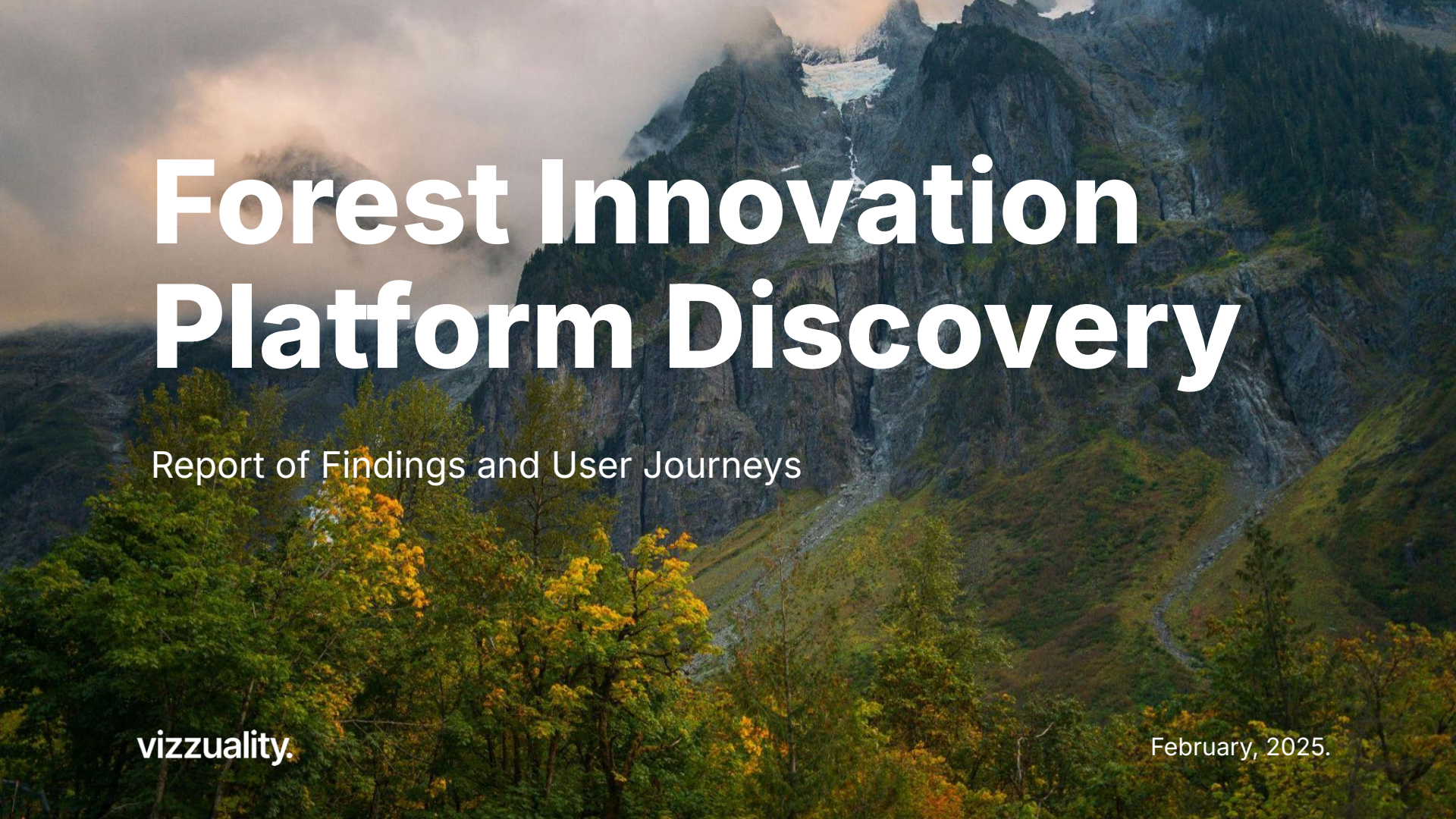


The background image is a full-page photograph of a mountain landscape. In the foreground, there is a dense forest of trees with green and yellowing leaves, suggesting an autumn setting. The middle ground shows a steep, rocky mountain slope with some green vegetation. In the background, a large, dark, and jagged mountain peak rises, partially covered in snow or ice at its summit. The sky is filled with soft, white clouds, and the overall lighting is somewhat dim, creating a moody atmosphere.

Forest Innovation Platform Discovery

Report of Findings and User Journeys

vizzuality.

February, 2025.

Index.

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01.

Project Overview.

Background.

The Forest Innovation Platform (FIP) will be an open-source tool designed to help land managers conduct vulnerability assessments and adaptation planning for forestry and forest conservation. Users of the FIP should be able to understand whether there are gaps between their management intents and actions and the environmental pressures. Ultimately, the tool would support user decision-making around the adequacy of adaptation measures in response to the environmental pressures.

Key users were already identified as being federal and non-federal adaptation planners, land planners, and forest managers. Previous research with potential users and funders had been conducted in order to understand the key components of the FIP, and this user discovery was intended to support the start of design and development.

Discovery Activities.

1. **Business discovery.** We outlined the specific needs of the business, as well as the objectives of this project.
2. **Landscape analysis.** We analyzed reference and inspirational tools and platforms to understand the space and take inspiration from what has been done well.
3. **Use case owner interviews.** Two interviews were conducted in November 2024 with the owners of the use cases (*8: Fine-Scale Restoration Planning at Lower Timberline in Santa Cruz County* & *9: Climate Change Vulnerability Assessments across the USFS Eastern Region*) to get initial descriptions on potential use cases for the FIP.
4. **User working group sessions.** The User Working Group consisted of previously identified potential users of the FIP. Four sessions were conducted in total.
5. **Tribal working group talking circles.** We observed talking circles with Tribal users of the platform to understand their unique needs for the FIP.

01a.

Business Discovery.

Summary.

The Business Discovery helps align goals, needs, technical feasibility, and stakeholder needs.

The FIP is designed to support **science-informed forest management** by providing data, decision support tools, and adaptation planning resources.

Additional information including governance, risks, constraints and benefit evaluation can be found in the [Business Needs Document](#)

Business Objectives.

- Improve the resilience of U.S. forests and ecosystems.
- Support land managers by providing data and tools for vulnerability assessments and adaptation planning.
- Ensure science-informed decision-making by integrating authoritative climate and forest data.
- Accelerate planning and management through streamlined workflows and reporting capabilities.

Business Needs.

- An integrated, open-source platform that provides accessible, vetted climate and forest data.
- Decision-support workflows that guide users through vulnerability assessments and adaptation planning.
- Compliance-ready outputs to support reporting for planning regulations like NEPA.
- Collaborative tools to facilitate stakeholder engagement and knowledge sharing.
- Scalability and security to ensure reliable long-term use by land managers, researchers, and policy makers.

Business Requirements.

- **FIP-M1: Decision Support Tool**
 - Enables users to assess vulnerability, compare adaptation strategies, and generate reports.
 - Supports data visualization, scenario modeling, and structured workflows.
- **FIP-M2: Climate Risk Data Hub**
 - Provides access to authoritative datasets for forest management.
 - Ensures data governance, filtering, and API integrations.
- **FIP-M3: Decision Support Tool Library**
 - Offers a curated set of external decision-support tools.
 - Ensures interoperability with existing analysis frameworks.
- **FIP-M4: Training & Capacity Building**
 - Includes self-paced tutorials, guides, and onboarding resources.

CrossCutting Requirements.

