

# Teaching digital skills

Learning usability testing by peetraining



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Who we are



Who we are |

# What is the Office of Natural Resources Revenue?

For the benefit of all Americans, ONRR collects, accounts for, and verifies natural resource and energy revenues due to States, American Indians, and the U.S. Treasury.



Who we are |

# What we work on

Our team manages an open data website about how the U.S. government manages energy and mineral resources, revenue, and disbursements from federal lands and waters.

revenuedata.doi.gov



The screenshot shows the homepage of the Natural Resources Revenue Data website. At the top right, there is a small American flag icon followed by the text "An official website of the U.S. government". Below this, on the right side, are links for "Glossary" and "Download data". The main heading reads "U.S. Department of the Interior" followed by "Natural Resources Revenue Data" in a large, bold, black font. Below the heading is a navigation menu with links for "Home", "About", "How it works", "Explore data", and "Case studies". The main content area is divided into two columns. The left column is titled "Explore data" and features a map of the United States with a green overlay representing land ownership. The right column is titled "Land ownership" and contains the following text: "Natural resource ownership, governance, and revenues are closely tied to land ownership. Federal land represents 27.4% of all U.S. land, mostly concentrated in western states." Below this text, it begins to say "Data on this site covers production, revenue, and".



Who we are |

# Vision statement

We are informing policy debates and raising public awareness by building the definitive source of timely and useful data about how the government manages federal energy and mineral resources, revenue, and disbursements.

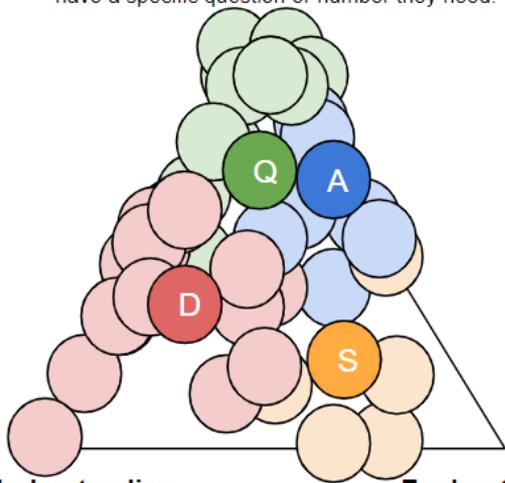


# Who uses our site

## Finding Data on the Site

### Known Question

Someone else is asking them for information or they have a specific question or number they need.



### System Understanding

They want to understand the process or system and how well it is working at a high level.

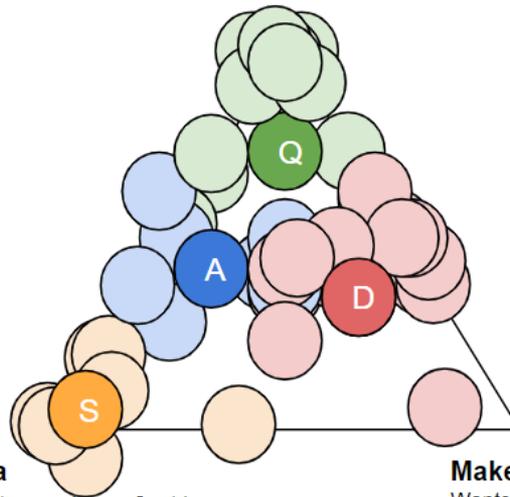
### Exploration

They have a topic they want to learn more about or are looking for the data to tell them a story.

## Usage of the Data

### Provide an Answer

Provide just the answer to the known question to the asker of the question.



### Present Data

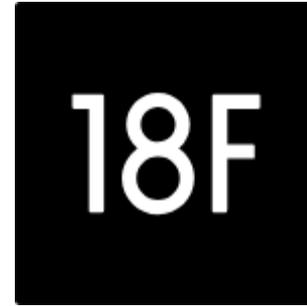
Tell the story of the numbers. Could be in an article, report, or chart.

### Make a Decision

Wants to read and understand the information to make a decision.

Who we are |

# Beginnings of the site



Driven by EITI requirements and their multi stakeholder group, ONRR brought in a Presidential Innovation Fellow to conduct research and create a prototype of the site.

The Presidential Innovation Fellow went on to become one of the founders of 18F, so ONRR pitched the project to continue the development of the site and they accepted it as one of their first projects.



