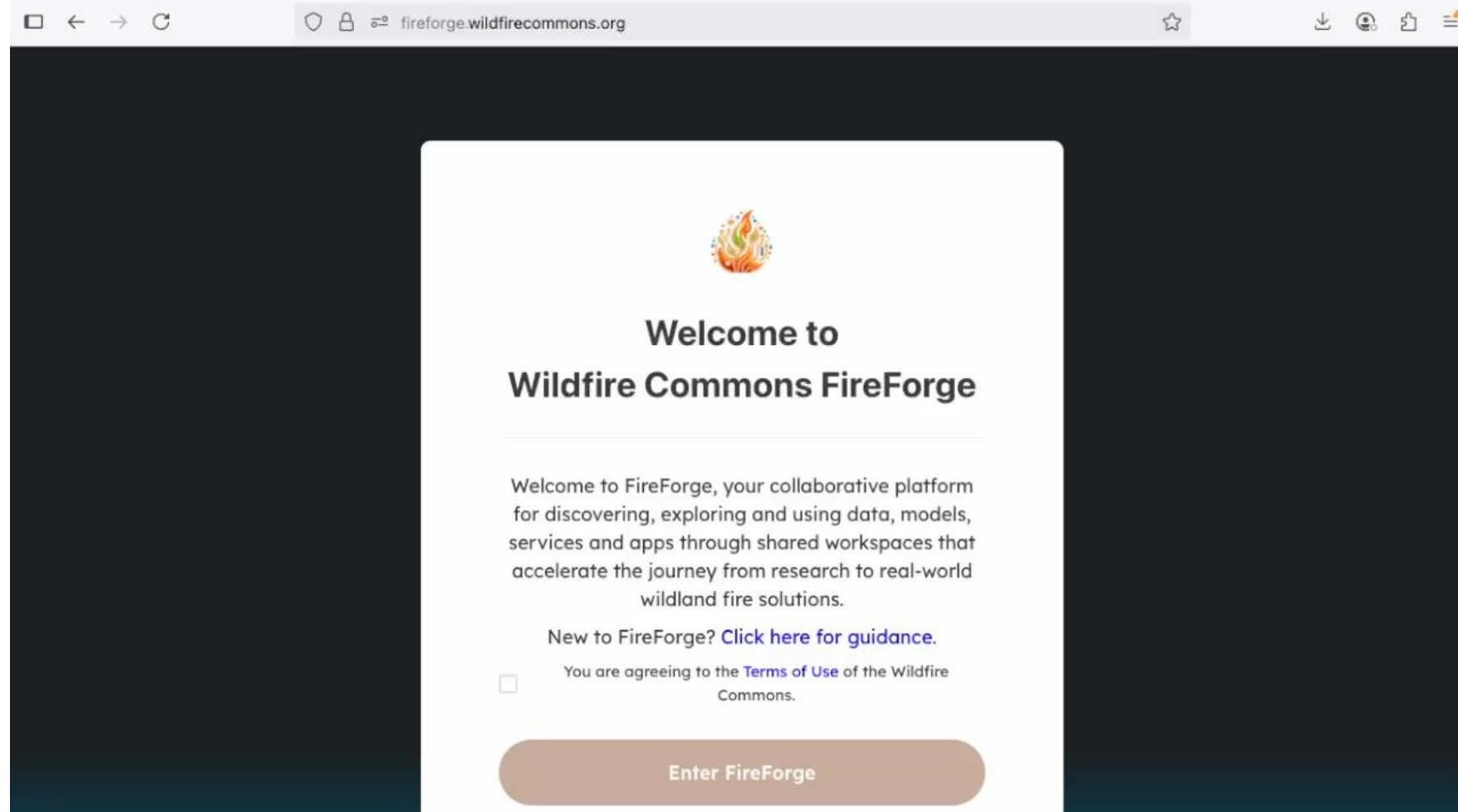


<https://www.wildfirecommons.org>



Leticia Lee, PhD

OBJECTIVE: Process terrestrial LIDAR scans (TLS) from the USGS IntELiMon program to create visual representations of the scans to push them to data systems that integrate them into the Points2Pano app in WIFIRE's Immersive Forest.



Step 2:

Create a workspace & project



<https://www.wildfirecommons.org>



Leticia Lee, PhD

OBJECTIVE: Process terrestrial LIDAR scans (TLS) from the USGS IntELiMon program to create visual representations of the scans to push them to data systems that integrate them into the Points2Pano app in WIFIRE's Immersive Forest.