- **FIP-CC1: Accessibility** → Intuitive UI with minimal training needs.
- **FIP-CC2: Collaboration** → Shared workspaces and stakeholder engagement features.
- **FIP-CC3: Transparency & Privacy** → Clear data sources and privacy controls.
- **FIP-CC4: Reporting** → Customizable reports aligned with NEPA and other regulations.

Additional information including acceptance criteria and preliminary requirements breakdown can be found in the [Business Requirements Document](#)

01b.

User Discovery.

User Discovery Objectives.

The purpose of the user discovery was to:

- understand user profiles and use cases
- identify users' objectives, journeys, and expectations from a platform like FIP
- define user requirements to inform the design of the platform



Working Sessions.

Vulnerability Assessments #1

Participants completed templates describing their journey when completing a vulnerability assessment. Session facilitated by Kanika Singhal and Santiago Ferrer.

Indigenous Talking Circle #1

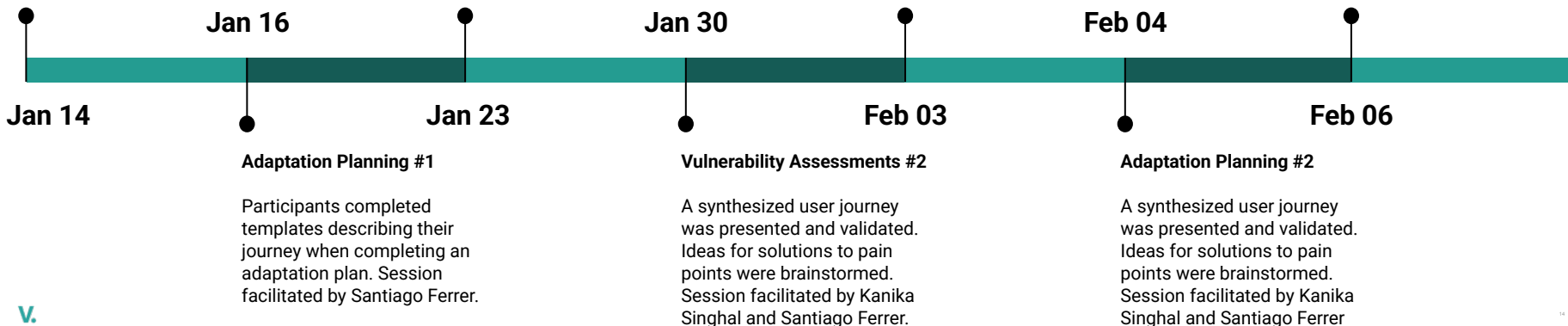
Potential Tribal users were engaged in a talking circle facilitated by Cristina Eisenberg.

Indigenous Talking Circle #2

A follow up sessions focused on data protection needs facilitated by Cristina Eisenberg.

Indigenous Talking Circle #3

A third talking circle digging into further Tribal user needs. Session facilitated by ShiNaasha Pete.



02.

Key Learnings.

Key Learnings.

Users would benefit from being guided through each phase of the journey within the FIP.

Users have to navigate data collection, stakeholder engagement, risk assessments, adaptation planning, and implementation, having to navigate piecing together various tools and datasets.

Some smaller community groups, including Tribal groups, face technical barriers or high turnovers in staff. Structured guidance can support consistent workflows, assessments and methodologies, and make onboarding for non-expert users simpler.



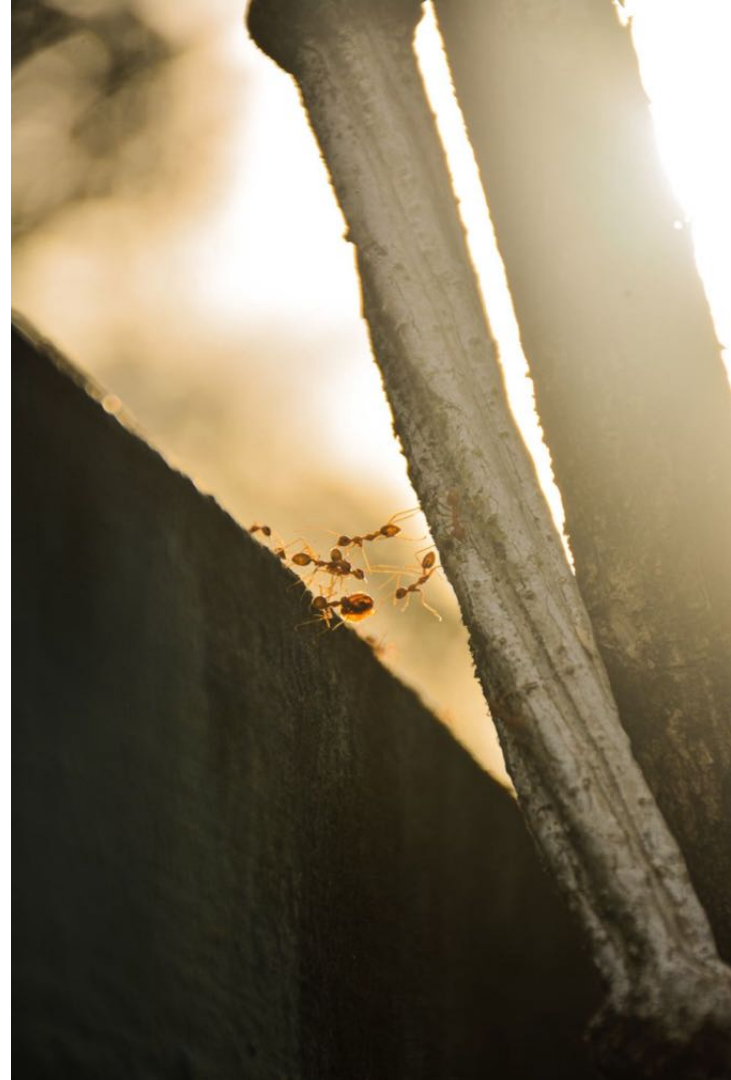
Key Learnings.

Stakeholder engagement is critical at various points of the journey, but can be complicated to integrate.

Users spend a lot of time and effort on stakeholder alignment of priorities and ensuring all voices are heard in the decision making process.

Challenges exist due to the various number of stakeholders to manage (agencies, communities, Tribal groups, landowners, scientists), who might all have different needs, priorities, values, and interpretations of what should be done.

Successful engagement includes stakeholder buy-in, consensus building, implementation support, project coordination, and policy actions.



Key Learnings.