Who we are |

# Teamstructure



Product Manager/Product Owner  
Jennifer Malcolm

Term limited (24 years) innovation specialists



Developer  
Jeff Keene



Content Strategist  
Ryan Johnson



UX Designer  
Shannon McHarg

Career government employees



Chris Mentasti



Maroya Faied

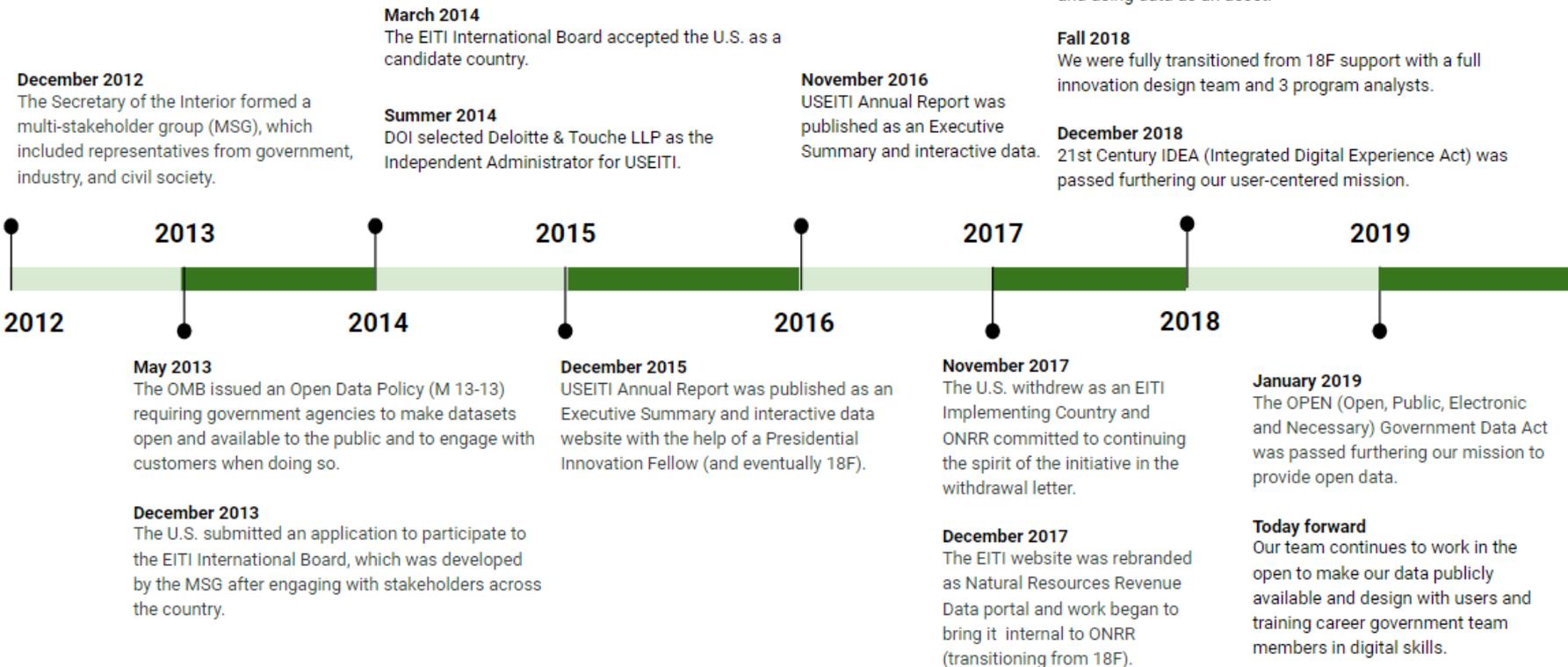


Lindsay Goldstein

