

## eCuleNote

Transforming **Complex  
Experiment Documentation** into  
an Intuitive Research Workflow.

# Overview

Project

**Ecule Note – Electronic Lab Notebook (ELN)**

Industry

**Life Sciences**

Platform

**Web Application**

Timeline

**3 Months - Contract**

Tools Used

**Figma**



## Roles & Responsibilities

- 1. Led the UX redesign** of the existing Electronic Lab Notebook (ELN) web application.
- Collaborated with Product Managers, business stakeholders, and engineering teams **to align user needs with business objectives.**
- Analyzed the existing product to **identify usability issues, workflow bottlenecks, and opportunities** for improvement.
- Conducted user research and synthesized insights into **actionable design opportunities.**
- Redesigned end-to-end user workflows** for experiment creation, documentation, review, and collaboration.
- Created **information architecture, user flows, wireframes,** and interactive prototypes.
- Established reusable UI patterns** and contributed to a scalable design system for consistency across the application.
- Facilitated design reviews and incorporated feedback from stakeholders and development teams.
- Worked closely with front-end engineers** during implementation to ensure design quality and feasibility.
- 10. Iterated on designs** based on user feedback, technical constraints, and business priorities.

# About Ecule Note

What is Ecule Note ?

**EculeNote is a cloud-based Electronic Laboratory Notebook (ELN) that helps researchers digitally document, manage, and collaborate on laboratory experiments.**

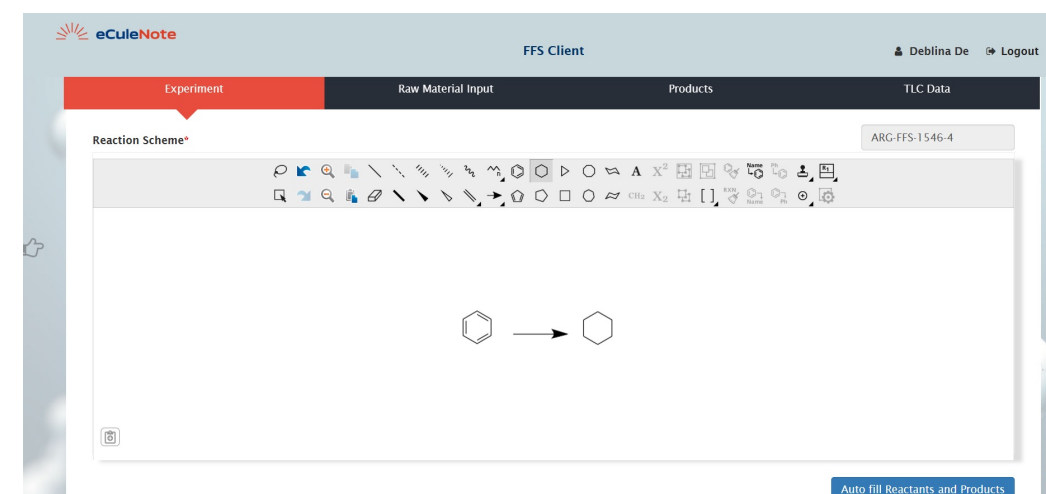
**It replaces paper notebooks with a centralized, searchable workspace for recording experimental data, protocols, observations, and supporting files.**



# Why a Redesign Was Needed?

- The existing Experiment page suffered from cluttered navigation, poor information architecture, and inconsistent workflows.
- Users struggled to locate experiment details quickly, increasing the time required to document and review experiments.
- The redesign aimed to simplify navigation, improve content organization, and create a more efficient and intuitive documentation experience

The screenshot shows the 'Experiment' page in the eCuleNote FFS Client. The page has a top navigation bar with tabs: 'Experiment' (active), 'Raw Material Input', 'Products', and 'TLC Data'. Below the tabs, there are several input fields for experiment details: Notebook ID (ARG-FFS-1546), Project Code (CSFFS-24-0241-TV), Type (<Select>), Step (3), Title of the Reaction (Suzuki coupling), Page Number (4), Compound Code (1a), Purpose (<Select>), Synthetic Method (<Select>), and Experiment Date (01-April-2026). There is also a 'Literature References' section with an 'Attachment | View' link. At the bottom, there is a 'Reaction Scheme\*' section with a placeholder for the reaction scheme (ARG-FFS-1546-4).

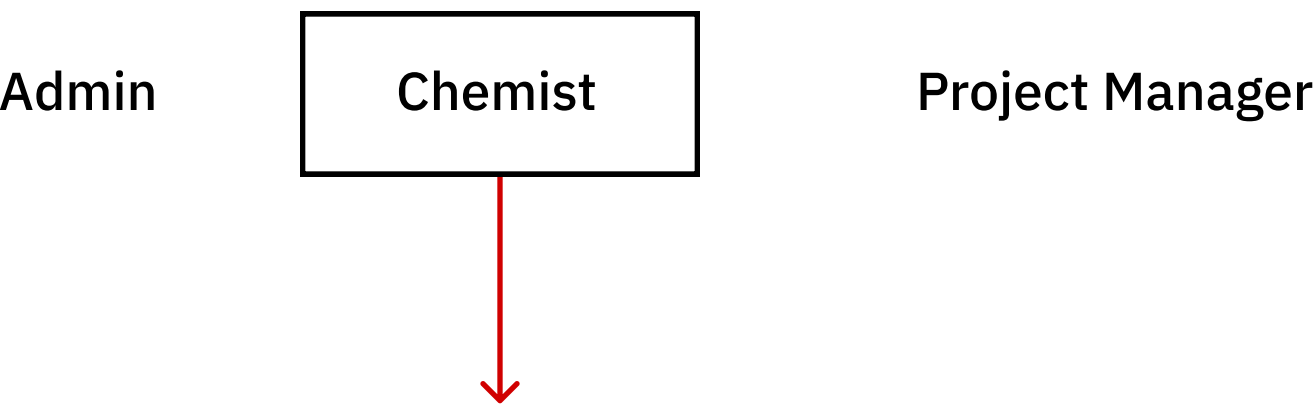


# Business Goals

- Increase researcher productivity
- Reduce documentation effort
- Improve experiment traceability
- Improve adoption
- Standardize workflows
- Modernize the platform