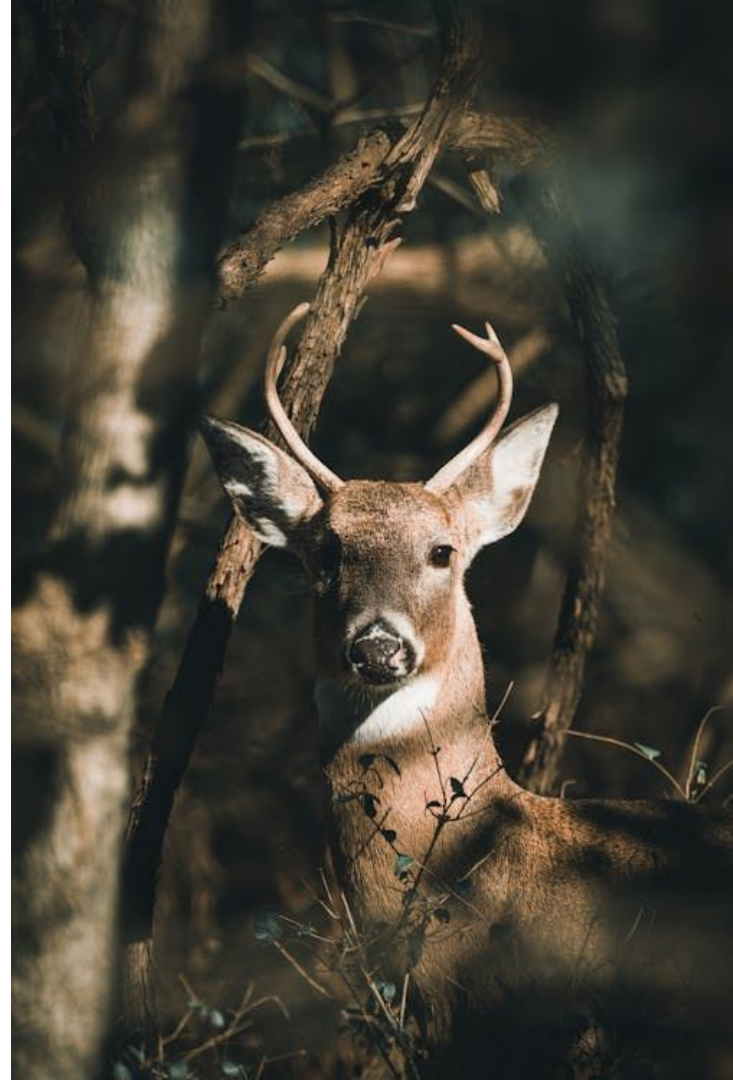
"Setting up those mechanisms for public engagement in the front end to glean the best and as much information from a broad array of stakeholders as possible is critically important to get the types of results that are beneficial to these initiatives."

- Vulnerability Assessment Session 1

Key learnings.

Users want to integrate Indigenous Knowledge into the adaptation planning but lack a clear process.

Users would like more support on how to integrate IK into their planning processes considering that this data is sensitive and may not be accessible. It was noted that there are distinct challenges with incorporating Indigenous Knowledge into planning when using a Western means of analyses.

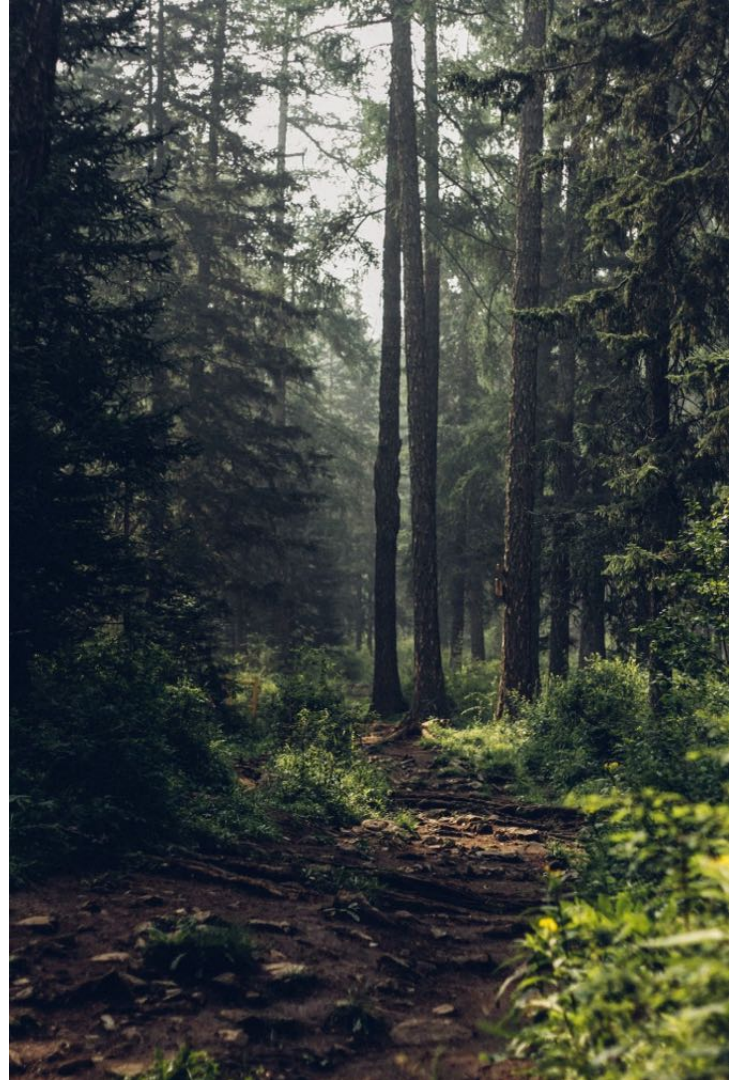


Key Learnings.

A key pain point for users is managing data and uncertainties from models and scenarios .

Some users reported complexities and inconsistencies when managing, interpreting, and comparing various outputs of models, making it difficult to translate the insights into actionable plans.

Additionally, users are sometimes challenged with understanding uncertainties and confidence levels of the models, making it difficult to assess the weight that should be given to certain projections over others when making decisions.



Key Learnings.

"Things can get really complex really quickly. Planning for one scenario of the future can be complicated. And then if you try to plan for multiple plausible futures, you're just multiplying that complexity in some ways. Striking the right balance between what is useful and helpful to moving forward without getting so bogged down in the complexity that it causes paralysis is a real challenge."

- Adaptation Planning Session 1

Key Learnings.

"What's frustrating is that different models might tell you wildly different things. One model is saying that species is going to decline and another model is saying the species is going to increase. There might be even differences within the model between scenarios. Trying to reconcile that and explain it to managers and getting their buy-in is just really challenging.

There's also inconsistency and availability of different model results across the nation. So in the east, we have a certain set of models that are typically available, but in the West, there's different sets of models that are available and so that can be really challenging as well."

- Vulnerability Assessments Session 1

Key Learnings.

Users repeatedly noted the challenges with scales when moving from broad analyses to site-specific actions .

Users shared they struggle with downscaling broad data when trying to make local and site-specific decisions. When local data is available, it might be hard to integrate with broader scale models.

Users would need support conducting multiple scales of analysis, from broad-scale regional assessments that can align with localized implementation.



Key Learnings.

Users see a role for FIP in helping them navigate and move past funding roadblocks .

Users reported multiple steps along their journeys where barriers came up due to insufficient funding, or due to misalignment between the adaptation work necessary and the requirements or priorities of the fundings available (e.g. covering only specific adaptation types rather than a diverse approach that might be needed).

Lack of funding for monitoring and evaluation is another frustrations for users. Funding cycles might not align with project or ecological timelines.



Key Learnings.

"One of the reasons people want to engage in climate vulnerability assessments is so they can then go secure finance to actually do something about it. Regional efforts are very constrained in terms of staff time and capacity for writing grants. If we can generate automated graphics, maybe even automated text or tables that are grant ready or even have some grant templates would help with catalyzing potential."

- Vulnerability Assessment Session 2

Key Learnings.

Shared workspaces can help users manage their adaptation projects and collaborations.

A way for users to save and organize their work on the platform would support them in keeping track of their progress, and allow them to share projects with relevant stakeholders such as community members and Tribal groups. This could further support users' needs for establishing alignment by allowing stakeholders to communicate directly on the platform and compare their objectives.

Saved projects could be accessed by others who are looking to do similar work, or at a later time to update with new data and models.



Key Learnings.

"Thinking about this platform as creating spaces where multiple people can have input to the same maps or identify important places or concerns in a shared visual representation can do a lot towards building consensus."

- Adaptation Planning Session 2

Key Learnings.