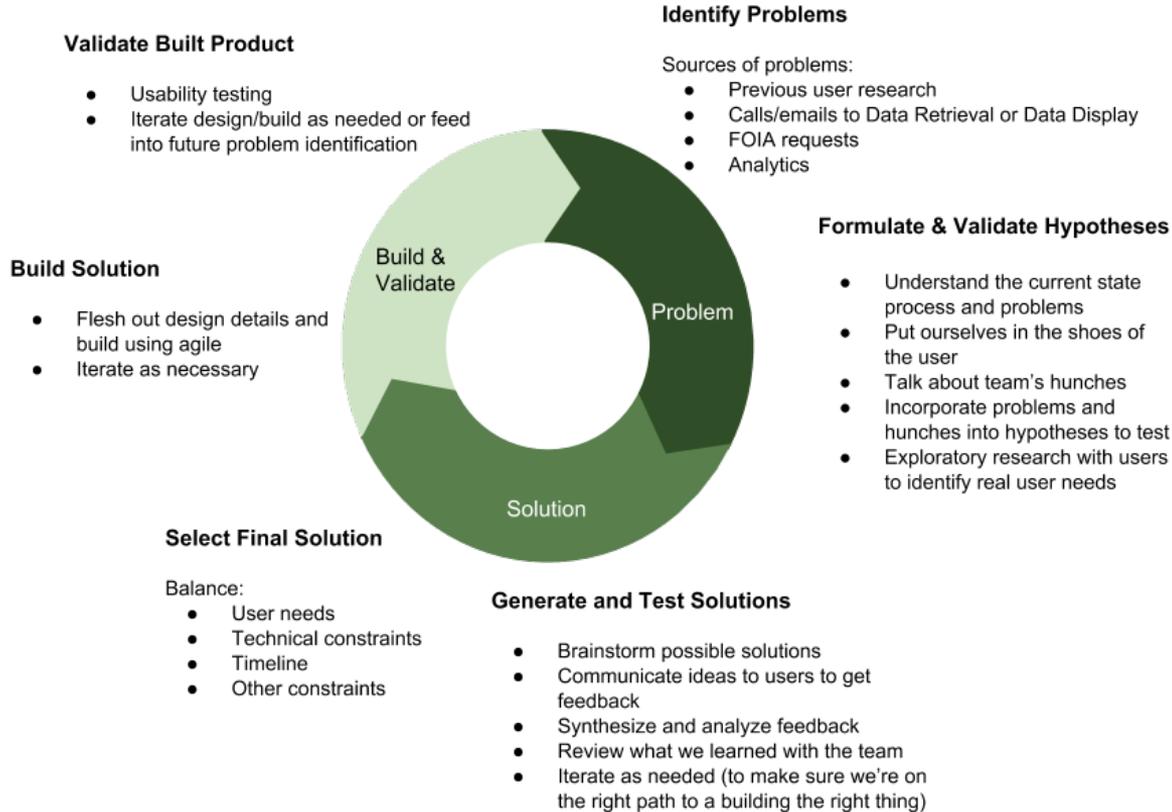
Program Analysts



# How we got here



# Our process



# Peer training





Peer training |

## Why we decided to peer train

- The scope of our site keeps increasing
- Other teams in our agency are interested in user research
- We have a small team with only one, term limited designer
- Recruiting participants takes a LOT of time



