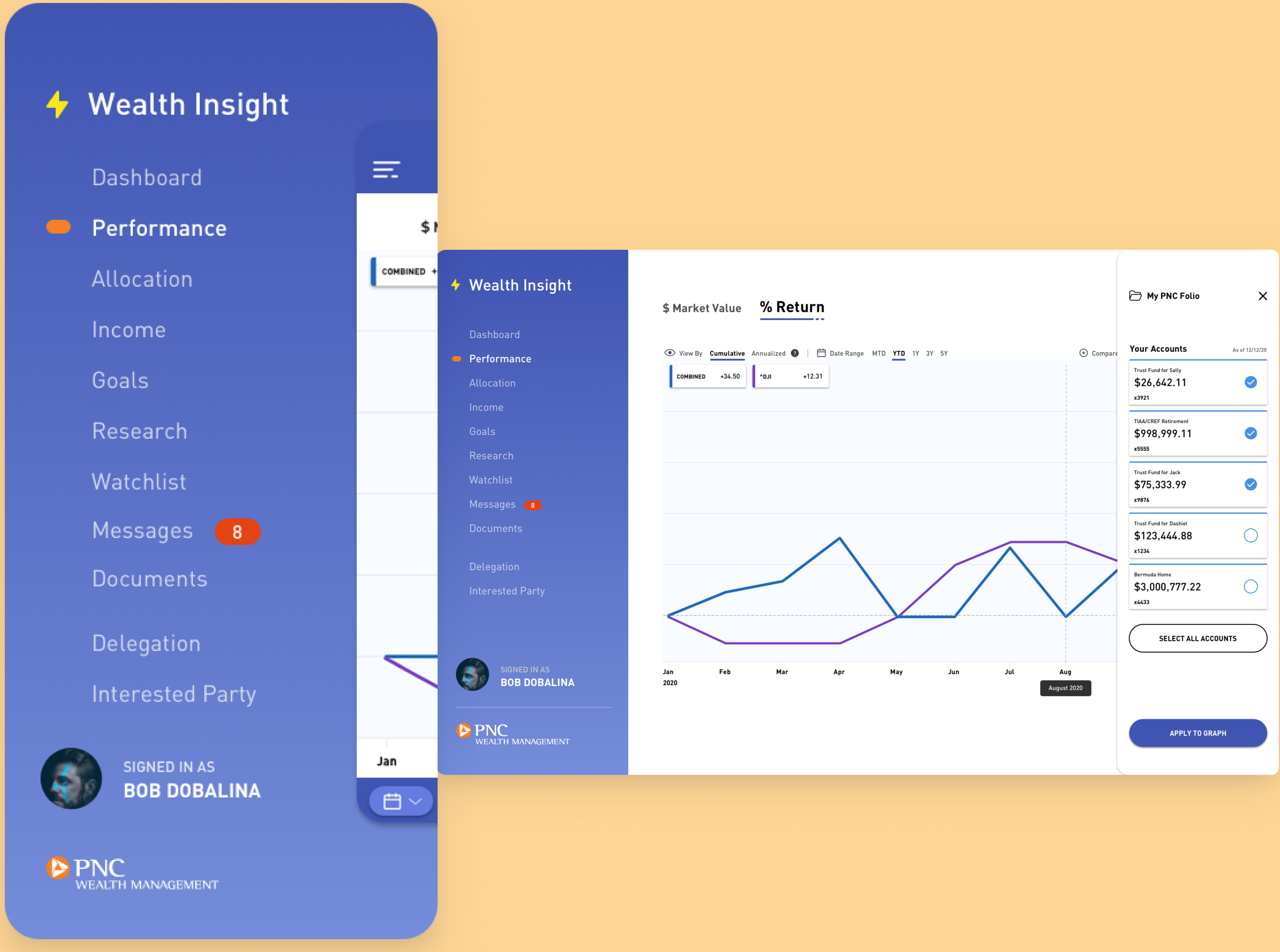
JOSH LINE

CASE STUDY

PNC
Total Insight &
Wealth Insight



Overview

What is Total Insight & Wealth Insight?

PNC Total Insight and Wealth Insight are investment platforms that help investors observe fluctuations in their holdings over time. Investors can look at and track asset performance, asset allocation, dividends, and perform rudimentary research on stocks or funds for later discussion with their investment advisor.