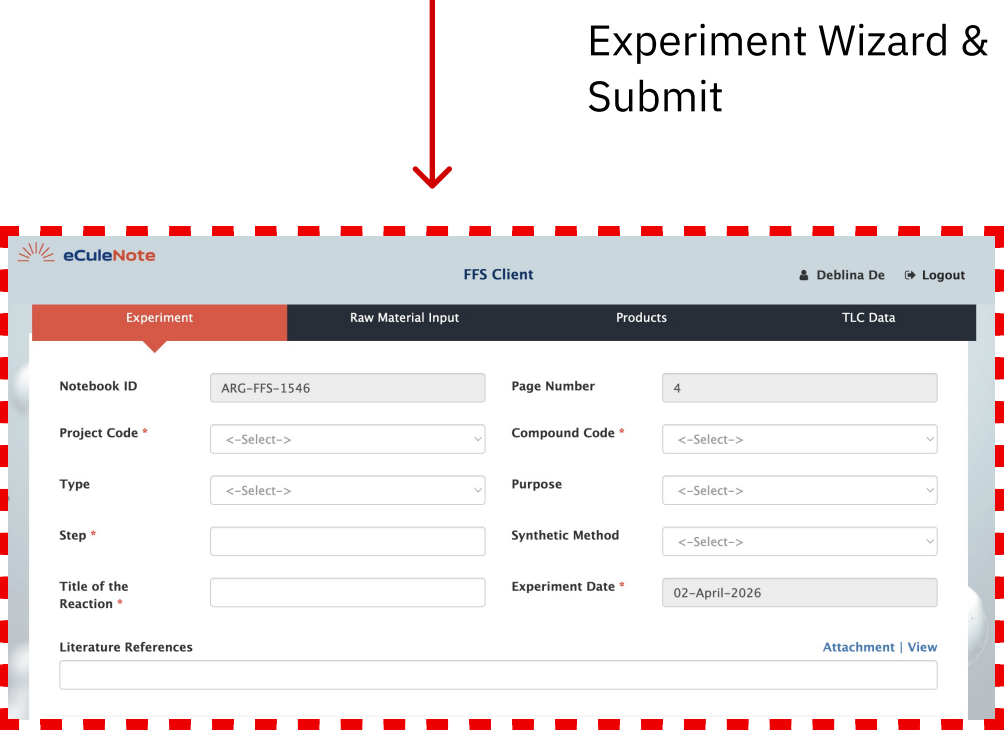
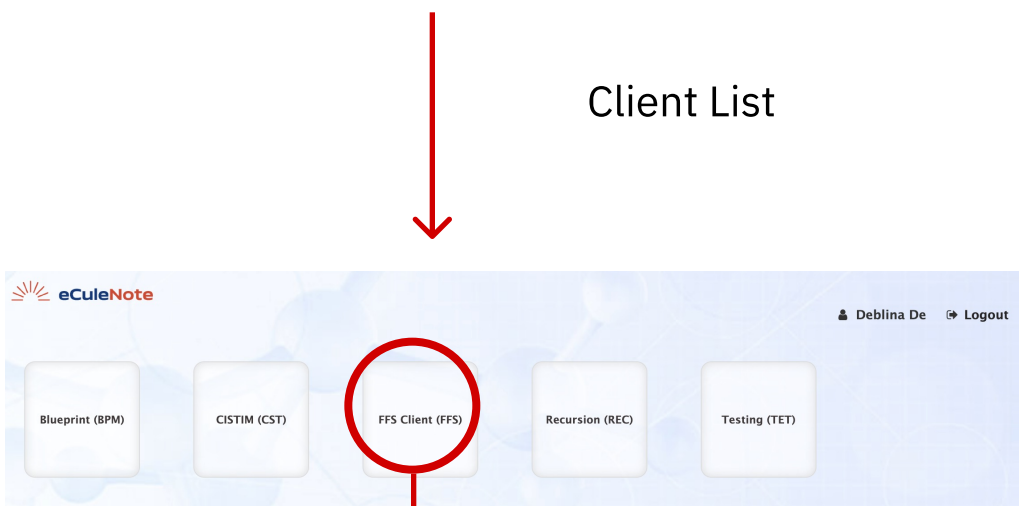
# Understanding Users & Workflows

## User Groups & User Flow + Journey Map

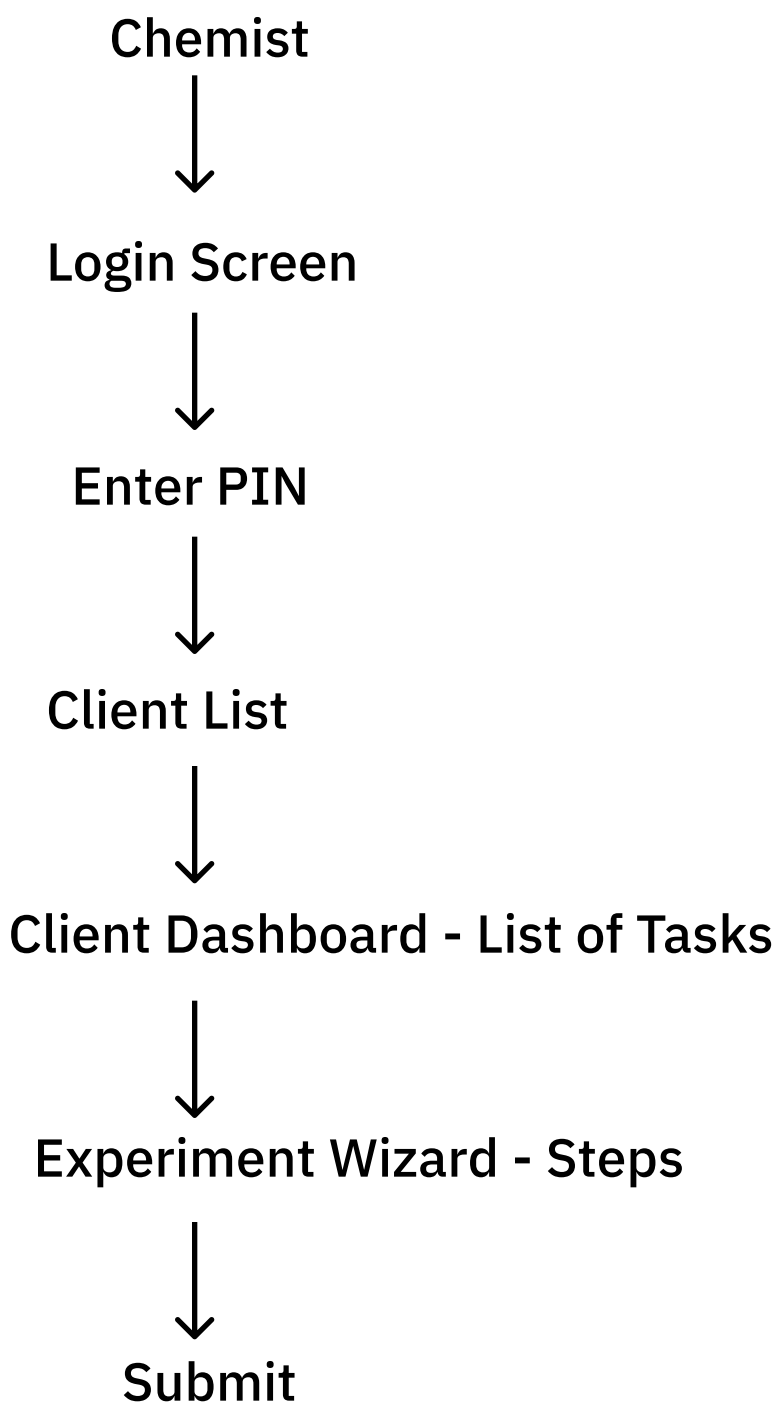


### Understanding “Experiment Page” Journey in the Application

#### Login & Enter Pin Screens



## Information Architecture



## About Chemist User

### User Profile

**Name :** Suresh

**Education :** Graduated

**Occupation :** Sr Chemist

**Brief :** Daily workflow includes preparing experiments, executing protocols, recording data in an Electronic Lab Notebook (ELN), reviewing results, and submitting experiments for approval.