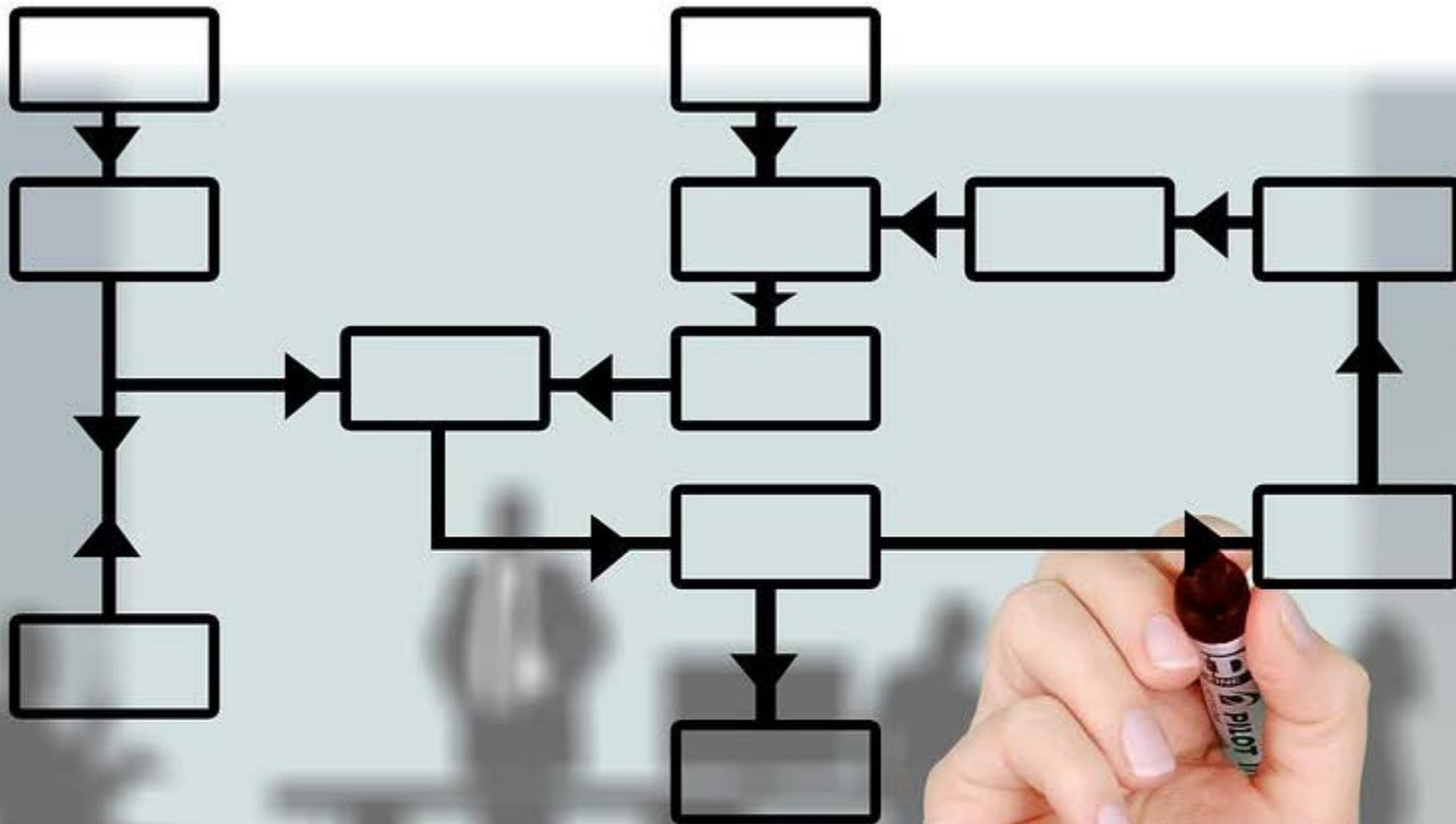
Peer training |

# Learning by doing

We decided that it would be best to learn by doing and do mock interviews.

Which meant...

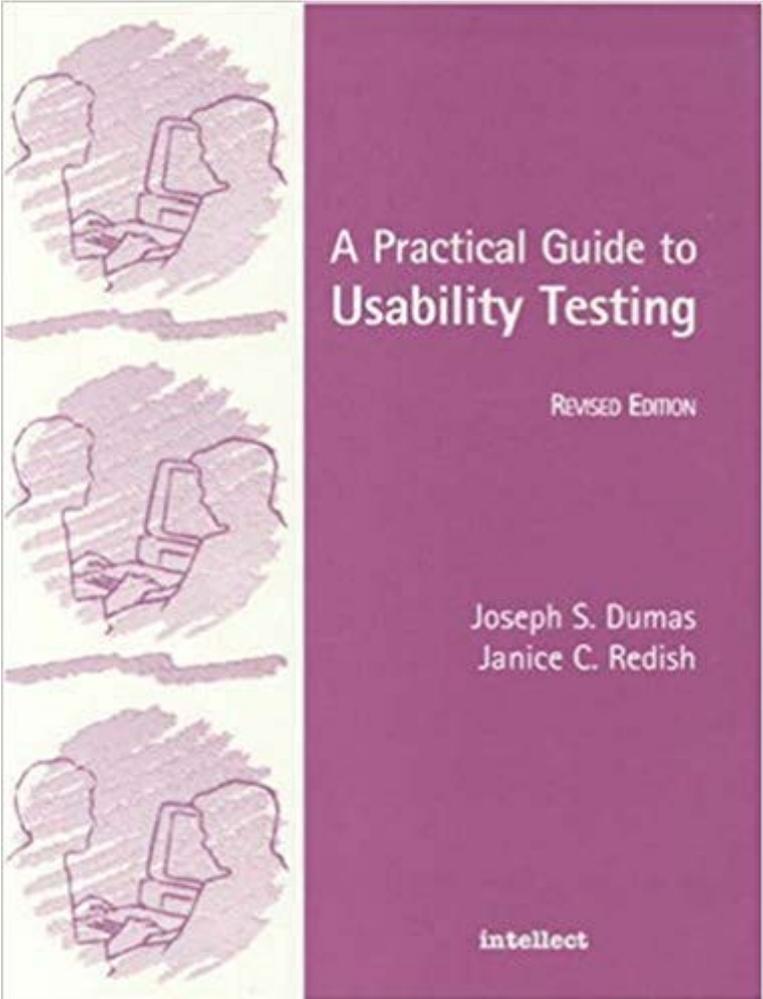




I had to document all of my processes in detail.

While I did that...