The Problem

Over time, PNC Digital Wealth & Investing has been losing wealth customers to competitors who provide investors the freedom to manage their own portfolios/holdings. To offset the loss of market share, the product management team worked with a third-party agency to execute a redesign without performing any type of user research or usability testing. The redesigned screens were presented to the project stakeholders who thought the designs didn't solve any particular problem for the business or the investor. Upon starting this role, my team and I were charged with redesigning and improving the next generation of these investment products by performing user research to understand investors and their lives, and locating opportunities to improve the overall investor experience.

Problem Statement

Investors need a way to understand what is happening with their investments so that they can feel confident about their decisions.

Design Question

How might we empower investors to feel more confident about their investment decisions?

My Role and Responsibilities

Leadership: I led a team of six user experience designers, as well as partnered with many areas of the business (development, product, testing and innovation teams). I led many structured ideation sessions to further guide this project along.

User research & consolidation: I performed domain research, competitive analysis, interviewed investors, and performed usability testing on third-party designs. Based on the data I gathered, analyzed, and synthesized, I developed thinking styles (behavioral personas) and identified pain points and opportunities that guided the redesign effort.

Design execution & validation: I designed the overall structure and strategy of the final products, as well as the performance and folio views, from initial concept to wireframes, high-fidelity designs, and testing prototypes.