A screenshot of the Wildfire Commons FireForge web application. The browser address bar shows "fireforge.wildfirecommons.org/projects". The page has a dark sidebar on the left with the Wildfire Commons FireForge logo and navigation links: "Back to Wildfire Commons", "My Dashboard", "My Hub", "Catalogs", and "Data Challenges". The main content area is titled "My Hub" and features three buttons: "+ New Workspace", "+ New Curated Catalog", and "+ New CollabStudio". Below these are four tabs: "Workspaces", "Curated Catalogs", "Projects", and "Data Challenges". A light blue informational box states: "A Workspace is your private area to organize and work with data, models, and services. Think of it like a personal lab — you can attach specific datasets, build models, and experiment freely. It is not shared by default." At the bottom, a message says: "You have no workspaces. Create a workspace to get started!"

Step 3:

Jupyterhub



<https://www.wildfirecommons.org>



Leticia Lee, PhD

OBJECTIVE: Process terrestrial LIDAR scans (TLS) from the USGS IntELiMon program to create visual representations of the scans to push them to data systems that integrate them into the Points2Pano app in WIFIRE's Immersive Forest.

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Step 4:

Run code on Jupyterhub



<https://www.wildfirecommons.org>



Leticia Lee, PhD

OBJECTIVE: Process terrestrial LIDAR scans (TLS) from the USGS IntELiMon program to create visual representations of the scans to push them to data systems that integrate them into the Points2Pano app in WIFIRE's Immersive Forest.

The screenshot shows the WIFIRE Science & Technology Commons Jupyterhub interface. The left sidebar contains the WIFIRE logo and navigation options like File Directory, Git Extension, and WSTC. The main area displays the current folder path: `root/_User-Persistent-Storage_CephBlock_`. Below this, there are sections for "Select Workspace:", "Clone Repository:", and "Add Selected Files:". The "Launch New Notebook" section shows a table of available kernels.

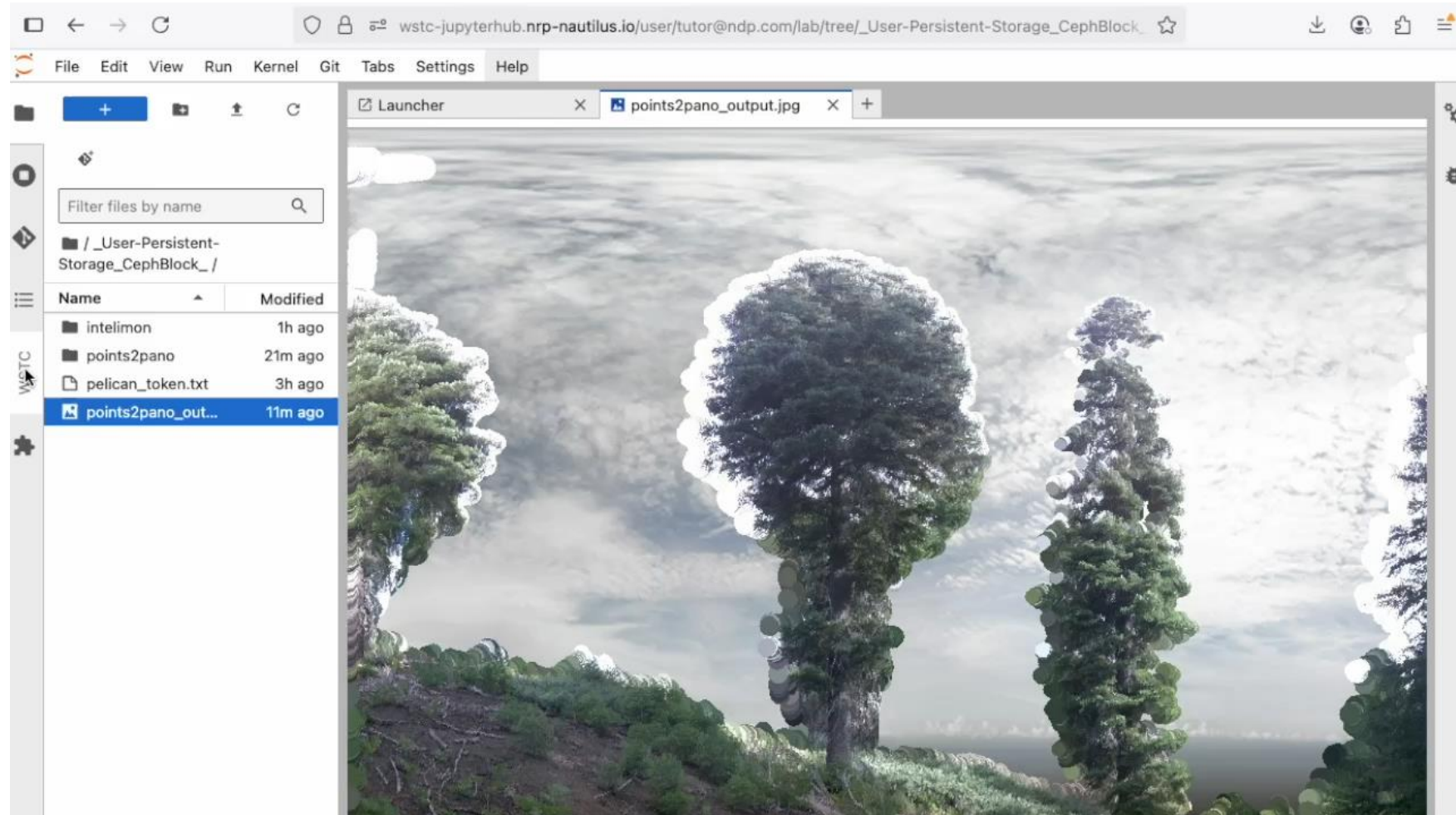
Kernel	Debugger	Last Used	
Python 3 (ipykernel)	true	Never	☆
R		Never	☆