# A Practical Guide to Usability Testing

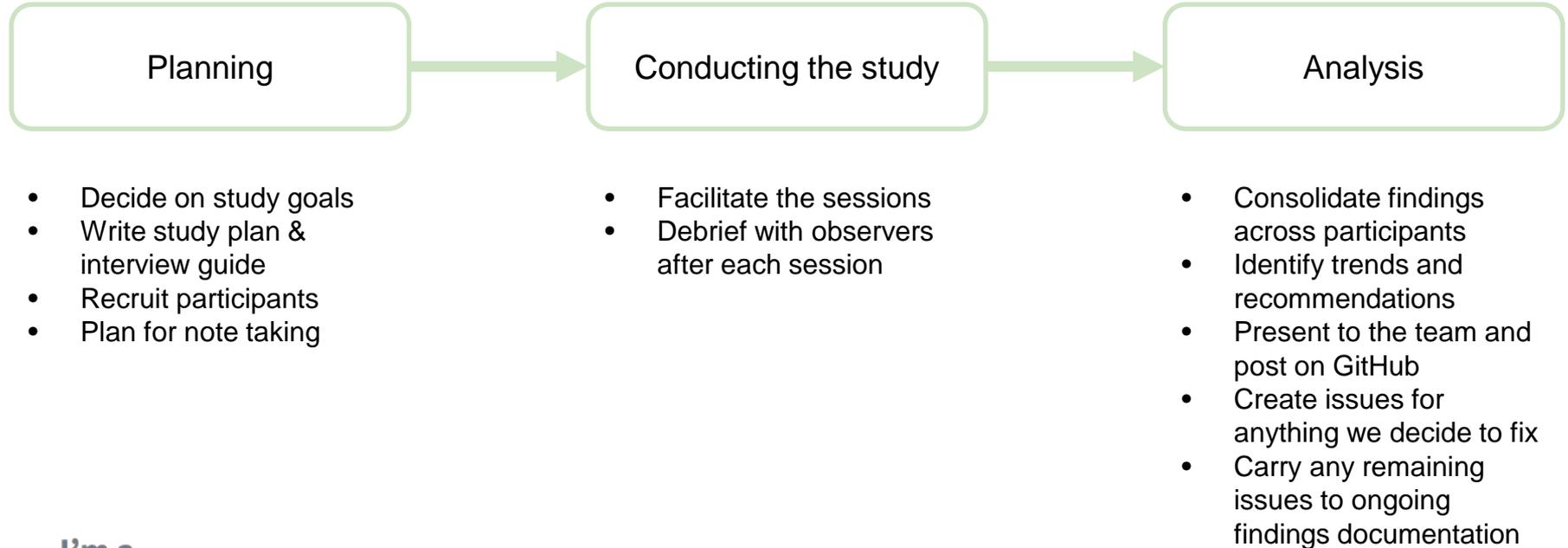
REVISED EDITION

Joseph S. Dumas  
Janice C. Redish

intellect

Maroya and Lindsay started by reading about user research to get the basics and hear it from the experts.

# Usability testing process



# Planning

- The analysts put together a study plan & guide to test a prototype for a new design.
- The two analysts practiced facilitating on each other.
- Then we recruited our teammates to participate as fake participants, mimicking things we've seen real users do in previous studies.



# Study plan

## Background

We have created a production filterable table to be able to sort our annual and monthly production using various relevant filters. The annual table will list all the commodities, and the monthly table will only list the highest producing commodities. These will serve as a home for lease level data once it is available. We want to evaluate these designs with users.

Link to Filterable Production Table Draft: [https://4cawh1.axshare.com/#g=1&p=explore\\_data](https://4cawh1.axshare.com/#g=1&p=explore_data)

## Goals

- Determine how the users would use this table as a part of their overall task
- Determine the best approach for filterable production tables on the page.
- Determine the best approach to display trends (bars or sparkline)
- Determine the best categories to be listed under "organized by" and "sort by" columns
- Determine the best language to use for "land owner" column (Federal, Native American, Mixed), source, commodity column, and any other language on the pages.
- Determine how table should be sorted.
- Determine if volume is needed by users.
- Determine best hook for lease level data.

## Method and Desired Participants

Over the course of a few weeks, we would like to interview at least 5 participants from the following user groups for 30 minutes 1:1 interviews. We will focus on users that have oil and gas experience and understand production data and different commodity units.

- Question Answerers: These are people like congressional aides and internal liaisons who use the site to answer specific questions.
- Agenda Supporters: These are people like those from NGOs or industry who use the site to see how the data supports an agenda they already have in mind.
- Storytellers: These are people like journalists and academics who want the data to tell them a story that they want to share with other people.
- Domain Learners: These are people like state and county government reps and tribal leaders who want to monitor what's going on within their domain and understand the whole system.

## Recruitment Strategy

In order to recruit research participants from our target user groups, we will contact people who are familiar with the site or oil and gas production data. We will recruit internally from ONRR and externally.

We are hoping to speak with ONRR employees who are familiar with our data and can help evaluate if the data organization makes sense. We would also like to speak with company representatives who are responsible for production reporting. We are reaching out to ONRR production team to get referrals. We will also use social media and outreach events to recruit participants.

## Test Assets

We will be testing the link on the Explore Data page that takes the user to the filterable tables and lease level data to understand if users understand the link's purpose and if placement is intuitive.

We will be testing the following

- Explore Data page with links to filterable table
- Yearly production, monthly production
- Search leases and agreements
- Monthly filterable table
- Term Source
- Sort by & Organize by
- Trend helpful?
- Yearly filterable table
- Commodity level (oil)
- State level (California )
- State and Commodity ( California oil)
- Yearly bars

# Interview guide

## Intro

### Introduction

Thank you for taking the time to participate in our research study. I will be conducting the interview, and my teammates will be listening in to take notes and observe. Our goal in this team is to talk to users about our site, test how they would complete a task, and observe how they are using it to learn about possible improvements to the site.

### External users

I have a form for you to digitally sign giving us permission to conduct the study. It just states your rights as a participant and that we won't be capturing any personally identifiable information

- Consent form: [Google form](#)

### User Task Background (people don't fit our user profiles) (5 min)

Tell us a little bit about your background, so we can get a sense for where your perspective is coming from.