Timeline

March 2018 - September 2018

Tools

Sketch

InVision

UserZoom

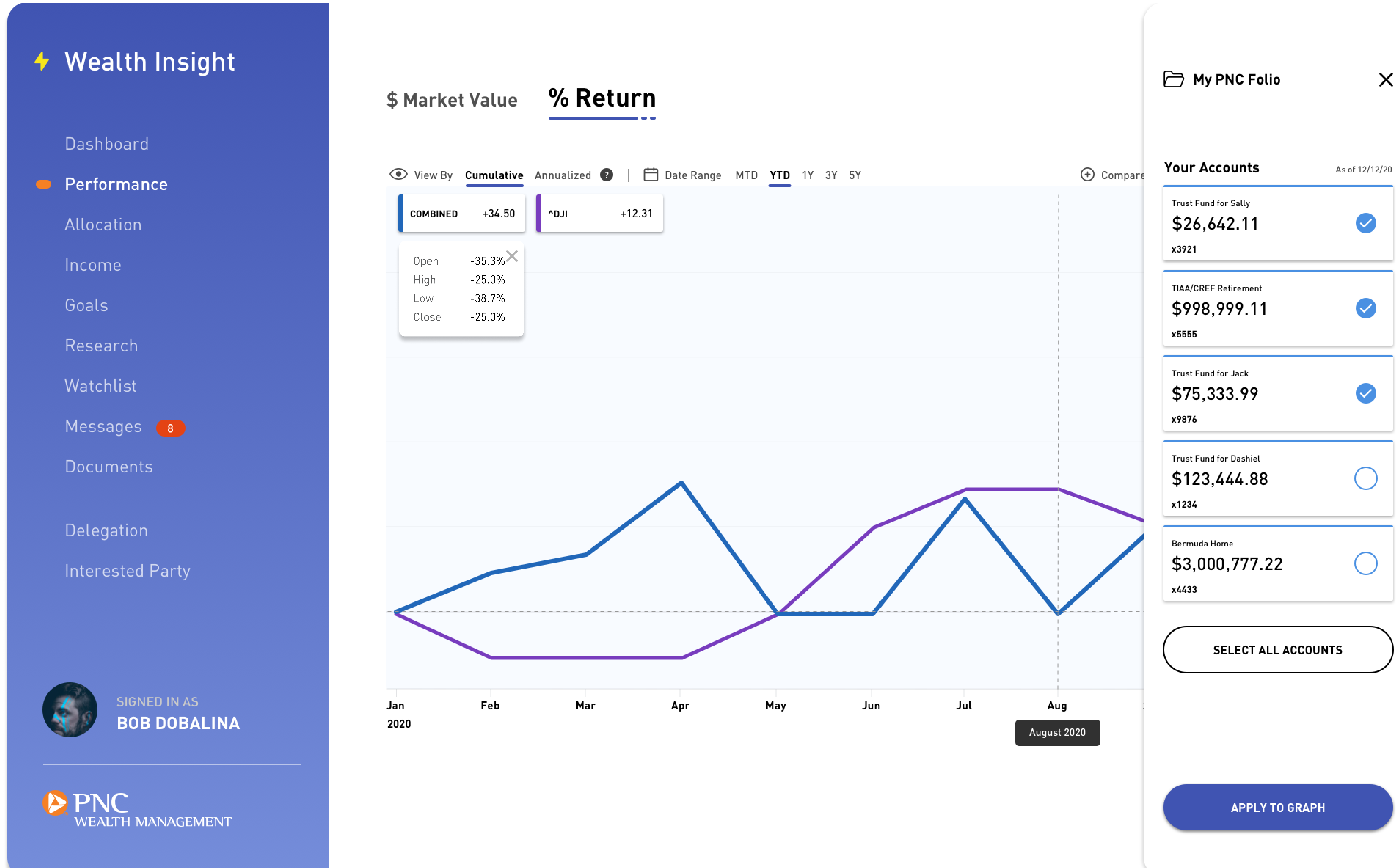
OmniGraffle

Solution

Working within an agile product team, I redesigned the holistic structure of the Total Insight & Wealth Insight, as well as the performance and folio sections (featured here within this case study) with many key enhancements to keep investors engaged with their money and goals across mobile, tablet, and desktop views.

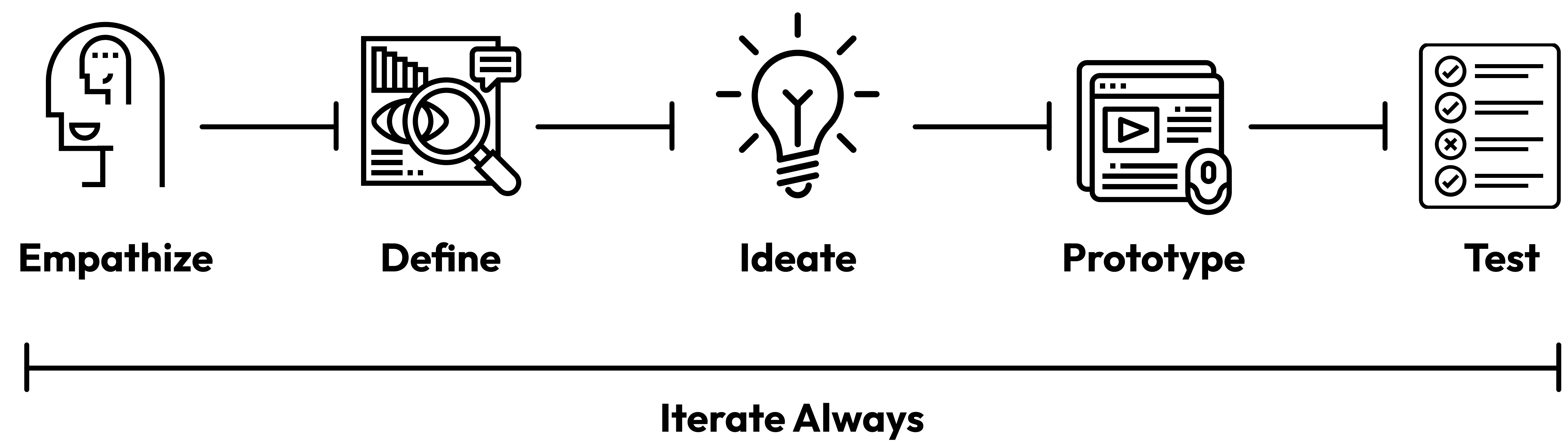
Throughout this process, I introduced the following:

- Everyday language definitions for difficult investment concepts
- Self-generated goals to help keep people on track with their money
- Investment projections within performance
- The ability to fully analyze and purchase stocks/funds in a completely reimagined research section.



My Design Process

My design process for the Total Insight and Wealth Insight redesign roughly falls in the same conceptual buckets as the EDIPT process (Empathize, Define, Ideate, Prototype, and Test) with iteration as needed across phases.