Communication assets would help users turn findings into actionable insights .

Data is important, but on its own it isn't enough. Various audiences and stakeholders have differing needs around the types of communications required, whether it's to support buy-in, apply for funding, support policy decisions, or ensure regulatory compliance.

Users would benefit from customizable communication tools that would help translate their work into actionable insights that can be shared with stakeholders, funders, or policymakers.

Summaries and data visualizations could support the existing hurdles users face with regards to securing and aligning funding.



Key Learnings.

"Anything that this tool could do to help communicate components of a vulnerability assessment, whether it's some built in graphics that get generated or ways to make little videos would be helpful. I think that that most of us that do this work are coming from a science background and we have to hand things over often to the comms people to help with the outreach and uptake. Templates are super helpful."

- Vulnerability Assessments Session 2

Key learnings.

Visualizing projected impacts on (eco)systems can help users make better informed decisions.

Users stated the importance of being to understand the impacts on resources, species, and ecosystems of various models and projections. The impacts, especially if visualized, would be key in facilitating decision-making and communicating the potential risks with partners who are non-scientists such as policymakers and funders.



Key Learnings.

Summary of vulnerability assessment user journey.

	1. Pre-planning and Scoping	2. Define assessment area	3. Gather baseline data	4. Analyze impacts and vulnerabilities	5. Consensus building with stakeholders	6. Synthesize and communicate findings	7. Adaptation plans and strategies
Activities	Development of project plan including defining the objective and goals, securing the funding, and engaging stakeholder. Understanding planning schedules (NEPA).	Mapping the boundaries of the area of interest, including consensus building on boundaries and goal with stakeholders.	Gathering the relevant ecological, socio-economic data and identify gaps in data. Map the data spatially. Stakeholder engagement in data collection.	Use models to project changes in forest species, ecosystems. Identify priority impacts within that ecosystem vulnerability Summarize findings.	Collaborate with stakeholders to share findings and gather input. Consultation with experts to refine the findings and determine confidence in findings.	Compile learnings into summaries and communications. Reporting of vulnerabilities and actionable recommendations.	Define management implications, strategies and action plans. Incorporate stakeholder input and align with policy frameworks.
Data & Tools	Surveys and polls to understand public and stakeholder sentiment.	GIS for mapping (ArcPro, AGOL), management plans, forest maps, ecoregion data. Landowner and socioeconomic data.	Observed data, forest ecosystem maps, forest conditions, models like MACAv2, FIA data. Expert knowledge.	Modelling tools (Tree Atlas, Landis, VIS hydrologic models) Risk matrix. Literature reviews on projections. Climate velocity maps.	Collaborative and communication tools.	GIS software, visualization platforms, word processing.	Adaptation workbooks and guides, scenario planning and decision-support tools.
Pain Points	Limited funding, competing priorities, complex stakeholder landscapes.	Disagreements on boundaries and ensuring comprehensive stakeholder engagement.	Hard to narrow information, gaps in data at actionable scales, difficulty integrating custom data. Sensitivity with using Indigenous Knowledge.	Rapidly evolving tools and literature, interpretation of conflicting results from models, models ability to integrate the interaction of forest management with predictions.	Scheduling conflicts with stakeholders, managing differing values and opinions of stakeholders.	Ensuring clarity and accessibility of reports for diverse audiences, delays in reviews and feedback cycles.	Balancing short-term and long-term priorities, gaining consensus on adaptation strategies, securing funding.
Feeling	😊	😄	😞	😞	😊	😊	😊

Key Learnings.

Summary of adaptation planning user journey.

	1. Stakeholder & community engagement	2. Define scope, goals, and planning framework	3. Assess impacts and vulnerabilities	4. Identify and prioritize adaptation strategies	5. Develop detailed implementation plans	6. Implement adaptation actions	7. Monitor and evaluate effectiveness
Activities	Identify the geography and the boundaries of the work. Identify and align with stakeholders and communities.	Identify the objectives, scope, and goals of adaptation. Align with strategic goals. Stakeholder engagement and consensus on priorities.	Conduct and review vulnerability assessments, use climate model projections and scenario planning to assess future risks and opportunities, Build a conceptual model.	Brainstorm potential adaptation strategies. Align strategies with management goals and stakeholder input. Priorities strategies based on feasibility, cost, and expected outcomes.	Define actions, timelines, and responsibilities. Map action areas and ensure legal and environmental alignment. Stakeholder and community input.	Execute actions such as habitat restoration, infrastructure improvements, or land management activities. Foster collaboration between stakeholders.	Monitor key indicators to assess the effectiveness. Analyze data to identify successes and areas of improvement. Adjust plans to improve future outcomes.
Data & Tools	GIS data layers to contextualize the area such as watershed, recent disturbances.	Org strategy documents, stakeholder engagement frameworks, strategic maps, geospatial data.	Vulnerability assessment tools (FireCLIME, Climate Toolbox), model projections, local and regional ecosystem data, assessments by other actors. Species data.	Adaptation menus, trade-off analysis tools, case studies.	GIS tools, legal compliance templates (NEPA). Contract templates, funding sources, decision-support tools.	Guidance documents, equipment and tools for the various intervention types (e.g. forest management, species relocation).	Monitoring frameworks, baseline data, analytical tools. Mechanisms for sharing findings with stakeholders.
Pain Points	Time constraints, managing biases and opinions of people with different values and interests.	Time constraints and limited funding. Lack of clarity on overarching goals.	Complex to integrate models with localized needs. Balancing expert knowledge with available science. Understanding uncertainties with data.	Stakeholder engagement. Translating broad strategies into actionable, site-specific plans. Communicating trade-offs between strategies.	Bureaucratic hurdles in environmental analysis and legal compliance. Lack of funding and staffing for plans.	Limited funding and capacity for execution. Translating plans into practical on-the-ground activities.	Insufficient funding for long-term monitorities. Difficulty connecting monitoring results to actionable insights (due to time constraints).
Feeling	😐	😐	😞	😊	😄	😊	😞

03.

Tribal User Needs.

Tribal User Needs.

A tool that supports storytelling around what should be protected or enhanced would be useful for Tribal users.

Culturally significant species. Tribal users would want to tell stories of species and how to protect the lands that those species need. Strong data would support these stories and additional communications tools would be useful.

Risk assessments and monitoring. It's important for Tribal users to be able to identify the highest risks on the landscape and make plans in order to adapt to those risks. Flooding, drought, fire are key issues.

Scenario planning. Tribal users want to see historical data and projected risks. Projected impacts on specific species based on various future scenarios would further support Tribal environmental staff tell the story, build buy-in, and inform management decisions.

Tribal User Needs.

Tribal users have additional needs around the accessibility and ease of use of the platform.

High staff turnover. Tribal users reported there can be a high turnover of staff working on land management and restoration projects, highlighting the need for additional documentation and ease of use of the platform.

Broadband limitations. The ability to use the tool offline would benefit Tribal users who may not always have access to a strong or secure broadband connection.

Geospatial tools. The tool shouldn't require Tribal users to use GIS, as not all would have subscriptions.

Tribal User Needs.

There may be some barriers to adoption to consider including limited staff capacities, and limited funding to support adaptation projects.

Support with funding. Tribal users face challenges securing long-term funding for projects due to competing priorities within the communities.

Securing buy-in. The tool should support Tribal users with practical information to build a program and provide the documentation to secure buy-in from different Tribal departments in their communities.

Many hats. Tribal staff can wear many different hats, posing capacity challenges to learning yet another tool like FIP.

Tribal User Needs.