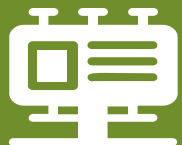
Step 5: Save outputs to cloud- compatible storage



Leticia Lee, PhD

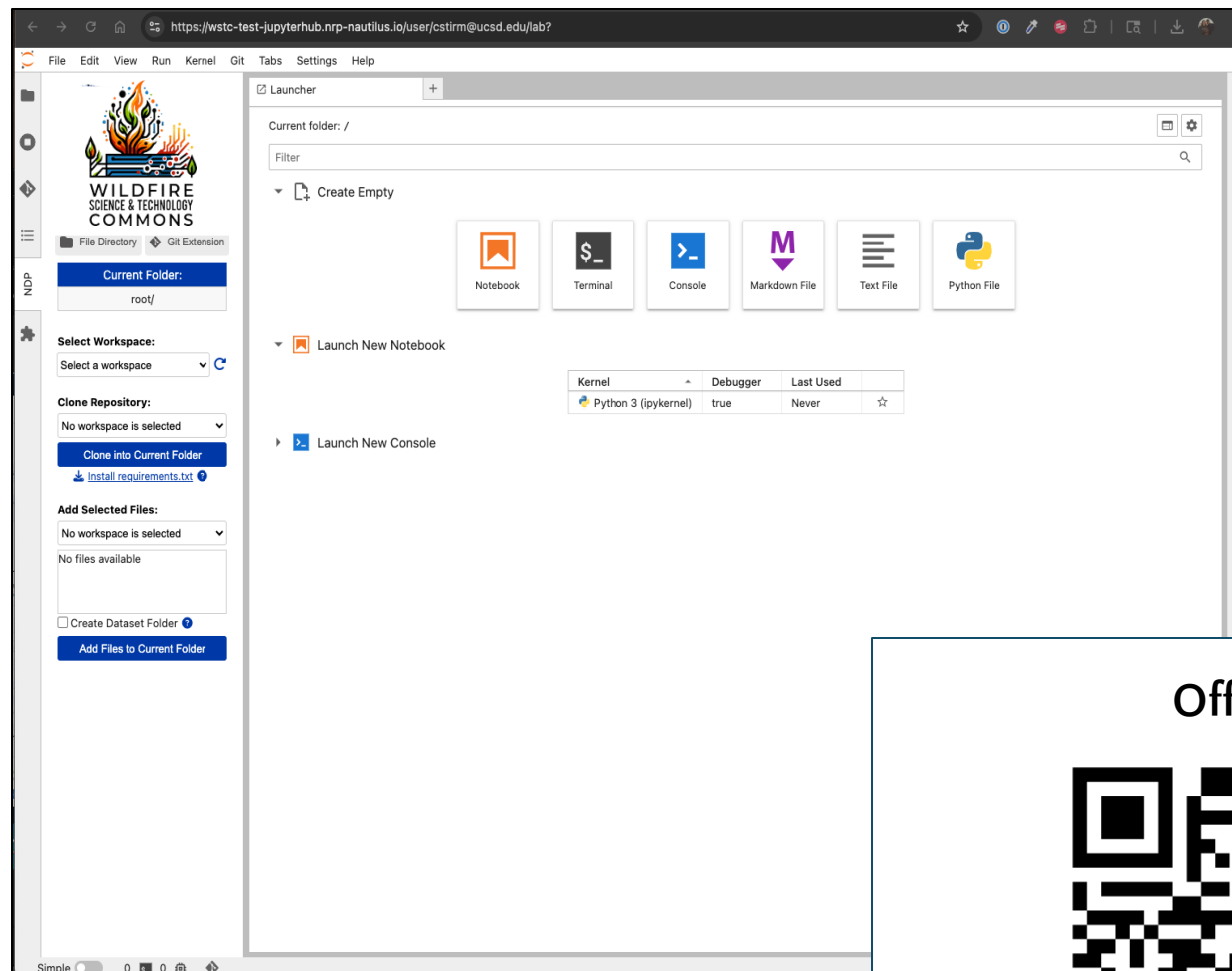
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How can you start using the FireForge Platform?