Empathize

Process: Assumptions / Business Goals / Competitive Analysis / Heuristic Evaluation / User Interviews / Card Sorts / Usability Testing

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Assumptions

Before planning and performing any user research, I sought to gather and understand my team's (product, design, and development) assumptions on investors, their preferences, and how they approach investing in their lives.

Assumptions

Together, the product team and I came up with the following list of assumptions to capture what we think we know about the investor and what we need to investigate:

01 Investors possess a solid understanding of investment jargon.

02 Investors will look up investment definitions they don't know to gain an understanding and fill in any gaps in knowledge.

03 Young investors prefer self-directed research online to visiting or calling an advisor.

04 Investors have clear goals for their money.

05 Investors check their investment performance and allocations on a monthly basis.

06 Investors work with advisors to establish their retirement goals.

07 Middle-aged and older investors prefer working with advisors to self-directing investing on the Internet.

08 Investors perform performance and allocation tasks the most out of all their investment activities.

Related Documents

Assumptions APPENDIX

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Business Goals

The team interviewed stakeholders from Total Insight (PNCI) and Wealth Insight (AMG) to gather and understand the following business goals:

- Understand investors in the present day to capture and analyze their needs.
- Increase time on site.
- Improve the look and feel of Total Insight and Wealth Insight.
- Improve the usability of Total Insight and Wealth Insight.
- Design for accessibility - WCAG 2.1 AA level.
- Provide advisors with the same interface.
- Reduce the need (gradually) for an investor to call an advisor.

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Competitive Analysis

To get a better view of the market, we sought to understand the competitive advantage behind each of our competitors' wealth offerings.

I was able to identify direct and indirect competitors and compare each offering on the desktop experience. This allowed me to get a better idea of what investors are using outside of the Total Insight & Wealth Insight ecosystem.