Understanding that all Tribal data must be protected, future conversations and collaborations are needed to establish how the FIP can work with Tribal data.

Absolute control. Tribal users would not want to upload their data unless they have full control over who can access it.

Legal agreements. MAOs and data-sharing agreements will need to be considered to support the protection of Tribal data.

Upload data locally. One proposed idea was for Tribal users to be able to upload the data they want to analyze locally on the FIP.

Tribal User Needs.

Tribal users expressed the need for training on the tool to facilitate successful onboarding.

High turnover. Changes of staff creates a need for providing regular training sessions on the FIP.

Dedicated contact. A trainer who can present the FIP to Tribal users and answer questions about how to apply it to their work could be a useful form of support.

Various forms. Workshops, in-depth training sessions, and detailed documentation like a handbook would all be useful forms of training materials to onboard new and non-expert users.

Tribal User Needs.

A shared governance model is necessary for ongoing Tribal input and ensuring the tool meets the various needs of Tribal Nations.

Shared governance. Regular meetings and annual symposiums to address data protection in a shared and collaborative approach, directly with users, leaders, and elders.

Continued engagement. Conversations need to continue about this topic to ensure feedback is consistently incorporated in decision-making around Tribal data.

04.

Pain Points and Desired Features.

04a.

Vulnerability Assessments

Pain Points and Recommendations.

Vulnerability Assessments

Phase 1: Pre-planning and scoping 😊

1. Pre-planning and Scoping

Pain Points

- Limited funding and competing priorities.
- Opaque agency processes and complex stakeholder landscapes.
- Buy-in from various groups

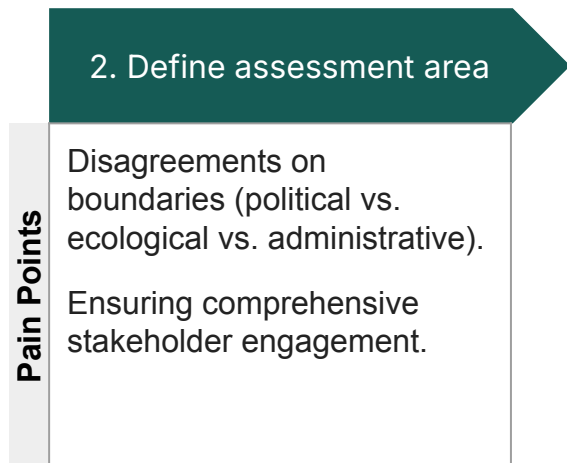
Imagining FIP as the solution:

- For a given landscape, visualize who the existing collaborators will be on a map.
- Users can start a project and store their data on the platform.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 2: Define assessment area 😊



Imagining FIP as the solution:

- List or visualization of various assessments happening in a certain geography to make available the work already done by different groups.
- Users can save templates so they can rerun assessments yearly with new data.
- Notifications for when a big event or change (fire, disease outbreak) has happened in the area of interest.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 3: Gather baseline data 🙄

3. Gather baseline data

Pain Points

Data gaps or limitations, especially at actionable scales.

Overabundance of information can make narrowing focus difficult.

Difficulty integrating custom data and ensuring it is the right scale, standardization, and compatible with spatial software.

Indigenous knowledge is sensitive.

Imagining FIP as the solution:

- Support users with standardization, processing, and analysis of custom data (whether on FIP, or through training for them to do it themselves in the cases where data is incompatible).
- FIP could fill in the gap the lack of datasets at local and actionable scales (e.g. urban forested natural areas), or at least guide users on how to approach the challenge of scale.
- Advise users who want to work with Indigenous Knowledge or connect them from Tribal Nation representatives who might want to be involved with a specific project.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 4: Analyze impacts and vulnerabilities 🙄

4. Analyze impacts and vulnerabilities

Pain Points

Keeping up with rapidly evolving tools and literature.

Interpreting conflicting or counterintuitive modeling results.

Models being able to integrate how variables such as forest management interact with predictions.

Imagining FIP as the solution:

- Include the impacts on ecosystems within the platform including ecologically functional predictions as opposed to upstream data alone.
- Provide information on the best models, support with interpreting them, what to do if there is conflicting information, and explanations around values of uncertainty.
- Include socio-economic data.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 5: Consensus building with stakeholders 😊

5. Consensus building with stakeholders

Pain Points

Scheduling conflicts and time constraints for participants.

Managing differing values and opinions and ensuring productive discussions. Might not always get consensus.

Summarize a large amount of information for workshop participants.

Imagining FIP as the solution:

- Outputs that can be downloaded including summaries of data and project progress to communicate and follow-up with workshop participants and stakeholders.
- Ability for stakeholders to view the project workspace and “play” around to see what is being considered, make comments if needed.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 6: Synthesize and communicate findings 😊

6. Synthesize and communicate findings

Pain Points

Ensuring clarity and accessibility of reports for diverse audiences.

Addressing delays in review and feedback cycles.

Imagining FIP as the solution:

- Support with communicating components of the vulnerability assessments through visualizations, templates, and scripts (role for AI?). Graphics generated from datasets to put into reports and grants.
- Community exchange thread for sharing how the analysis and datasets are used.

Pain Points and Recommendations.

Vulnerability Assessments

Phase 7: Adaptation plans and strategies 😊

7. Adaptation plans and strategies

Pain Points

Balancing short-term and long-term priorities.

Gaining consensus on strategies and securing funding.

Imagining FIP as the solution:

- Help teams visualize the outcomes of adaptation strategies and compare the costs and trade-off analyses of various options.
- Showcase how different adaptation choices impact climate resilience of an ecosystem.
- Define the impacts of adaptation strategies to help make a case for funding.

04b.

Adaptation Planning

Pain Points and Recommendations.

Adaptation Planning

Phase 1: Stakeholder & community engagement 🙄

1. Stakeholder & community engagement

Pain Points

Time constraints - people who already have other work need to get together to have these conversations

Managing biases and opinions of different people/values/interests

Reporting out on who attended and what happened.

Imagining FIP as the solution:

- Being able to see priorities collaboratively on a map where various stakeholders can have input into identifying the important areas of consideration.

Pain Points and Recommendations.

Adaptation Planning

Phase 2: Define scope, goals, and planning framework 😐

2. Define scope, goals, and planning framework

Pain Points

Lack of clarity on overarching goals.

Time constraints and limited funding to initiate the planning process.

Imagining FIP as the solution:

- Geospatial representations of existing climate impacts, hazard maps.
- Representation of the lived experience of communities at local scales.
- Potential use of metadata to capture varying interests/values and clarity on overarching goals.

Pain Points and Recommendations.

Adaptation Planning

Phase 3: Assess impacts and vulnerabilities 🙄

3. Assess impacts and vulnerabilities

Pain Points

Complexity of integrating models with localized project needs.

Balancing expert knowledge with available science while managing data inconsistencies.

Understanding uncertainties with data.

Imagining FIP as the solution:

- Task management within the tool where users can see which steps of their plan are still remaining.
- Users can export their work as reports including citations, graphs, tables.
- Support with scenario planning and visual representation of adaptations to share with core stakeholders. Being able to communicate the projected impacts of treatments.
- The FIP can provide a synthesis of all vulnerability assessments for an area or give the user the option to look through the various ones, with uncertainties explained.

Pain Points and Recommendations.

Adaptation Planning

Phase 4: Identify and prioritize adaptation strategies 😊

4. Identify and prioritize adaptation strategies

Pain Points

Challenges in fostering creativity and stakeholder agreement.

Difficulty translating broad strategies into actionable, site-specific plans.