### User Task Background (people who fit our user profiles) (20 min)

- What is your role and how do you use natural resources data in that role?
- Have you used the Natural Resource Revenue site before?
- Can you walk us through how you would find the data, analysis you would perform on the data, and how you would use or present this data?
- Is production data by lease and agreement important to you?
  - Where do they fit in the process?
  - Which specific pieces of information do you need?
  - How do you currently access the production data you need to do your job?
  - How can the portal help facilitate that process?
  - Is there a geographic component to how you want to use that data?
  - In what format would you like to see monthly production data?
  - How would you like to search for the data (e.g. by lease or agreement number in a database, on a map)
- What kind of questions do you get from other people about production, particularly at the lease level?

### Interview testing Process:

- We're testing the design we're not testing you.
- There are no right or wrong answers.
- Please think out loud as we are conducting the interview for us to understand your thought process as you are exploring the site. We want to know what you would do if we weren't watching.
- We are testing the design and different prototypes and not everything may be clickable.
- We appreciate your honest feedback to help us improve our designs

## Tasks & Questions:

- Can you tell me a specific task you would use the data for? Can you walk me through how you would find that information?
  - Take a look at this page and tell me what this site is about.
  - What do you think of the information that's presented?
  - Is this information useful?
  - Is there any information that you would like to add to the table?
  - Poke around and see if you can learn more about the site.
- Complete the task identified in the previous task, if possible.
  - If you wanted to know how much oil was produced in 2014, how would you get there?
  - Is that where you thought it would be? Did the placement make sense?
  - How many years back do you want to see data? What do you use historical data for?
    - Is it helpful to see the ten year trend?
    - Do you need all the numbers in the table?
    - How many years should show in the table by default?
  - What does the "land owner" column tell you?
    - How would you abbreviate "Federal" "Native American" and "Mixed"?
    - What does "Mixed" mean to you for land ownership?
  - What do you think the "organize by" dropdown does? [Have them click on it and see if it was what they expected.]
    - Would there be another category you would like to see here?
    - Are there any that don't make sense to you?
  - What do you expect the "sort by" dropdown to do? [Have them click on it and see if it was what they expected.]
    - Would there be another category you would like to see here?
    - Are there any that don't make sense to you?
  - What's the difference between "organize by" and "sort by"?
  - What does "withheld" mean to you? Would you like to see the States listed for commodities with withheld data?
- Let's say you're interested in looking at monthly production for the this year so far. How would you do that?
  - Is it helpful to provide monthly data in a table format for the top producing commodities?
  - Do you like the way the table is organized?
  - What do you think "Source" refers to? Do you have a better term?
  - What do you think about the use of the word "Commodity"? What does the word commodity mean to you? What does the word "product" mean to you? What do you expect to find in this column?
  - What would you expect to happen when you click the download icon?
  - Is it helpful to have the trend chart?

- Can you help me find oil production in Kings County, California for 2013?
  - [Should be either on Oil or California table or on Oil California]
  - Do you like how it is organized? What would want to see different?
  - What would you want to be able to sort and organize this data by?
  - [On oil page organized by state] is offshore planning area data important to you?
  - [On California page] is it helpful to have the number of counties listed?
  - [On California Oil page] is it helpful to have the number of operators listed for each county?
- Sparkline styling. Take user back to "Yearly" Data to show sparklines
  - What do sparklines show?
  - Then show Yearly Bars. What do bars show?
  - Which is more helpful?
- Do you know what a well number is?
  - If yes, if you had a well number, how would you find out how much production was on that well?
  - If no, explain how leases work then ask how they would find data about a specific lease.
    - If they don't find it. What do you think "Search leases and agreements" does?
    - Is that where you thought it would be? Did the placement make sense?

## Close (2 min)

- Are you interested in participating in future studies? Do you have any other specific areas of the site (or data elements) that you're interested in providing your feedback on?
- Is there anyone else you recommend we speak with to get more insight on disbursements data?
- Thank you for your time. Your insights have been helpful to us in understanding how we might improve processes around sharing disbursements data. If there is additional information that comes to mind that you think might be helpful please feel free to reach out to myself via email

# Planning learnings

- Goals of the study
- Method & desired participants
- Recruiting strategy



# Conducting the study

The analysts took on all of the logistical tasks of the study moderator.

- Conducting the study
- Communicating with the participants
- Troubleshooting technology issues with Google Hangouts
- Ensuring we had a note-taker
- Coordinating the post-session debriefs

After each session, the designer provided feedback on the moderator's facilitation.



# Conducting the study learnings

- Being Organized
- Interacting with participants
- Observing actively



# Analysis

## The analysts took on all of the analysis

- Consolidating findings
- Identifying trends and recommendations
- Creating a findings summary and presenting to the team and posting to Github
- Creating issues for agreed on changes
- Documenting items for future analysis

The designer provided feedback on the analysis.