<https://www.wildfirecommons.org>



Join us for office hours:
<https://bit.ly/wc-officehours>

Office Hours:



Wildfire Science & Technology Commons



Expert
Network
Tool



FireForge
Platform



Community
Marketplace



Marketplace (December 2025)

The **Wildfire Commons Marketplace**, coming December 2025, will transform how the wildfire community shares their best data, models, services and applications.

Partner-shared innovations will be browsable with step-by-step guidance directly from providers on how to access each resource. Marketplace listings will include descriptions from product owners on the featured solutions, as well as expert support to get you started.



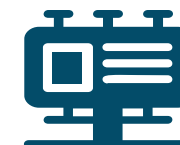
COMING SOON



**Badging and Tagging
Standards**

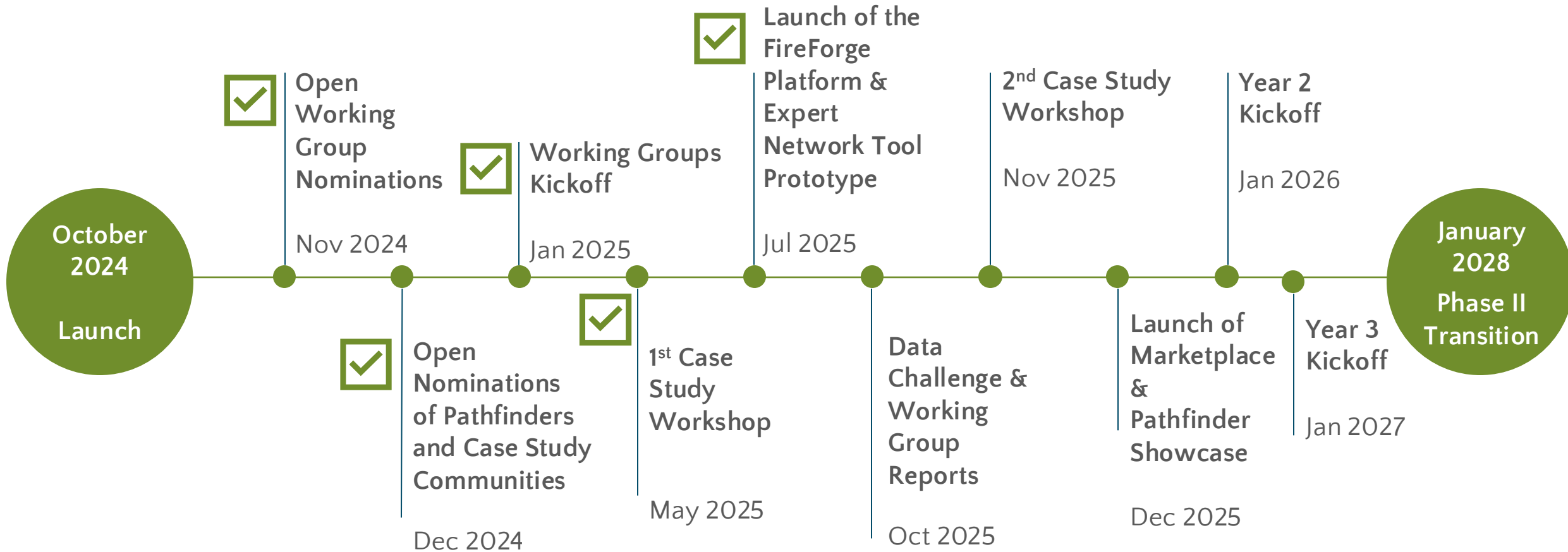


**Access Controls and
FireForge Integration**



**Integration with
External Platforms**

Timeline



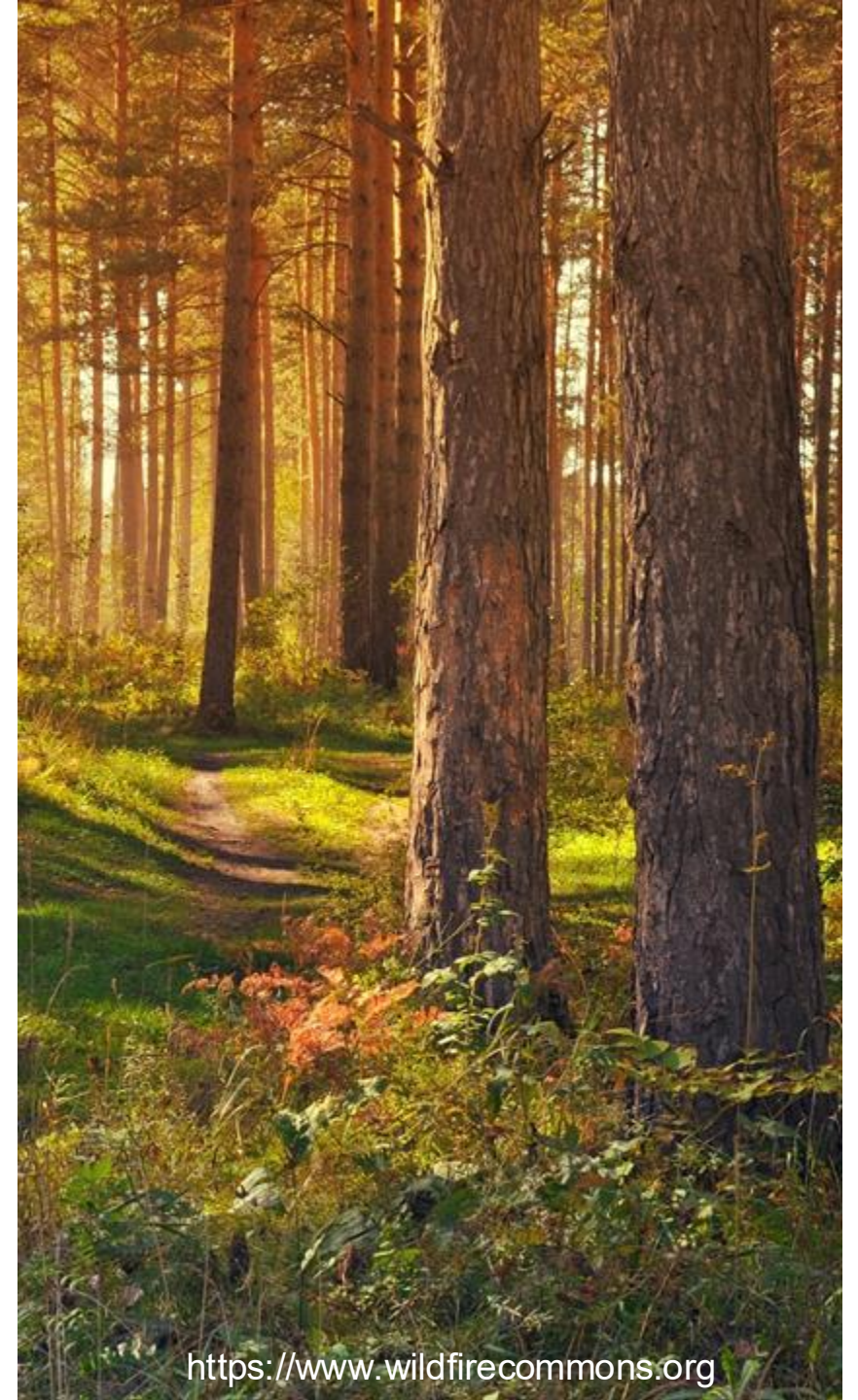
Other Upcoming Milestones

Shrub-Wise Data Challenge – Oct 1

Working Group Reports – Oct 31

2nd Case Study Workshop – Nov

Pathfinder Showcase – Dec 12




Timeline





Data Challenges



Wildfire Commons
FireForge

[Back to Wildfire Commons](#)

- [My Dashboard](#)
- [My Hub](#)
- [Catalogs](#)
- [Data Challenges](#)

Powered by the
NATIONAL DATA PLATFORM


My Dashboard

Welcome back, Tutor Admin!