Communicating trade-offs between strategies.

Imagining FIP as the solution:

- Maps based on resources (e.g. water quality) that could be filtered when responding to call for proposals.
- Understand the trade-offs of costs and effectiveness of different actions.
- Be able to show expected or real impacts of initiatives in order to attract funding.
- Support for the ROI in quantitative metrics by assigning numeric values to habitat quality improvements or wildfire risk reduction.
- High level metrics to support decision making like % loss under no action versus % increase under some intervention.

Pain Points and Recommendations.

Adaptation Planning

Phase 5: Develop detailed implementation plans 😊

5. Develop detailed implementation plans

Pain Points

Bureaucratic hurdles in environmental analysis and legal compliance.

Lack of funding and staffing to finalize detailed plans.

Imagining FIP as the solution:

- A transparent space where stakeholders can come, see, and understand the adaptation plan.
- A way for the people working on the project to be able to share information on their implementation with other users.
- A map that identifies implementation plans with contact information and options to make the information public.

Pain Points and Recommendations.

Adaptation Planning

Phase 6: Implement adaptation actions 😊

6. Implement adaptation actions

Pain Points

Limited funding and capacity for execution.

Challenges in translating plans into practical on-the-ground activities.

Imagining FIP as the solution:

- Automated emails or notifications with updates to changes in the area of interest and progress of implementation.
- Feasibility toggles for implementation plans around the size and the costs.

Pain Points and Recommendations.

Adaptation Planning

Phase 7: Monitor and evaluate effectiveness 🙄

7. Monitor and evaluate effectiveness

Pain Points

Insufficient funding for long-term monitoring.

Difficulty connecting monitoring results to actionable insights - different time scales.

Imagining FIP as the solution:

- A long term record keeping system with a library of process and practice.
- Showcase the projects where the FIP has been used and what has been done there (e.g. <https://forestadaptation.org/adapt/demonstration-projects>)
- Maintain consistency with data input for keeping long term records on monitoring and evaluation.

05.

Future Considerations



05a.

Design Goals.

Design Goals.

Guided experience.

Allow users to jump into various phases of the user journey with ease with guided workflows.

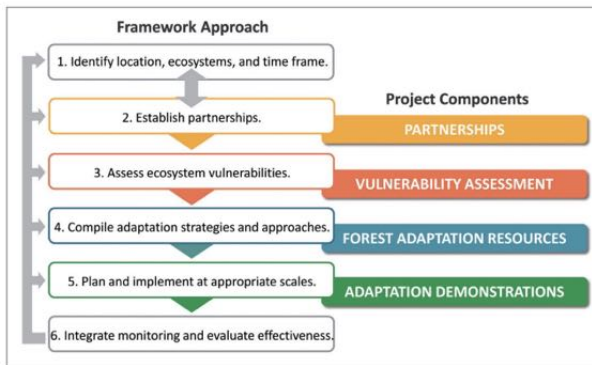
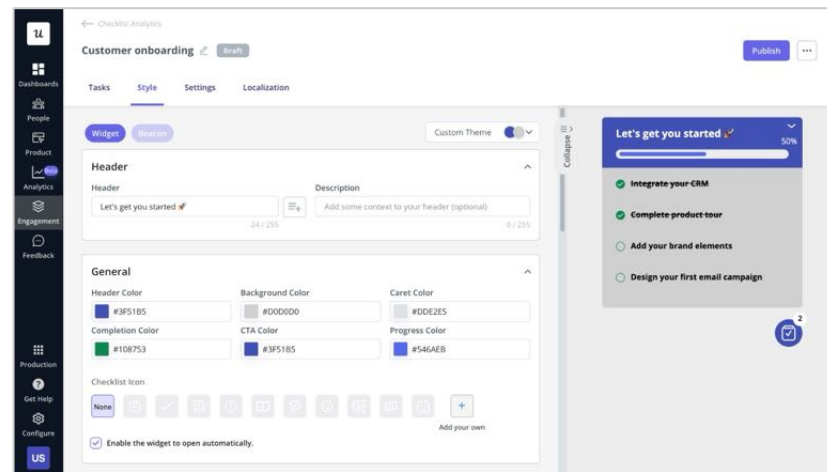
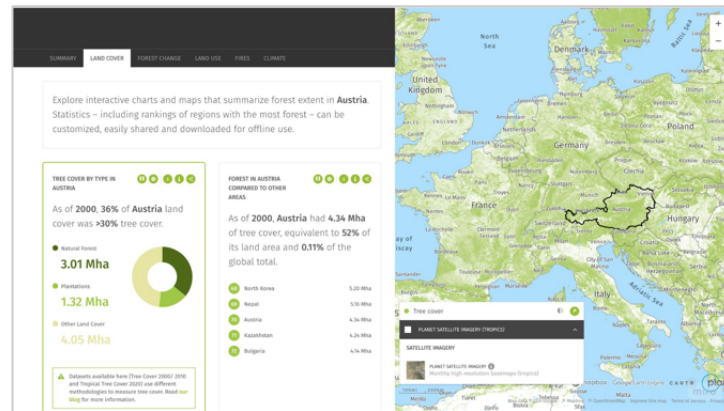
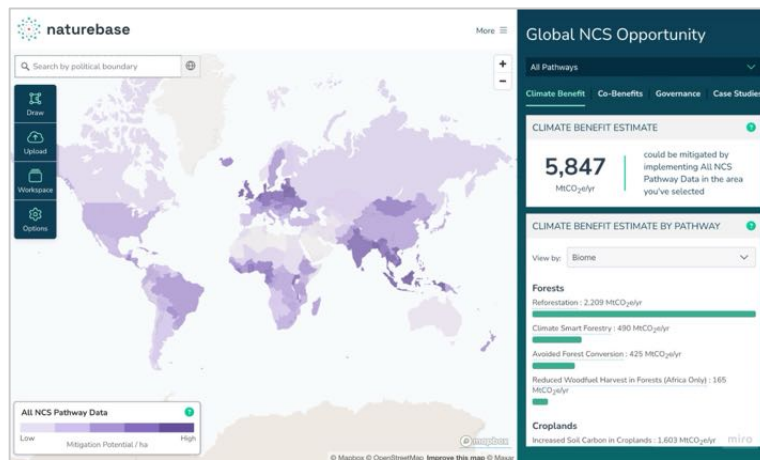


Figure 3.—Diagram of the iterative approach used by the Climate Change Response Framework to help natural resource professionals integrate climate change considerations into management planning and activities, and the resulting four project components.

Design Goals.

Storytelling of forests.