**Domain & Computer knowledge :** Good

### Task Profile

Login

Enter PIN

Client List

Client Dashboard

Experiment Wizard

Submit - Experiment Done

### Environment Profile

**Desktop**

**iPad**

**Mobile**

### Frustrations

- Cluttered experiment navigation
- High cognitive load due to dense information
- Lengthy form
- No Confirmation / Alerts etc.,

# Key UX Problems

| UX Problem         | Impact                    |
|--------------------|---------------------------|
| Complex navigation | Slowed task completion    |
| Dense information  | Increased cognitive load  |
| Long form          | Reduced efficiency        |
| Inconsistent UI    | Increased learning effort |

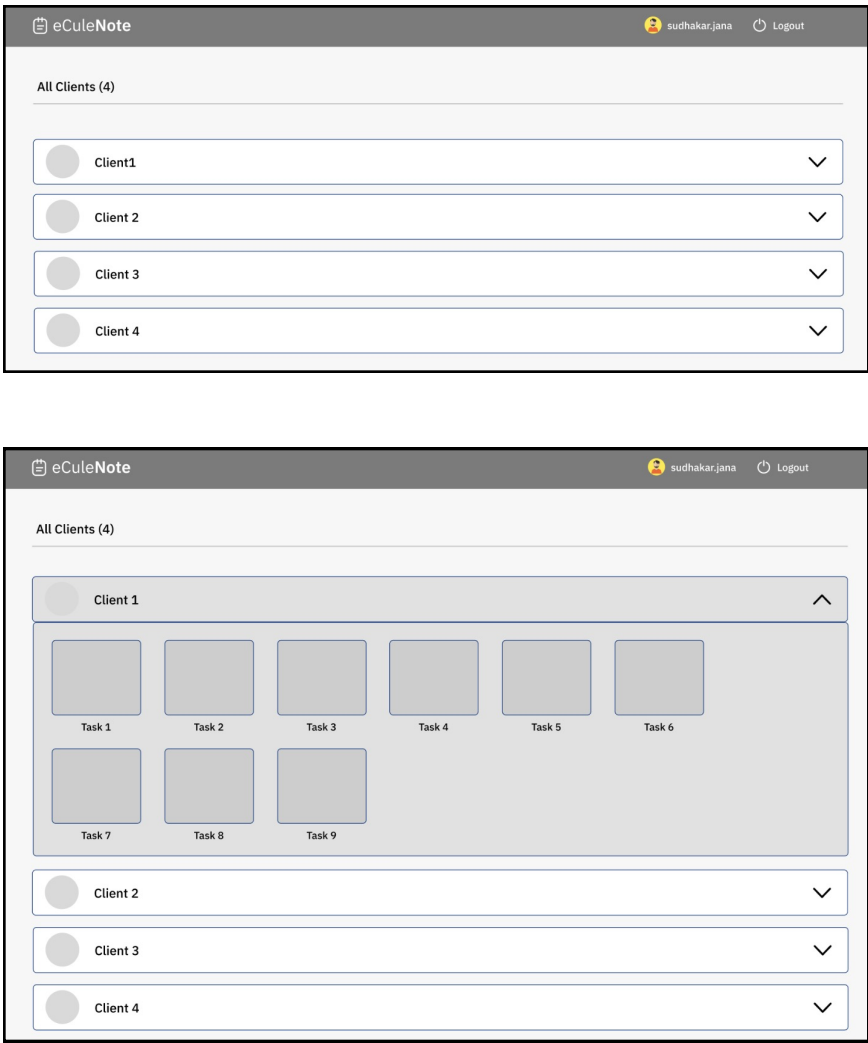
# Design Strategy

- Simplify without removing essential functionality
- Reduce cognitive load
- Improve discoverability
- Support frequent tasks first
- Design for scalability
- Maintain compliance requirements

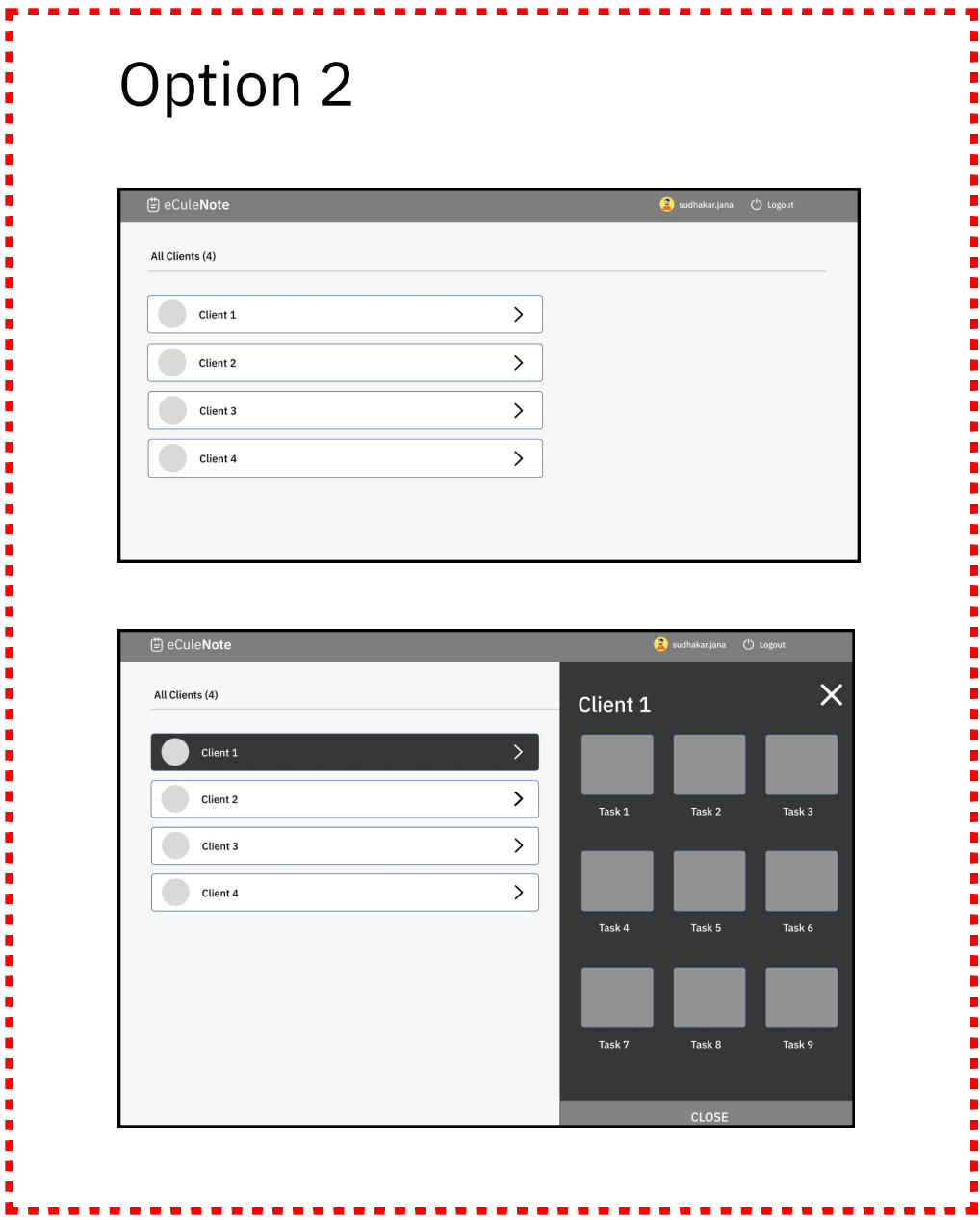
# Design Exploration - Client list & Client Dashboard Combined.

1. Conducted user research to understand chemists' needs, pain points, and workflows.
2. Defined the Information Architecture (IA) and user flows based on research insights.
3. Started the ideation phase by exploring multiple design approaches.
4. Created low-fidelity wireframes combining the Client List and Client Dashboard into a unified experience.
5. Designed three wireframe concepts to evaluate different layouts and navigation patterns.
6. Presented the concepts for stakeholder feedback and design validation.