Quick Explore

- [Explore Community Catalog](#)
- [Register to Catalogs](#)
- [Create a Workspace](#)
- [Data Challenges](#)

Your Profile



Tutor Admin
tutor@ndp.com

Timeline



Working Group Members

[wildfirecommons.org/team](https://www.wildfirecommons.org/team)

Community Marketplace Working Group

- Christopher Jones, Conversa Corps, Inc.
- Himanshukumar Varia, California State University of Sacramento
- Nick Maggio, University of Oregon, Oregon Hazards Lab
- Kevin Sofen, International Association of Fire Chiefs
- Rocio Frej Vitale, Improving Aviation | SkyTL

Scale and Sustain Working Group

- Ilkay Altintas, UC San Diego
- Ertugrul Taciroglu, UCLA
- Sarah Caldwell, Climate & Wildfire Institute
- Rahul Wadhwani, USDA
- Israel Orimoloye, Western Michigan University
- David Saah, USF/SIG
- Seth Schalet, Santa Clara County FireSafe Council
- Doug Toomey, University of Oregon

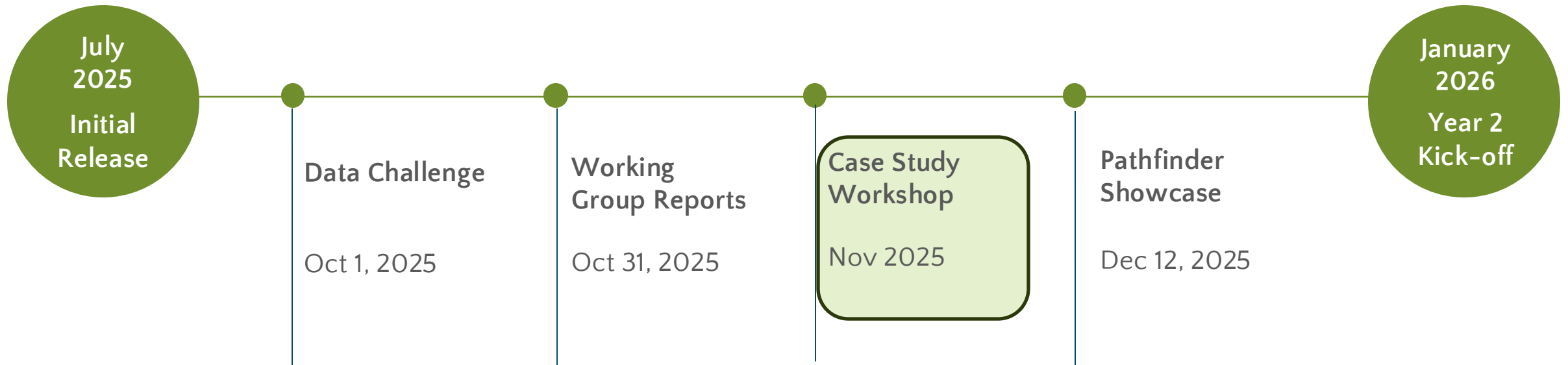
Standards Working Group

- Danielle Christianson, Lawrence Berkeley National Laboratory
- Nicholas LaHaye, JPL/SIG
- Ilkay Altintas, UC San Diego
- Jake Rose, Improving Aviation | SkyTL
- Zack Wurtzebach, Spatial Informatics Group (SIG)

Opportunity Assessment Working Group

- Mark Brown, Marin Wildfire Prevention Authority
- Mikhail Teverovskiy
- Josh Wilkins, Fireline Solutions
- Ken Kempter, Cal OES
- James Zollweg, SUNY Brockport
- Ertugrul Taciroglu, UCLA
- Matthew Thompson, Pyrologix LLC
- Kevin Vogler, Filsinger Energy Partners
- Bryce Young, Vibrant Planet

Timeline



Community Case Study enabled by the Wildfire Commons

- **4D Fuels, Fire and Smoke Modeling for Prescribed Fire:** Researchers and technologists working on 4D fuel and fire modeling will come together to use the FireForge platform to create new innovations.
- **Wildland Fire Digital Twin:** In progress to be announced soon.