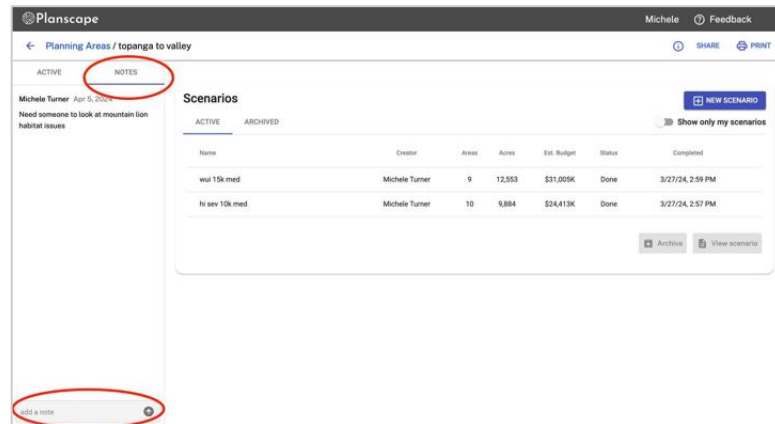
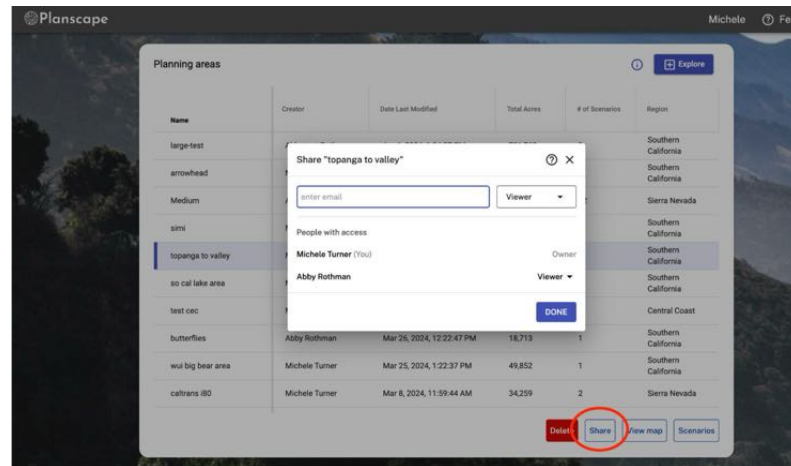
Users need to communicate their findings with various stakeholders along the way. Support users in telling the story of their forests and potential impacts based on models with data visualizations.



Design Goals.

Easy collaboration.

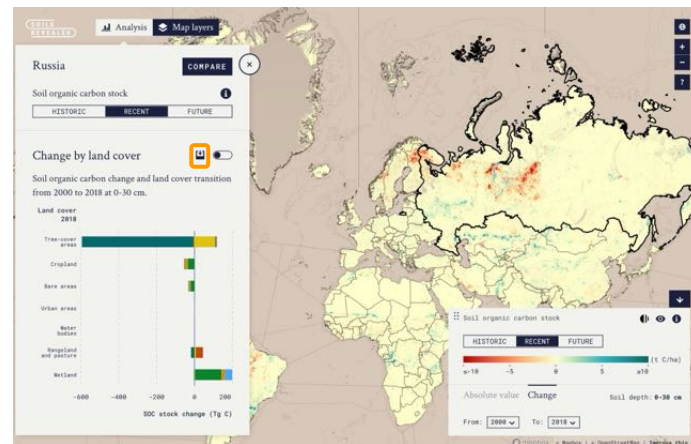
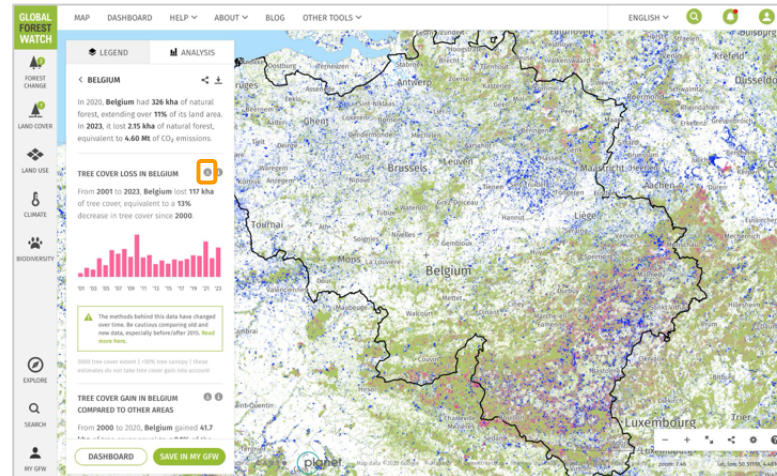
The platform should allow for users to easily engage with stakeholders along the way to build alignment across differing needs and values.



Design Goals.

Customizable outputs.

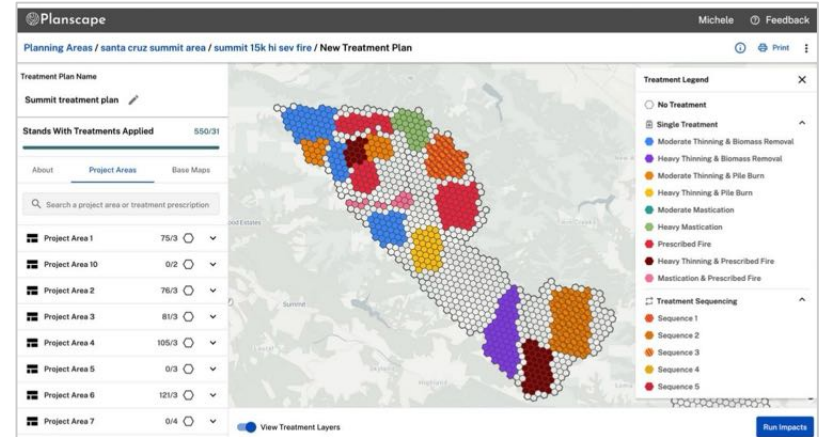
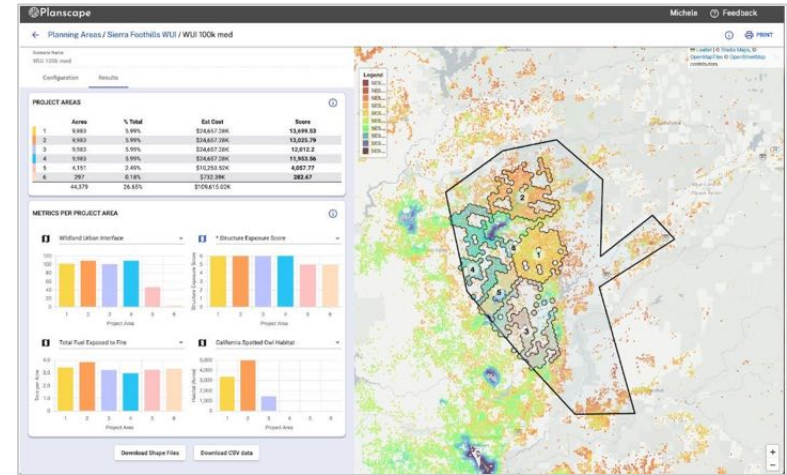
Allow users to download maps, graphs, and summaries for sharing with a variety of different audiences.



Design Goals.

Actionable insights.

Support users in translating broader adaptation strategies into site specific actionable plans.



05b.

Next steps.

Next Steps.

Moving forward with FIP.

- ❑ Definition of datasets and feasibility assessment of data requirements.
- ❑ Validation and prioritization of the business requirements.
- ❑ Sketching and designing the wireframes.
- ❑ Feedback on wireframes from users and Tribal users.

06.

Appendix.

06a.

Detailed User Journeys.