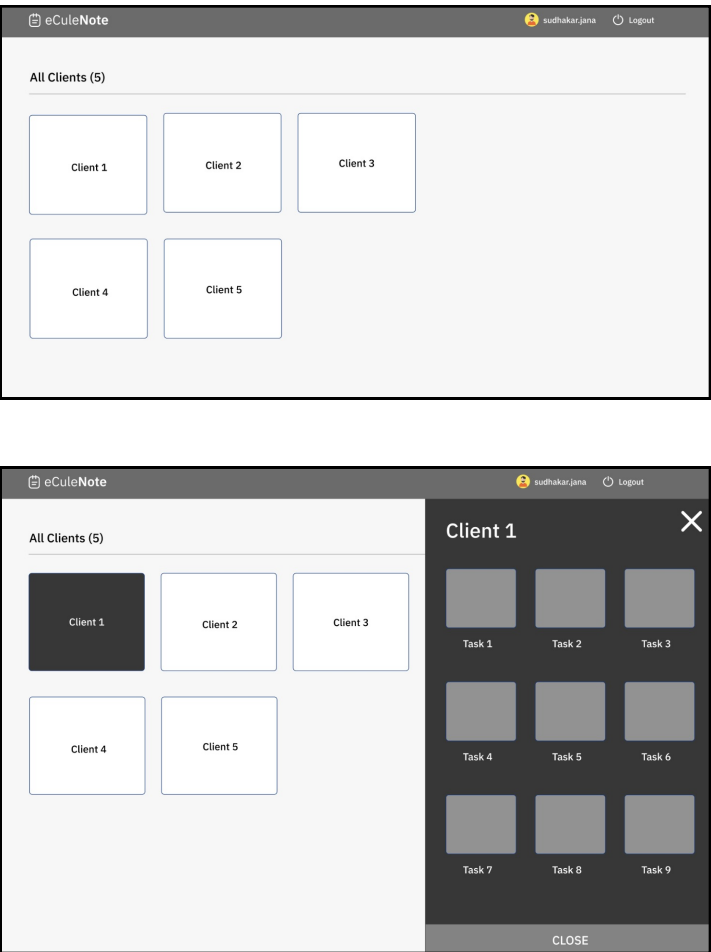
Option 1



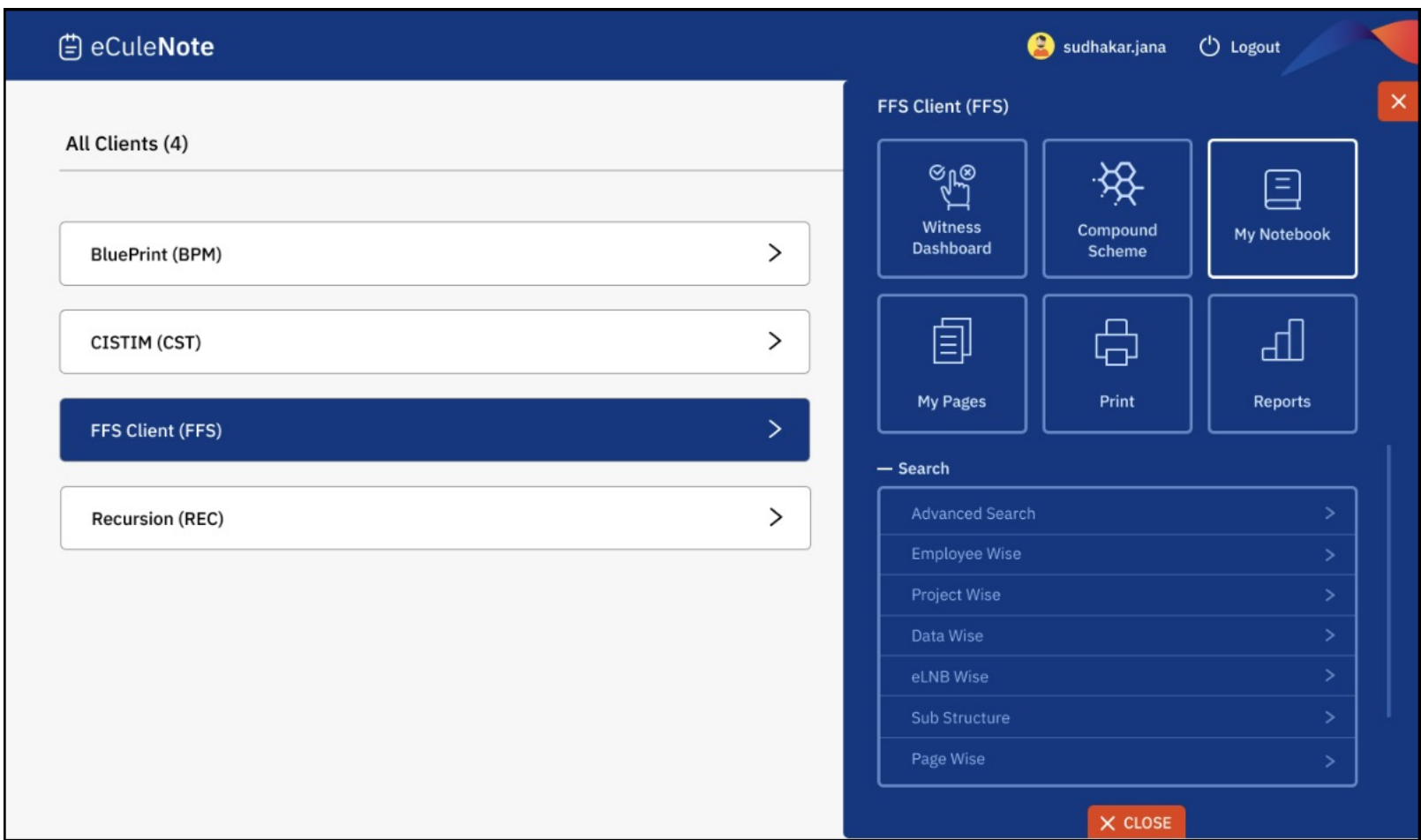
Option 2



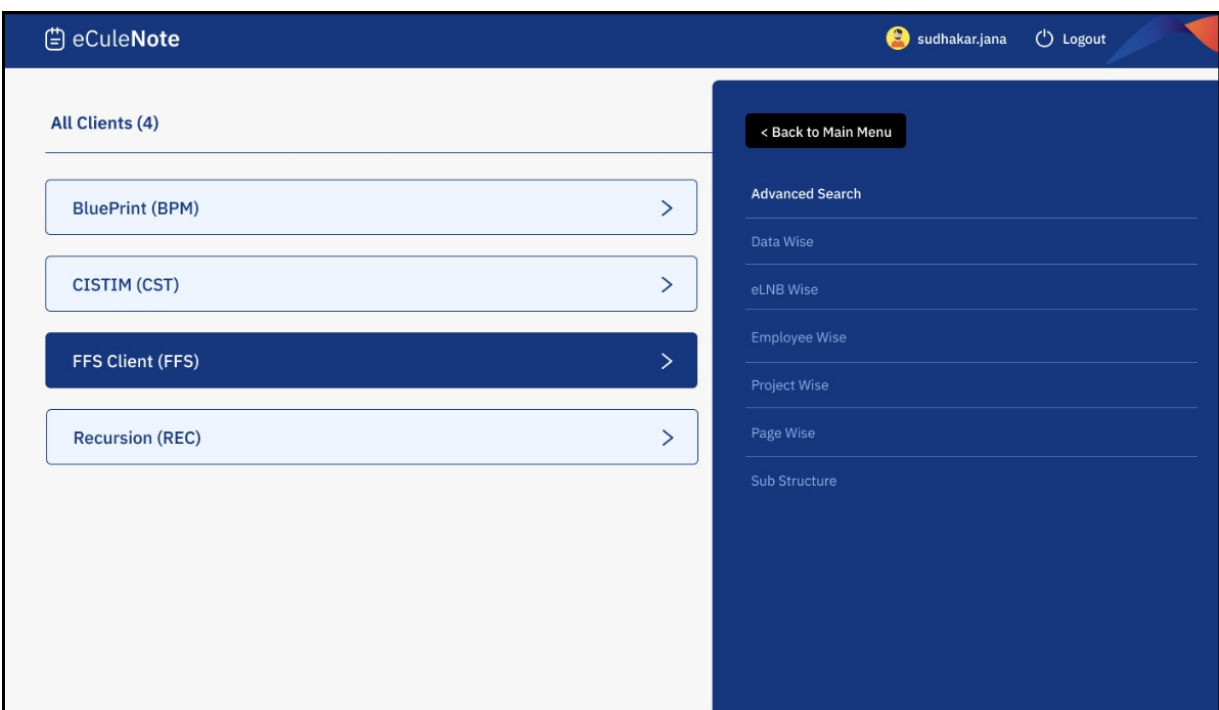
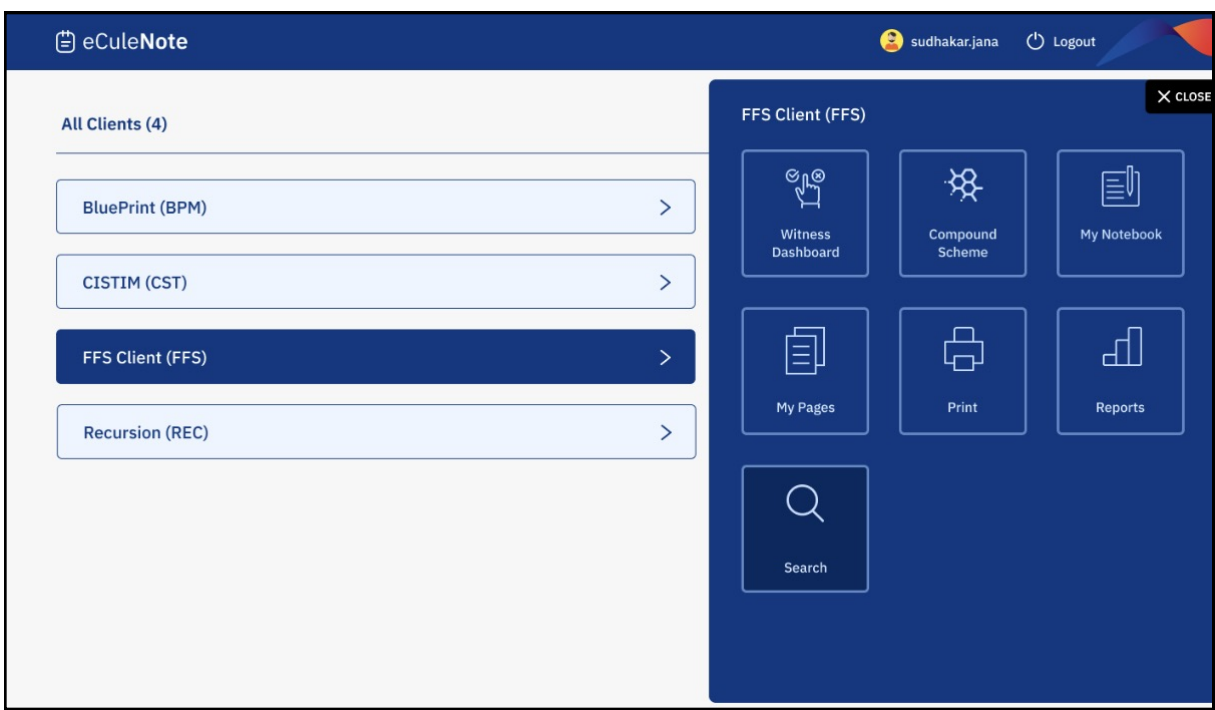
Option 3



Selected



- Identified that the Search feature contained multiple sub-actions, making the workflow more complex.
- Explored ways to simplify the search experience and reduce interaction steps.
- Created an additional wireframe iteration to improve search usability and overall navigation.
- Refined the layout based on usability considerations and stakeholder feedback.

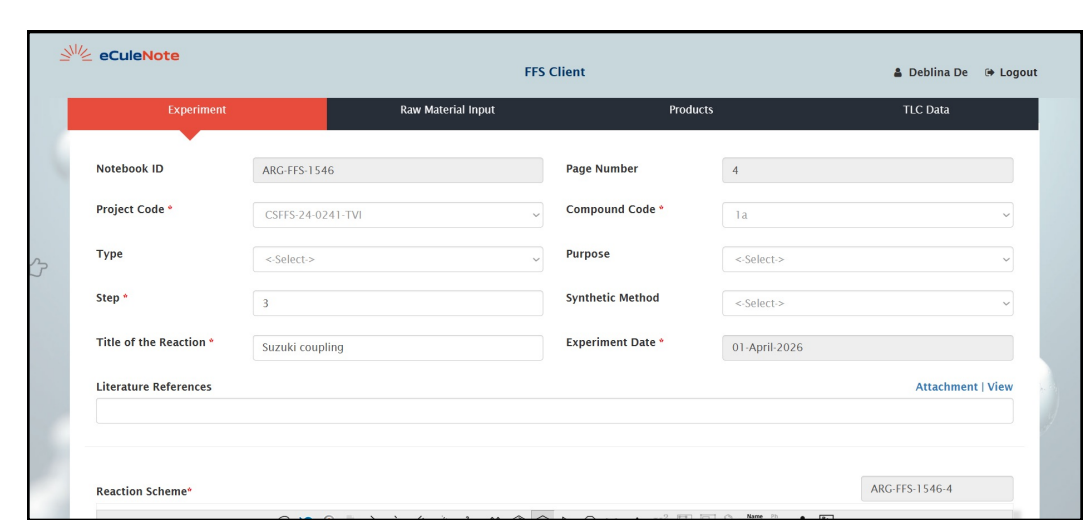


After refining the workflow, I introduced this change. The next slide showcases another significant enhancement.



# Design Exploration - Experiment Page

- The existing Experiment page suffered from cluttered navigation, poor information architecture, and inconsistent workflows.



## Step Descriptions (Brief)

My Notebook – Access and manage assigned experiments.

Experiment Details – Enter basic experiment information and metadata.

Reaction Scheme & Stoichiometry – Define the reaction, reactants, products, and quantities.

Procedure – Record the experimental steps and observations.

TLC Data – Capture Thin Layer Chromatography (TLC) results and related data.

Reaction Outcome – Document the final results, yield, and conclusions.

Review & Submit – Verify all information and submit the experiment for approval.