Competitive Review & Analysis - Overview: PNC Total Insight & Wealth Insight

Competitors	URL	Year Founded	Competitive Advantage	Heuristic Evaluation	General Notes	Questions/Notes to the Tea
Direct Competitors						
Morgan Stanley	https://www.morganstanley.com/what-we-do/wealth-management	2009	Morgan Stanley is known for its name recognition, advising, planning, and self-directed tools. Among these, the Goals Planning System (GPS) seems to be quite robust and useful for investors and investors-to-be. Provides optimal allocations, projections, after-tax recommendations, and tools to help you change the course.	Accounts, Markets + Research, Transfers, Payments, Trade, Services. Fairly intuitive. Accessibility issues with color on dark blue background. All too similar to what our third party vendor has provided to us. Dollar amounts seem to come from one data source. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Overall, this site has a tab structure (for instance, within an account, you have access Holdings, Activity, Realized Gain/Loss, Portfolio Reports, and Documents), using what looks like Material design. Morgan Stanley is smart about putting quick actions where you can find it, as well as Print, Download, and Definitions.	Questions about advisor workflow. Wha
J.P. Morgan	https://am.jpmorgan.com/us/en/asset-management/gim/adv/home/	1935	J.P. Morgan is the name in finance. J.P. Morgan is known for its name recognition, advisors, and staid presence within the markets. What-If Analysis: This feature allows you to see what would happen when you make a purchase of a stock or fund.	Overview, Transactions, Analytics, Statements, Dividends, Reports. This site is very table based. It has a very dated feel to it relative to some other interfaces I have seen. Exhaustive transactions filters - seems like a lot for a user to take in. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	A decent site but it has that dusty feel of a wealth management division slowly plodding its way into the future. The What-If feature was very nicely done relative to the design system in use.	Questions about advisor workflow. Wha
Wells Fargo	https://www.wellsfargo.com/the-private-bank/?linkLoc=fn	1972	Wells Fargo has been in the banking business for over a century. Within the Private Bank offering, one will find stock finder tools and market commentary. Not too much of an advantage as all investment firms are providing marketing commentary and comparison tools.	Brokerage Overview, Portfolio, Research, Customer Service. It feels like quite a bit of the navigation is tucked under each of these sections. Good use of big numbers but still retains the feel of the data table layout of statements sent to the investor. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	This site is impoverished relative to those above. Yes, there are big numbers and tools, but the overall look and feel makes the experience feel quite lackluster. The product tucks functionality under a very narrow navigation (four links), making it hard to find what you are looking for.	Questions about advisor workflow. Wha
Charles Schwab	https://si2.schwabinstitutional.com/SI2/SecAdmin/Logon.aspx	1971	Schwab has been in the market since 1971. Schwab gets by on name recognition and advisor-based tools. Big numbers, large charts coupled with data tables. Intelligent portfolios (like Morgan Stanley's GPS above).	Accounts, Trade, Research, Products, Guidance, Service, Messages, Contact Us. Big numbers, large charts, projections, all make the experience that much better with Schwab. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Even though the main sections are a mishmash of verb and noun terminology, I feel like it makes sense given what we know thus far about the investor and their mental model.	Questions about advisor workflow. Wha
UBS	https://onlineservices.ubs.com/olsauth/ex/pbl/ubso/dl/	1998	UBS is responsible for US$781 billion of invested assets. The UBS name is one of advice and distinction. UBS provides investment projections and a deep-dive into allocation information. The "Wealth Plan" seems interesting and distinct from other competitors.	Performance, Wealth Plan, Transactions. Light blue on brown is not accessible. Brown doesn't really work all that well for navigation. Extremely narrow navigation to place "all the things." Where would an investor find Allocations, Research, and other sections/pieces of information? **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	This site might be on-brand, but the brown doesn't work as a color. Emphasis seems to be on the advisor helping rather than self-service. Overall, it just seems ugly - not attractive to investors and potential investors.	Questions about advisor workflow. Wha
BNY Mellon	https://www.bnymellonwealth.com	2007	BNY is known for its name and brand recognition. BNY Mellon has at least US$1.7 trillion in assets under management. What BNY Mellon brings is a distinct visual presence and experience in an industry that largely looks the same.	Dashboard, Investments, Private Banking, Transfers, and other areas to keep the user focused within a view. A use of background images helps the information panels stand out from the background. A use of big numbers also is distinctive. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	BNY Mellon makes use of serif type that brings a level of distinction not seen in the other direct competitors.	Questions about advisor workflow. Wha
Indirect Competitors						
Acorns	https://www.acorns.com	2012	Acorns was built for the person looking to get into investment. There are no investment minimums. Robo-advising works by rounding up and taking what is left and investing in selected portfolios. Over time, this money will potentially accrue. For example, you can have $5.00 invested weekly which will be invested within a particular risk target. Over time, this amount "could" go up based on market conditions. What is particularly unique is that, through some retail and purchaser agreements, the investor can buy products on a particular website/service and then the retailer will invest back into your account. This is definitely a unique value proposition.	This site provides a very nice responsive experience. The panels break quite nicely to stack on top of each other. There is a soothing green color throughout the experience with blue panel call outs to denote Performance. There are calls to action for Potential, Offer Details, Performance, a Retirement account (Acorns Later), and opening account for your child/children. The hierarchy of these particular content pieces feels a bit disjointed or clumsy. It feels like this information was tacked on later without a lot of thought. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	The panels and offer details are nice, but it's hard to see the entire experience by way of the navigation.	No advisor workflow. Robo-advisor.
Personal Capital	http://personalcapital.com	2009	Personal Capital is another low-cost, low-entry investment product for potential investors. Personal Capital touts its features of the Retirement Planner, Net Worth, and Investment Check-up as the real value for investors. Personal Capital provides advisors on-hand to chat, video call, or text with any questions.	The CTAs are very clear: Overview, Banking, Investing, Planning, Advice. However, if I was to create an investment service, I would lead with those products and have Banking follow later in the display sequence. The Investment Check-Up allocation graph is very unique and some investors would appreciate this visual display of information. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	High fees would keep investors away from this service.	Questions about advisor workflow. Wha
Robinhood	http://robinhood.com	2013	Robinhood's value proposition is to provide commission-free trades for everyday investors. The company makes money based on a percentage taken on its Robinhood Gold product. Robindhood provides five products: Cash Management; Stocks & Funds; Options; Crypto; and Gold (their more robust product).	Robinhood provides perhaps one of the cleanest layouts of the indirect competitors. However, the navigation is too lacking: Home, Notifications, Account are just too thin for the work needed to understand what is happening to one's money. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Upon looking at the value proposition, I can see why so little is offered to the investor when it comes to the very segmented views of stocks and funds, money management, options, and cryptocurrency.	No advisor workflow. Robo-advisor.