# Findings consolidation spreadsheet

Participants	Grouping	Category	Finding	Recommendation	Priority
P1, P2, P3, P4, P5, P6, P7, P8	Data Highlights	Data Highlights	<p>Users get the interactivity on the data highlights.</p> <p>P1: Got the interactivity on Data Highlights, but was on an iPad and couldn't hover.</p> <p>P2: Got how the interactivity works on the Data Highlights.</p> <p>P3: Got the interactivity on the graphs.</p> <p>P4: Got the interactivity on the charts, but didn't expect them to change on hover or if they do, it should change the selection and stay changed.</p> <p>P5: Got how the interactivity worked for data highlights, but expected a tooltip treatment on rollover.</p> <p>P6: Liked interactivity on key facts and got how it worked.</p> <p>P7: Got how the interactivity on the graphs works.</p> <p>P8: Got how the interactivity works.</p>	Add interactivity to Data Highlights.	1
P2, P4, P6	Data Highlights	Home Content	<p>The Data Highlights are overwhelming and confusing to new users.</p> <p>P2: Data highlights was overwhelming for him to see up front.</p> <p>P4: Liked the sentence under Data Highlights - thought it belonged more here than in the overview. I think she thought Data Highlights was a label for the sentence, not the highlights.</p> <p>P6: In general, I like data visualization but I'm not exactly sure what I'm looking at here though. Wants to see revenue before production because he thinks the site is all about the money. It wasn't clear Data Highlights was for whole country until he saw the map.</p>	Put that section below the map, which is friendlier to new users and consider better framing the purpose of the Data Highlights section.	1



# Findings presentation

## Table Organization: Sorted by Major Commodity

### Production data

Timeframe: **Yearly** Monthly Year(s): CY 2015 - 2017 Organize by: Commodity Sort by: Major commodities  Include rows with only withheld numbers. [Download](#)

Commodity	State/offshore region	Source	Land owner	Trend 10 years	Units	2017	2016
Oil	29 states/regions	2 sources	Federal, Native, Mixed		bbl	811,781,280	816,662,345
Gas	31 states/regions	2 sources	Federal, Native, Mixed				
Coal	12 states	Onshore	Federal, Native				
Geothermal, direct use	New Mexico	Onshore	Federal				
Geothermal, direct use	Nevada	Onshore	Federal				

## Table Organization

Finding	Recommendation
<ul style="list-style-type: none"> <li>Majority of users understood drop down menu "organized by"</li> <li>Drop down menu "sort by" was confusing and different options need to be explored.</li> <li>Users spent time performing specific tasks and were able to make several suggestions for improvements.</li> </ul>	<ul style="list-style-type: none"> <li>Define "Operators" and explore possibility of also adding a list of payors on the lease</li> <li>Explore other designs for the table where the first column is frozen, filter options like how excel functions, sum of total for all land owner types.</li> <li>Explore options of showing more years or months by default on the table.</li> </ul>

# Findings GitHub summary

## Who We Interviewed

2 question answerers, 1 agenda supporter, 1 agenda supporter/storyteller, 1 storyteller, 1 domain learner



## What We Tested

Prototype: <https://4cawh1.axshare.com/>

## Summary of Findings

### Explore Data

- Most users able to navigate to the yearly production data from Explore Data page.

### Yearly Table

- Users understood table but need to further explain meaning of withheld data.
- Users liked to drill down to data using table links as well as drop down menus.

### Monthly Table

- Users like to use monthly for most updated data, but expected to see all commodities.
- Also liked to be able to drill down to state/county levels.

### Table Organization

- Majority of users understood drop down menu "organized by".
- Drop down menu "sort by" was confusing and different options need to be explored.
- Users had several suggestions for improvement that will be explored.

## Terminology

- "Commodity" was understood.
- Under the "Landowner" column, "Mixed" needs to be defined.

## Offshore Planning Area

- Users didn't understand or care about this information.
- Consider removing this information.

## Lease Level Data

- Found need to define terms "leases" and "agreements".
- Lease level data important to users.
- Explore and option to search geographically in addition to by lease or API well number. ##Trendlines
- Most users preferred "Option A" but users that download data didn't find it helpful.

## Summary of Recommendations

- Define "withheld" and explore how to display that data.
- Explore different options to select for the sort by column.
- Define leases verses agreements.
- Explore a search option by map or geographically for leases.
- Consider removing this category since majority of participants did not care for offshore planning area for lease level data.
- Define "Operators" and explore possibility of also adding a list of payors on the lease.
- Majority of participants like trendline option A. Explore option of displaying a trendline only for the years selected on the chart.
- Define "Mixed" in landowner column.
- Explore options of showing more years or months by default on the table.
- Explore other designs for the table where the first column is frozen, filter options like how excel functions, sum of total for all land owner types.

# Analysis learnings

- Summarizing findings
- Organize findings by scope & severity
- Recommending Design solution



# Outcomes



“Learning usability testing was both fascinating and eye-opening. The experience of conducting an interview and analyzing the results stimulated my interest to approach future projects by observing problems and finding solutions by considering different perspectives.”