## User Story Document

**User Story - Experiment Template (updated version)**  
As a Scientist (Chemist), I shall be able to access notebook to document my experiment

**Acceptance Criteria**

- A table must be displayed showing all Experiments created under selected Project
- The Experiments table (inside notebook) shall include the following columns
  - S. No. (Auto Increment number starting from 1)
  - Compound Code
  - Experiment Name
  - Page No.
  - Project Manager
  - Chemist
  - Witness
  - Frozen
  - Witnessed
  - Approved
  - Actions (Edit, View and Copy)
- Each row must include action buttons/icons for Edit, Copy and View based on conditions
  - Edit will be visible when Experiment is pending with login user
  - Copy will be visible for the user if user mapped for at least one compound in the working Project
  - View will be visible for all users.
- Clicking Edit opens a pre-filled form for updating the Experiment record.
- The table supports basic sorting and searching by all fields.
- User should be able to create new Experiment for the selected WBS Code (Project)
- New Experiment will have the 4 sections by default and would be as follows:
  - EXPERIMENT DETAILS
  - REACTION SCHEME & STOICHEOMETRY
  - PROCEDURE
  - TLC DATA
- REACTION OUTCOME
- Detail information for each section
  - EXPERIMENT DETAILS
    - Application should **autopopulate** Notebook ID. It should be read only mode
    - Application should **autopopulate** Page No. It should be read only mode