Related Documents

Competitive Review APPENDIX

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Heuristic Evaluation

I also performed a heuristic evaluation of the third-party designs and PNC's competitors using Nielsen's and Tognazzini's heuristics and principles of interaction design. The results of the heuristic evaluation showed that third-party agency-delivered PNC designs were failing our investor users considerably when compared to our competitors' experiences.

Related Documents

Heuristic Evaluation - Nielsen Heuristics APPENDIX

Heuristic Evaluation - Tognazzini Heuristics APPENDIX

Competitive Review & Analysis - Nielsen's Heuristics: PNC Total Insight & Wealth Insight

KEY: — Not Applicable · Missing · Poor · Fair · Good

Heuristic	PNC 3rd Party	Morgan Stanley	J.P. Morgan	Wells Fargo	Charles Schwab	UBS	BNY Mellon	Acorns	Personal Capital	Robinhood	Notes
Visibility of system status											
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.	Poor	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Fair	PNC designs seriously lacks in system status indicators.
Match between system and the real world											
The system should speak the users' language, with words, phrases and concepts familiar to the user.	Poor	Good	Good	Fair	Good	Fair	Good	Fair	Good	Fair	PNC designs do not speak in the investors' language - experience or inexperienced.
Follow real-world conventions, making information appear in a natural and logical order.	Poor	Good	Good	Fair	Good	Good	Good	Good	Good	Good	PNC designs use a mobile-first metaphor which jumbles the presentation order in a way that does not make sense to the user.
User control and freedom											
Users will need a clearly marked "emergency exit" to leave the unwanted state.	—	Good	Good	Fair	Good	Good	Good	Good	Good	Good	Many sites provide a good way of exiting an interaction or unwanted state. PNC does not provide this capability.
Support undo and redo.	—	Good	Good	Poor	Good	Poor	Good	Poor	Good	Poor	PNC does not provide this action to investors.
Consistency and standards											
Users should not have to wonder whether different words, situations, or actions mean the same thing.	Poor	Good	Good	Poor	Good	Poor	Good	Poor	Fair	Poor	PNC uses a lot of ambiguous and investment language/jargon to confuse new and experienced investors.
Error prevention											
Provide a design which prevents a problem from occurring in the first place.	Poor	Good	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Total Insight and Wealth Insight has not been designed to keep errors from occurring.
Eliminate error-prone conditions or check for them and present with a confirmation before they commit to the action.	Poor	Good	Good	Fair	Good	Fair	Good	Fair	Good	Fair	Total Insight and Wealth Insight has not been designed to keep errors from occurring.
Recognition rather than recall											
Minimize the user's memory load by making objects, actions, and options visible.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	Many options are provided, but they are decontextualized from graphs or what they do within the interaction design.
The user should not have to remember information from one part of the dialogue to another.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	The onus is on the user to remember what is to be done within a spartan interface.
Instructions for use of the system should be visible or easily retrievable whenever appropriate.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	As it stands, there is little in the way of instructions for the user in the Total Insight and Wealth Insight re-design.
Flexibility and efficiency of use											
Use of accelerators such that the system can cater to both inexperienced and experienced users.	—	Good	Good	—	Fair	Fair	Good	Fair	Fair	Fair	No such accelerators exist for experienced or inexperienced investors.
Allow users to tailor frequent actions.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	The redesign doesn't really provide for frequent actions to be tailored by the investor.
Aesthetic and minimalist design											
Dialogues should not contain information which is irrelevant or rarely needed.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Dialogues have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Every extra unit of information in a design competes with the relevant units of information and diminishes their relative visibility.	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	The PNC redesign is fairly spartan in some respects, but then provides a lot of decontextualized data/information that is visually noisy to the investor.
Help users recognize, diagnose, and recover from errors											
Error messages should be expressed in plain language (no codes).	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Error messages should precisely indicate the problem.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Error messages should constructively suggest a solution.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Help and documentation											
Help documentation should be easy to search.	—	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	—	No help documentation exists within the delivered redesign assets.
Help documentation should be focused on the user's task.	—	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	—	No help documentation exists within the delivered redesign assets.
Help documentation should list concrete steps to be carried out.	—	Poor	Poor	Fair	Poor	Poor	Fair	—	Fair	—	No help documentation exists within the delivered redesign assets.
Help documentation should not be too large.	—	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	—	No help documentation exists within the delivered redesign assets.