May 2025 - 4D Fuels, Fire and Smoke Modeling Case Study Workshop

Timeline



Pathfinders

Pathfinders are projects using the Wildfire Commons to showcase and multiply the impact of:

- existing efforts in FireTech
- leverage open data
- leverage open science
- seeking wildland fire solutions



BurnPro3D

BurnPro^{3D} is a web-based platform to help the fire management community understand risks and tradeoffs when planning and conducting prescribed burns. The interface allows burn planners to create and visualize high-resolution 3D fire... [more](#)



Multi-Sensor Smoke and Fire Detection and Tracking using Self-Supervised Deep Learning

Segmentation, Instance Tracking, and data Fusion Using multi-SEnsor imagery (SIT-FUSE) utilizes self-supervised machine learning (ML) that allows users to segment instances of objects in single and multi-sensor scenes, with minimal human... [more](#)



Marin Wildfire Fire Resilient Roadways

Fire Resilient Roadways is an interactive map designed to show the heat flux cars will be exposed to during evacuations. This helps to visually display to residents where they will be safe in their vehicles, even under fire conditions.... [more](#)

Am I a Pathfinder?

01


Share your data, models and tools in Wildfire Commons to multiply your impact and provide feedback

02

Build a community to utilize the Wildfire Commons with your tools

03

Identify a problem to create a solution-oriented community around it

 Wildfire Science & Technology Commons

HOME ABOUT ▾ COMMUNITY ▾ FIREFORGE MARKETPLACE HELP MY ACCOUNT ▾

[Home](#) > CREATE PATHFINDER

Create Pathfinder

Pathfinder Title *

Logo *

No file selected.

One file only.
40 MB limit.
Allowed types: png gif jpg jpeg.

Lead

Primary leader of the pathfinder. Start typing the name of the person you would like to add. If the person is not listed, please add their name and email to the "Notes for Admins" field below.

Contact

Primary point of contact for the pathfinder. Start typing the name of the person you would like to add. If the person is not listed, please add their name and email to the "Notes for Admins" field below.

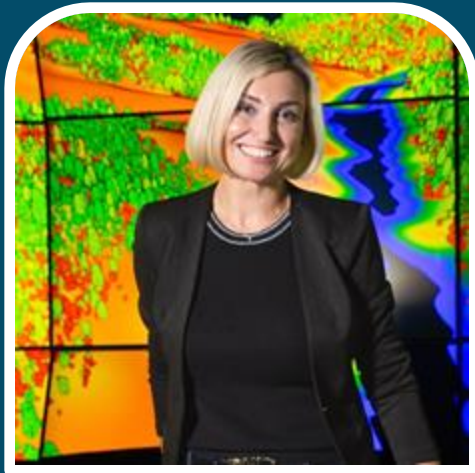
Organization

Partners

The Wildfire Science & Technology Commons partners, pathfinders, and working group members supporting the planning of the Wildfire Commons.



Wildfire Commons Team



Ilkay Altıntaş
Principal Investigator



Melissa Floca
Expert Network & Partnerships Lead



Claire Stirm
Project Manager & Engagement



Katie O'Laughlin
Lead Developer



Dan Crawl
Systems Operations



Kate Kaya
Developer



Jenny Lee
UI/UX Designer



Pedro Ramonetti
Onboarding Manager



**WILDFIRE
SCIENCE & TECHNOLOGY
COMMONS**

THANK YOU

NIST

UC San Diego

SCIL

Societal Computing
and Innovation Lab



<https://www.wildfirecommons.org>

How would you like to participate?

Join the Expert Network Tool

Login to the Wildfire Commons and create your profile:
<https://www.wildfirecommons.org/>

Use the FireForge

With your new Wildfire Commons expert profile,
access FireForge. Office hours: bit.ly/wc-officehours

Participate in the Case Studies

Join the case studies! Email
info@wildfirecommons.org

Become a Pathfinder Project

Submit your Pathfinder Project on how you will use the
Wildfire Commons:
<https://www.wildfirecommons.org/pathfinders>

Participate in Working Groups

Participate in working groups – self nominate at:
<https://www.wildfirecommons.org/team>