## Option 1

## Option 2

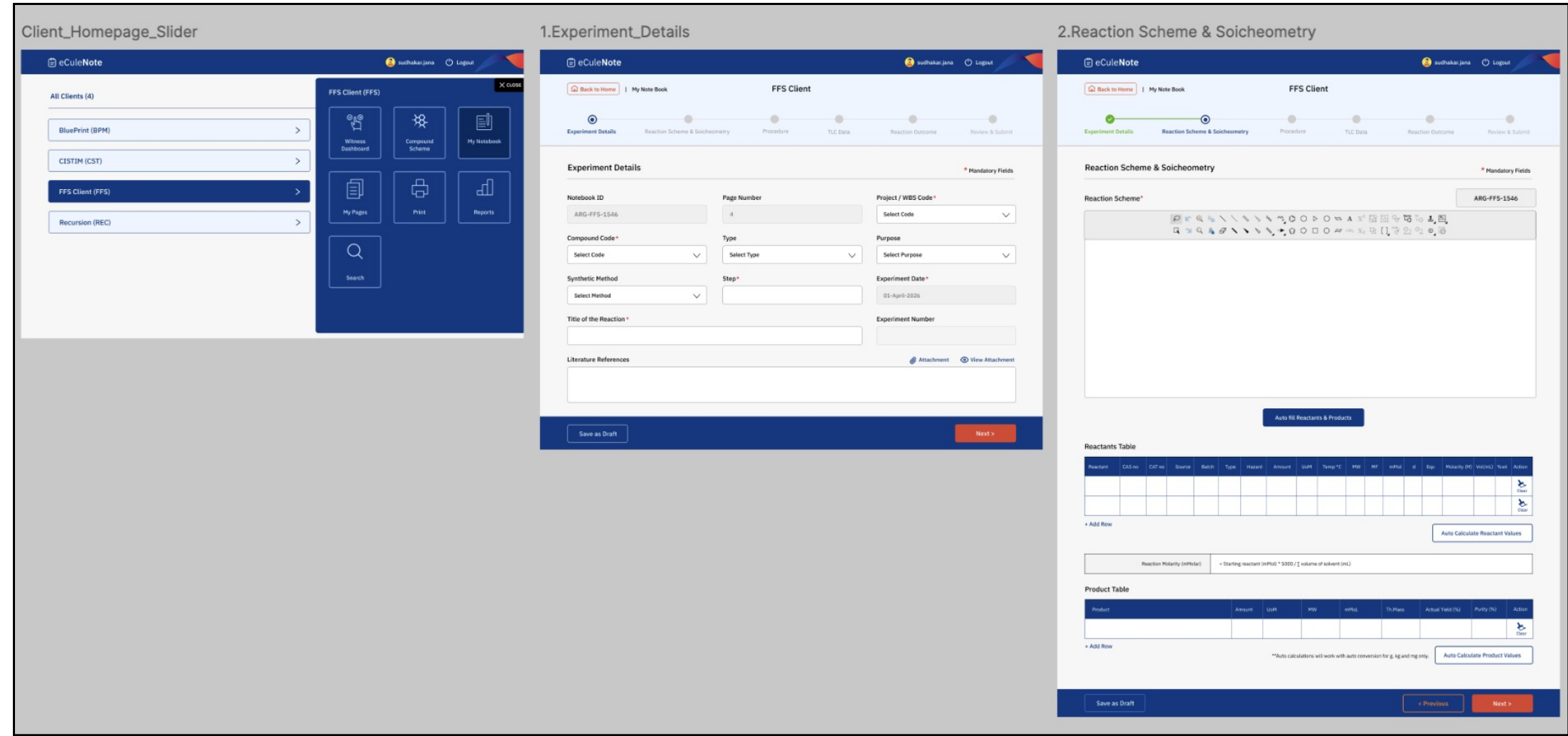
## Option 3

Selected

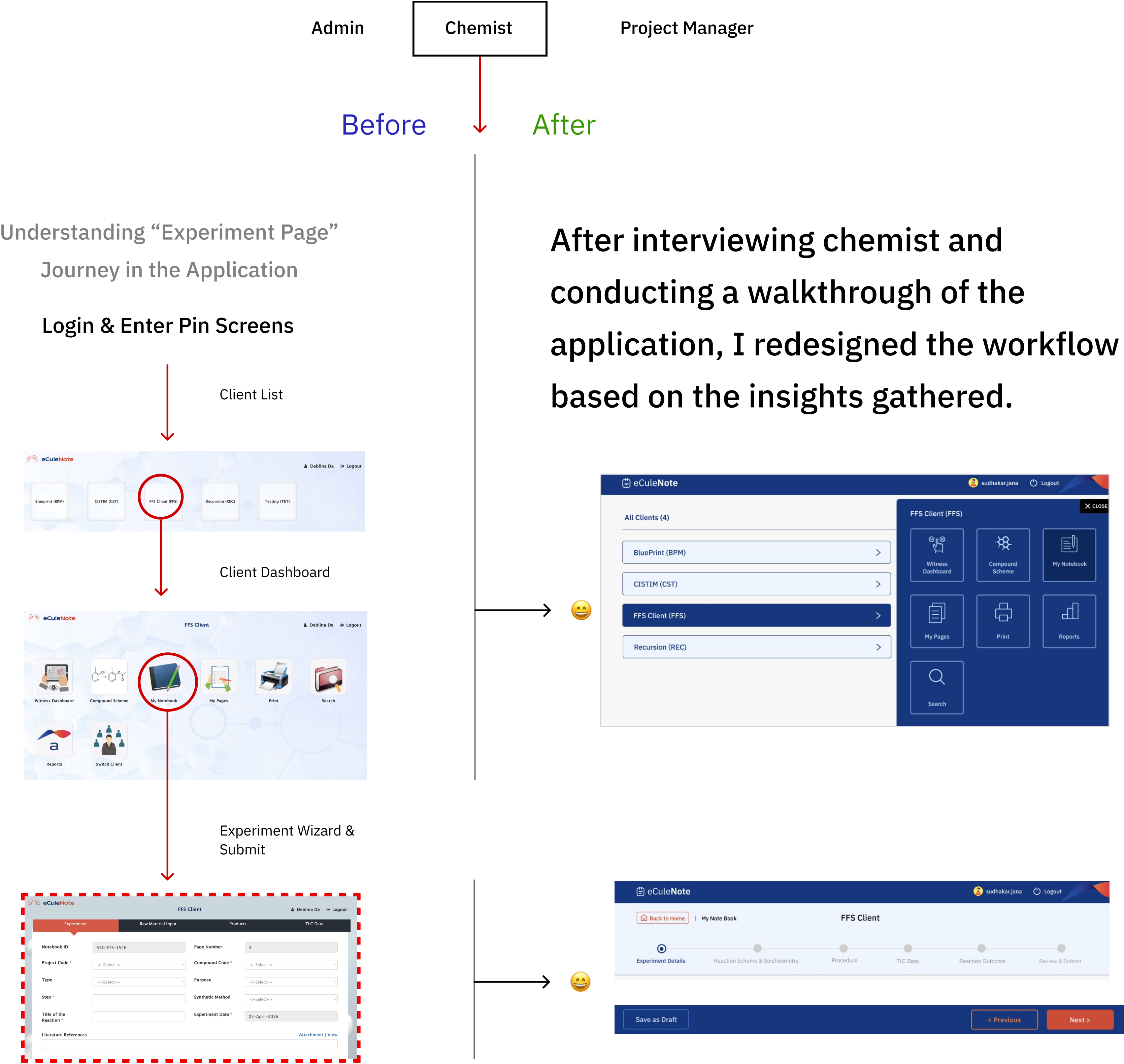


Chemists preferred this design because it was easy to navigate, reduced cognitive load, matched their laboratory workflow, and made experiment documentation faster and more intuitive.