*Maroya Faied, Program Analyst*



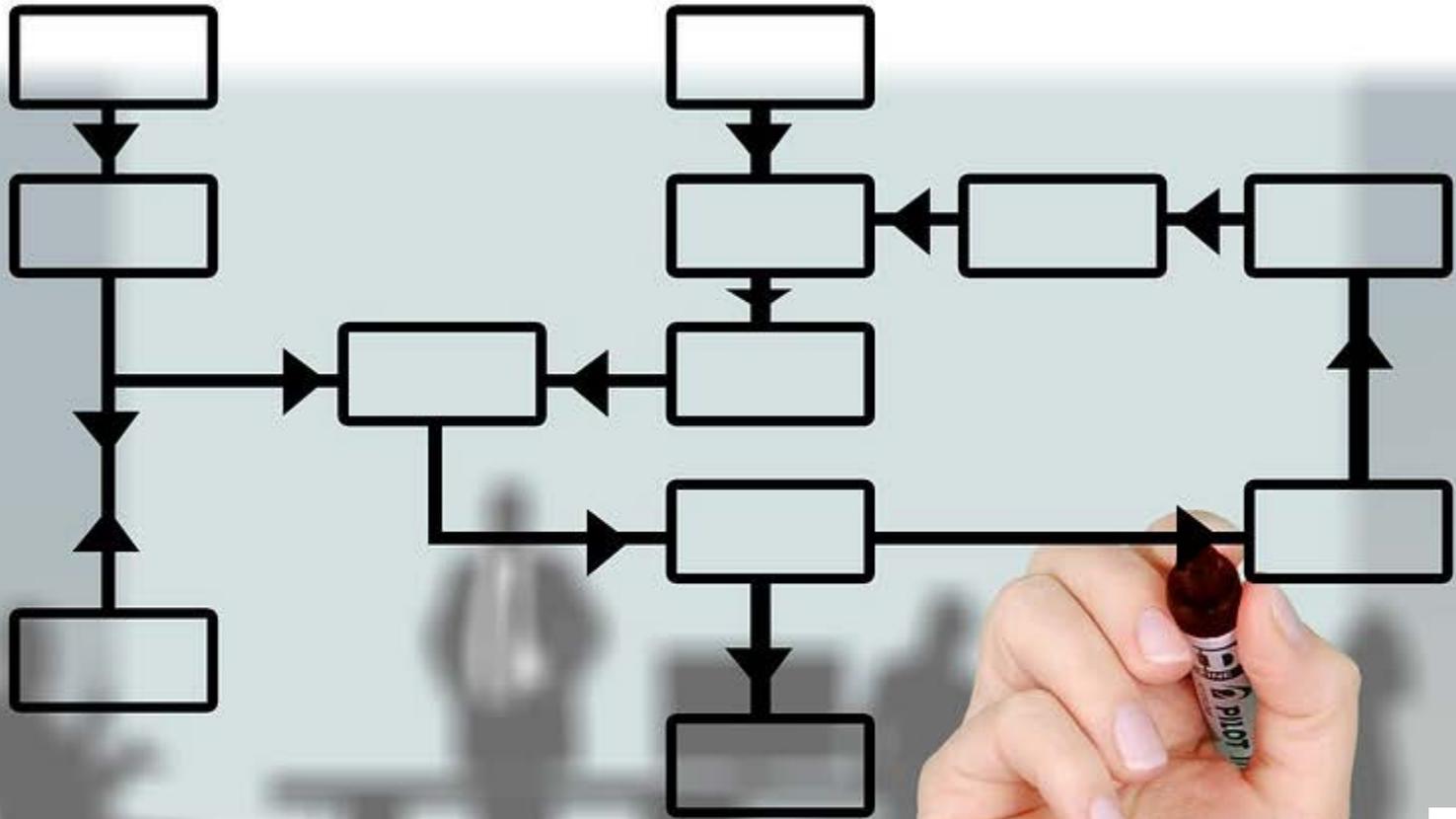


Outcomes |

# Greater team engagement

- User empathy
- More detailed look at prototype
- Cognitive walkthrough





Outcomes |

More process documentation



# Change in mindset

- Planning time helps the work run smoothly.
- Documentation makes it easier to spot opportunities for process improvement and sharing results.
- Provides a method to incorporate many viewpoints without creating conflict amongst team members or work groups.





Increasing our capacity for user research is helping us build bridges with other teams in our agency who are working on products that could benefit from user feedback. We are helping introduce user-centered design practices to those teams.



# Thank you! Questions?



## Connect with us



nrrd@onrr.gov



<https://revenue.data.doi.gov/blog/>



<https://github.com/ONRR/>



@DOIONRR



<https://www.facebook.com/DOIONRR/>



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