	Vulnerability Assessments User Journey			
Actions and tasks	1. Pre-planning and Scoping	2. Define assessment area	3. Gather baseline data	4. Analyze impacts and vulnerabilities
	- Secure funding and define the scope, scale, and stakeholders. - Identify key audiences and decision-makers. - Understand existing schedules (e.g., NEPA/planning cycles) and align efforts with them. - Develop a project plan including budget, staffing, and timelines. - Identify when to start engaging the public in the process - Compile a list of stakeholders including tribal groups, collaborators, and partners; initiate outreach.	- Map the geographic and ecological boundaries of the area of interest (AOI). - Build consensus on boundaries and goals with stakeholders.	- Collect and analyze data on forest condition, trends, and past management. - Gather relevant ecological, and socio-economic data. - Identify data gaps and conduct new data collection if necessary. - engage stakeholders in collection of relevant data and expert knowledge	- Review literature on past and projected changes. - Use models to project changes in forest species, ecosystems, and processes. - Summarize findings on impacts and ecosystem vulnerabilities.
	5. Consensus building with stakeholders	6. Synthesize and communicate findings	7. Adaptation plans and strategies	
	- Host workshops or listening sessions to share findings and gather input. - Facilitate shared learning among diverse stakeholders (e.g., federal, state, tribal, NGOs). - Use expert panels to refine conclusions and explore the areas of consensus on vulnerabilities.	- Compile data and workshop results into concise summaries and visualizations/communications - Evaluate confidence and agreement in vulnerability ratings. - Draft and refine reports with actionable recommendations.	- Use vulnerability results to identify management implications. - Develop strategies and action plans tailored to the AOI. - Incorporate stakeholder input and align with policy frameworks.	

Vulnerability Assessments User Journey

	1. Pre-planning and Scoping	2. Define assessment area	3. Gather baseline data	4. Analyze impacts and vulnerabilities
Datasets and tools used	- Budget and staffing spreadsheets, timeline tools. - Awareness of key audiences and relationships with stakeholders. - Surveys, polls to identify public and stakeholder sentiment	- Tribal group engagement - GIS software for mapping (ArcPro, AGOL). - Existing management plans, forest maps, and ecoregion data. - Landowner, socioeconomic data	- observed data, Forest ecosystem/stand type maps, forest condition datasets, models (e.g., MACAv2). - FIA data	- Modeling tools (e.g., Tree Atlas, Landis, VIC hydrologic models). - Literature review platforms (e.g., Google Scholar, Mendeley). - risk matrix - severity and likelihood of impacts - identify priority impacts within that ecosystem vulnerability - Climate velocity maps.
Pain points and challenges	- Limited funding and competing priorities. - Opaque agency processes and complex stakeholder landscapes. - Buy-in from various groups	- Disagreements on boundaries (political vs. ecological vs. administrative). - Ensuring comprehensive stakeholder engagement.	- Data gaps or limitations, especially at actionable scales. - Overabundance of information can make narrowing focus difficult. - people want to bring in their custom data but it is time and money intensive in getting the data processed, validated, and at the right scale + standardized. then make it compatible with visualizations and geospatial tools - Some information like IK is sensitive	- Keeping up with rapidly evolving tools and literature. - Interpreting conflicting or counterintuitive modeling results. - challenge with models being able to integrate how variables such as forest management interact with predictions

	Vulnerability Assessments User Journey		
	5. Consensus building with stakeholders	6. Synthesize and communicate findings	7. Adaptation plans and strategies
Datasets and tools used	• Workshop facilitation guides, virtual platforms (Zoom, Mentimeter). • Whiteboards, Excel, and other collaborative tools.	• Word processing tools, GIS software for mapping, and visualization platforms.	• Adaptation workbooks (e.g., NIACS guides). • Scenario planning and decision-support tools.
Pain points and challenges	• Scheduling conflicts and time constraints for participants. • Managing differing values and opinions and ensuring productive discussions. Might not always get consensus. • summarize a large amount of information for workshop participants	• Ensuring clarity and accessibility of reports for diverse audiences. • Addressing delays in review and feedback cycles.	• Balancing short-term and long-term priorities. • Gaining consensus on strategies and securing funding.

	Adaptation Planning User Journey			
Actions and tasks	1. Stakeholder & community engagement	2. Define scope, goals, and planning framework	3. Assess impacts and vulnerabilities	4. Identify and prioritize adaptation strategies
	- Identify the geography and boundaries of the work - Identify and align with the stakeholders and communities in those geographies	- Identify the mission, scope, and goals of the adaptation effort, aligning with organizational priorities. - Engage stakeholders, including partners, landowners, and tribal groups, to clarify and create consensus on priorities and objectives. - Develop a framework or checklist to ensure alignment with strategic goals and feasibility.	- Conduct and review vulnerability assessments to understand the exposure, sensitivity, and adaptive capacity of ecosystems, species, and infrastructure. - Utilize model projections and scenario planning to assess future risks and opportunities. - Build a conceptual model (e.g., a situation model) that integrates direct and indirect drivers.	- Brainstorm potential adaptation strategies using case studies, adaptation menus, and facilitated discussions. - Align strategies with assessed vulnerabilities, management goals, and stakeholder input. - Prioritize strategies based on feasibility, cost-effectiveness, and expected outcomes.
	5. Develop detailed implementation plans	6. Implement adaptation actions	7. Monitor and evaluate effectiveness	
	- Define specific actions, timelines, and responsibilities to achieve identified adaptation goals. - Use geospatial tools to map action areas and ensure alignment with legal and environmental requirements. - Incorporate monitoring mechanisms into the implementation plan. - Community input into the plan	- Execute planned actions on the ground, such as habitat restoration, infrastructure improvements, or land management activities. - Foster collaboration between scientists, managers, and other stakeholders during implementation.	- Monitor key indicators to assess the effectiveness of implemented actions. - Analyze data to identify successes and areas for improvement. - Share lessons learned and adjust plans accordingly to improve future outcomes.	

	Adaptation Planning User Journey			
	1. Stakeholder & community engagement	2. Define scope, goals, and planning framework	3. Assess impacts and vulnerabilities	4. Identify and prioritize adaptation strategies
Datasets and tools used	- Watersheds, vegetation, recent disturbances, and other GIS layers to put group in context - Heat map based on populating values, perhaps by stakeholder or organization	- Organizational strategy documents, stakeholder engagement frameworks, and decision-making checklists. - Strategic maps, geospatial data, and funding assessments.	- Vulnerability assessment tools (e.g., FireCLIME), model projections, and adaptation workbooks. - Local and regional data on ecosystems, species, hydrology, and socio-economic systems. - vulnerability assessments completed by other actors	- Adaptation menus, trade-off analysis tools, and examples of successful case studies. - Facilitated workshops and expert consultations.
Pain points and challenges	- Time constraints - people who already have other work need to get together to have these conversations - Managing biases and opinions of different people/values/interests - information on who attended, reporting out of what happened	- Lack of clarity on overarching goals. - Time constraints and limited funding to initiate the planning process.	- Complexity of integrating models with localized project needs. - Balancing expert knowledge with available science while managing data inconsistencies. - Understanding uncertainties with data	- Challenges in fostering creativity and stakeholder agreement. - Difficulty translating broad strategies into actionable, site-specific plans.

	Adaptation Planning User Journey		
	5. Develop detailed implementation plans	6. Implement adaptation actions	7. Monitor and evaluate effectiveness
Datasets and tools used	• GIS tools, legal compliance templates (e.g., NEPA), and interdisciplinary team input. • Contract templates, funding sources, and decision-support tools.	• Clear guidance documents, well-trained implementation teams, and adequate funding. • Equipment and tools specific to the type of intervention (e.g., forest management, species relocation).	• Monitoring frameworks, baseline data, and analytical tools. • Mechanisms for sharing findings with stakeholders (e.g., reports, workshops).
Pain points and challenges	• Bureaucratic hurdles in environmental analysis and legal compliance. • Lack of funding and staffing to finalize detailed plans.	• Limited funding and capacity for execution. • Challenges in translating plans into practical on-the-ground activities.	• Insufficient funding for long-term monitoring. • Difficulty connecting monitoring results to actionable insights - different time scales.



Thank you.

vizzuality.