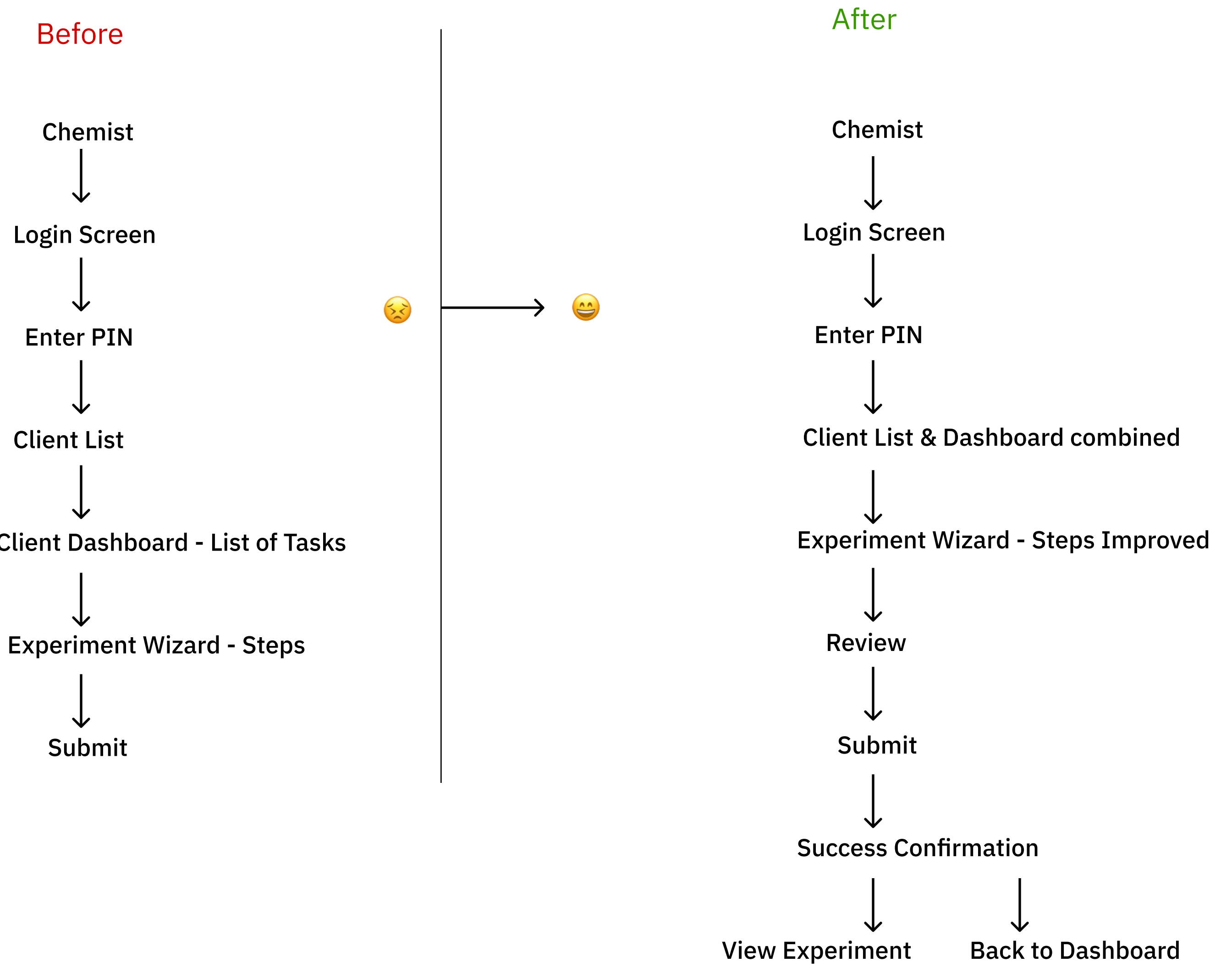
- Simple and intuitive workflow that aligns with how chemists perform experiments.
- Step-by-step navigation reduces confusion and helps users stay focused.
- Clear progress indicator makes it easy to track completed and pending sections.
- Always know where you are with clear page titles and client context.
- Fewer clicks and less navigation, improving task efficiency.
- Save as Draft allows users to pause and continue experiments without losing work.
- Previous and Next buttons support a natural, sequential workflow.
- Consistent layout reduces the learning curve for new users.
- Back to Home provides quick access without disrupting the workflow.
- Improved readability and information hierarchy make important actions easy to find.



# Before vs After



# Information Architecture



Before vs After

Admin

Chemist

Project Manager

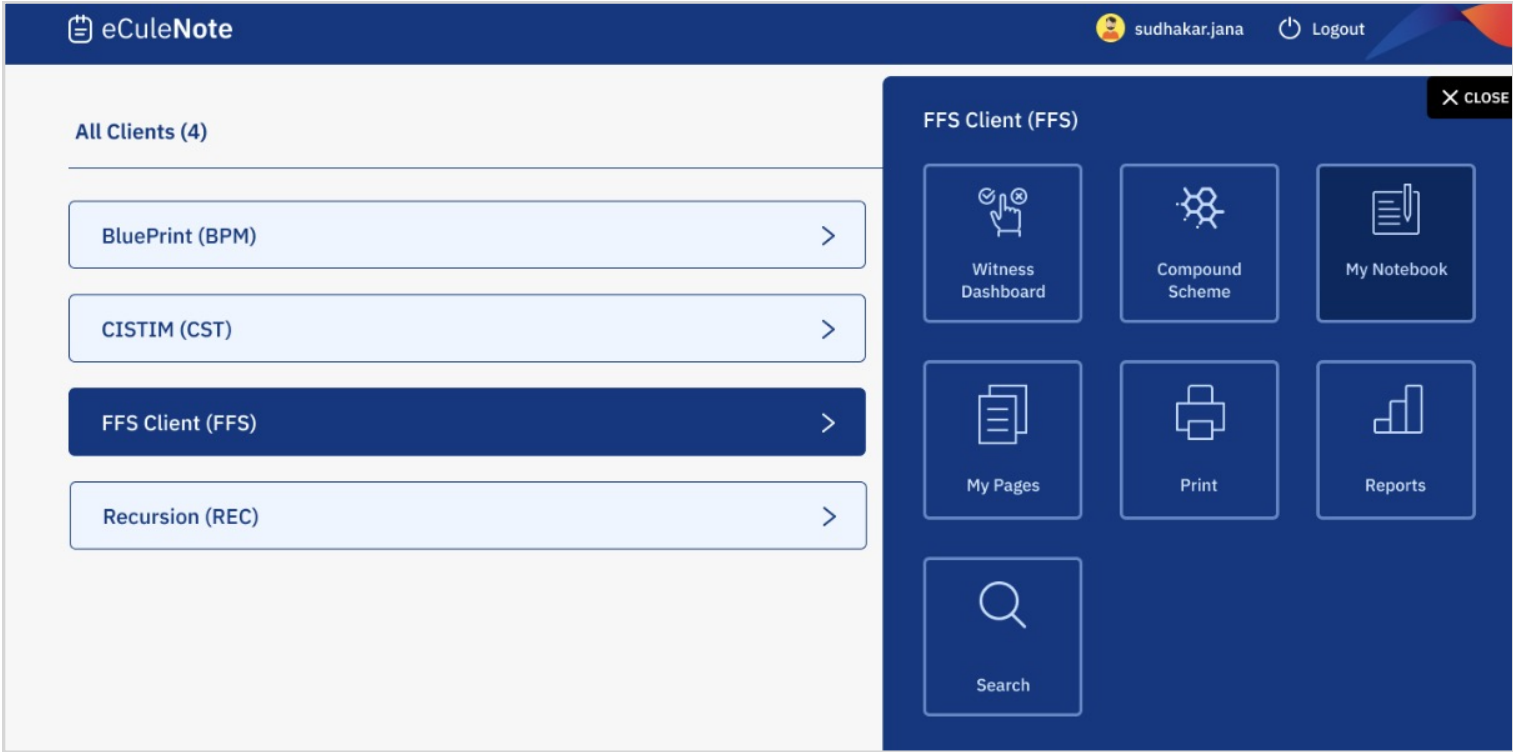
Before

After

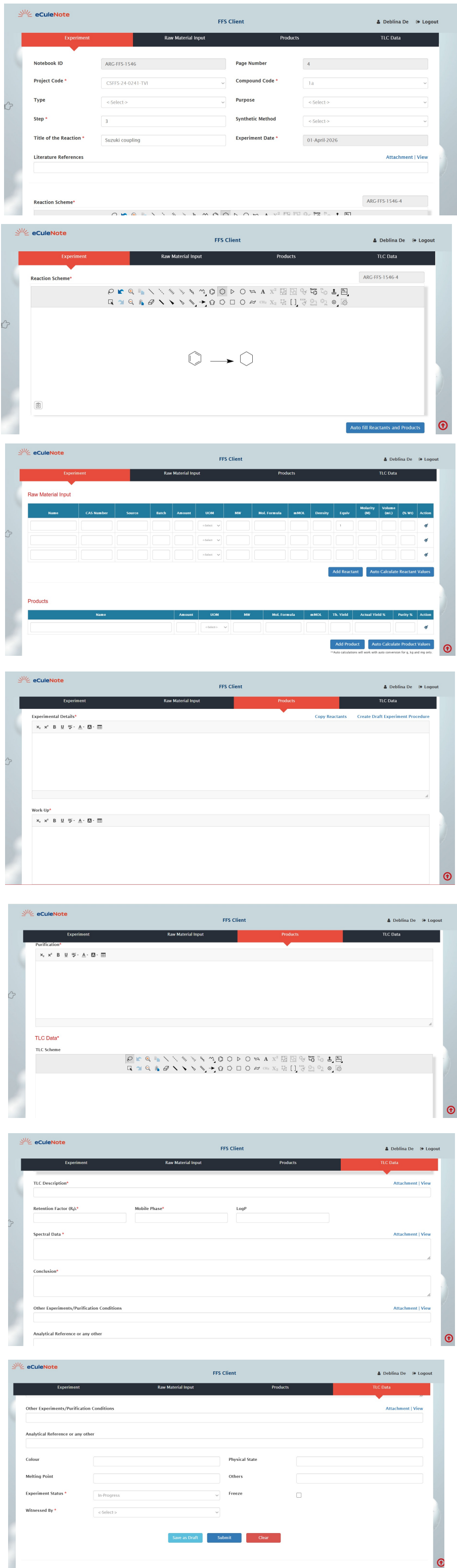
Client list & Dashboard  
Separate Pages



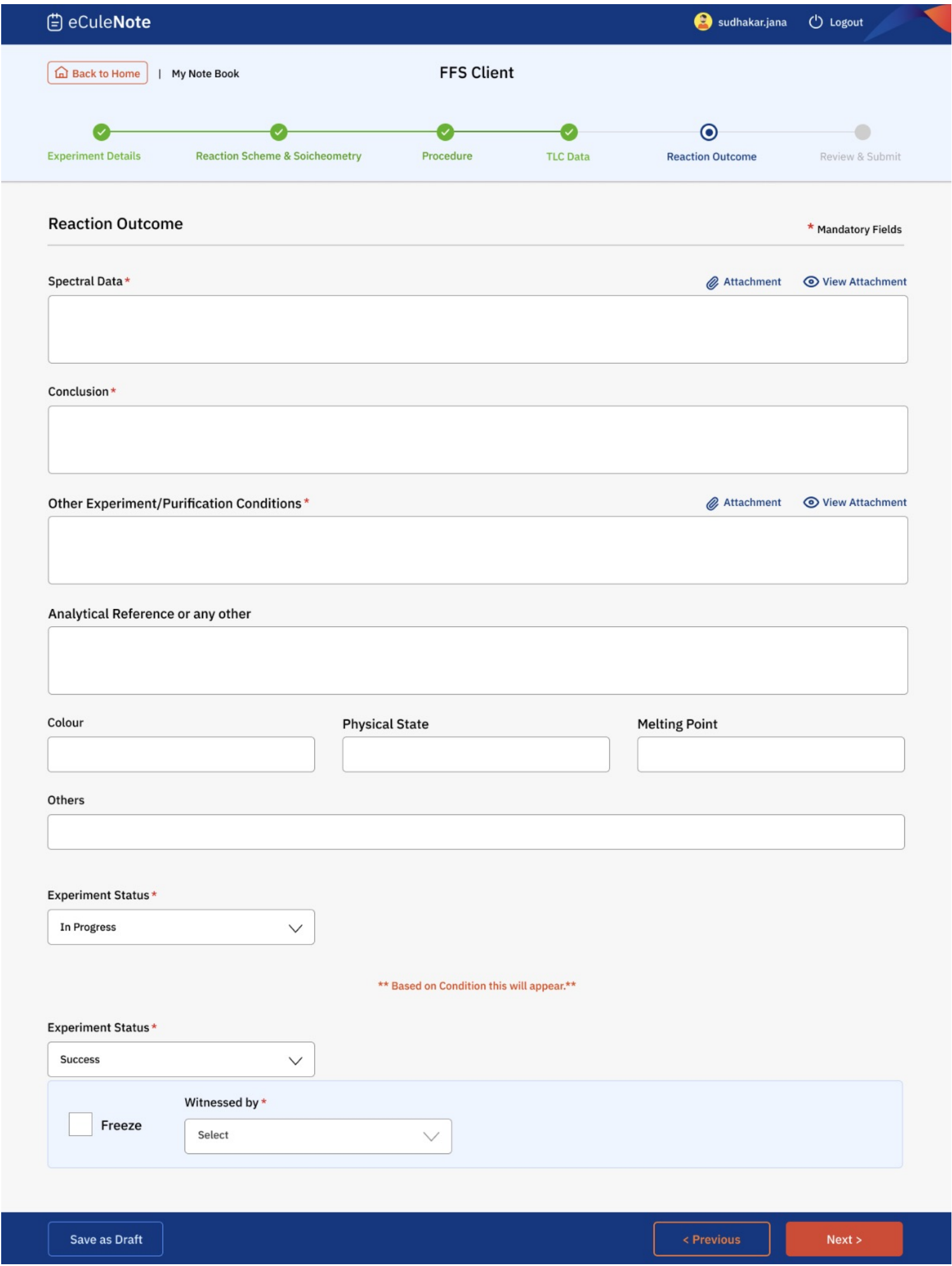
Client list & Dashboard Combined  
Pages



Lengthy Experiment Page



Clear Journey and Easy Steps



# Takeaways

- Reduced task completion time by 60%.
- Improved workflow efficiency by 80%.
- Achieved 100% user satisfaction during usability testing.

# Learnings

- Users first, design second.
- Followed a User-Centered Design (UCD) approach.
- Used ChatGPT and Claude to validate workflows and information architecture.