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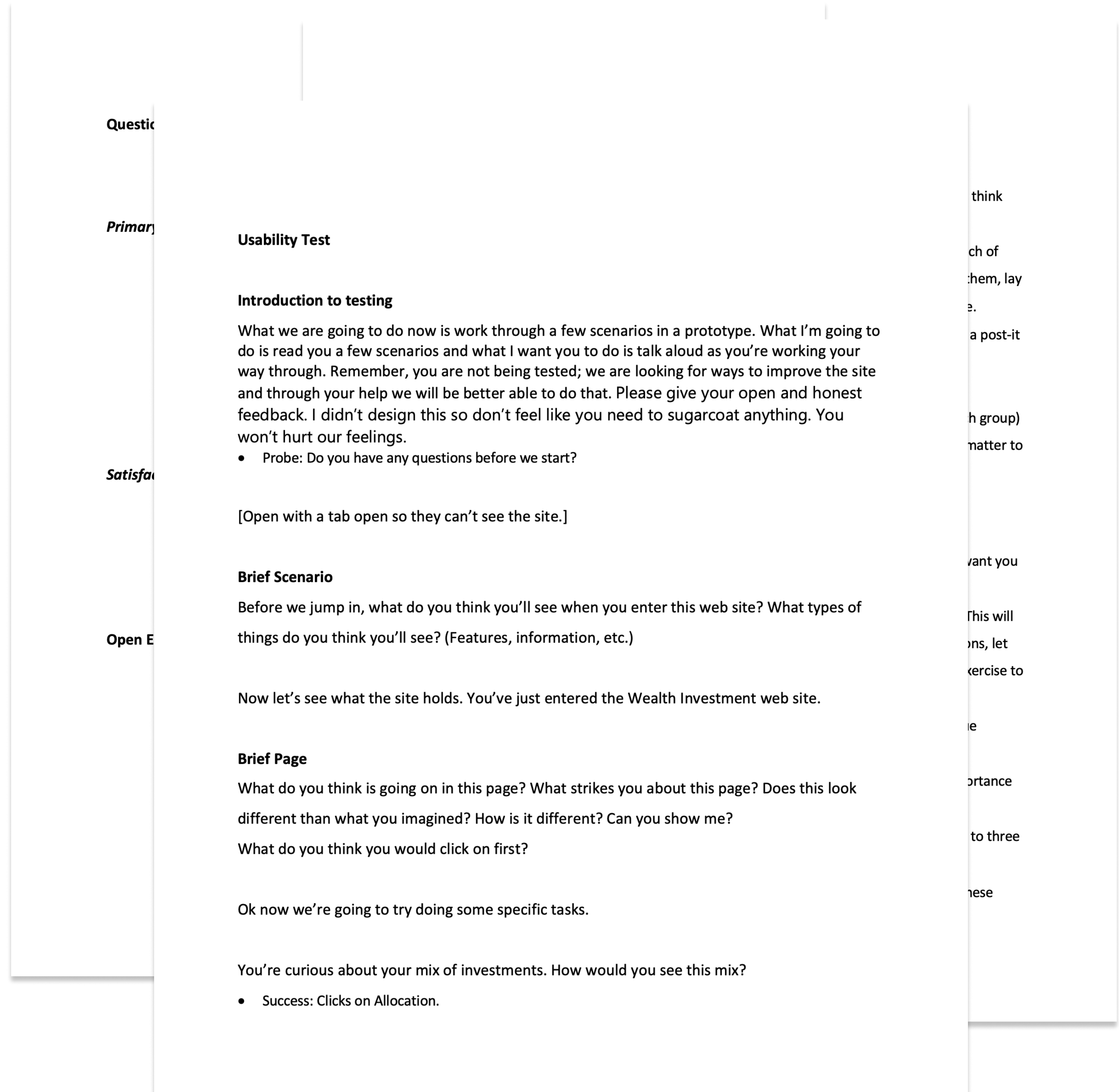
User Interviews

I wrote a user research guide to ensure my interviews would follow a similar set of questions or “guide rails” during research sessions.

Each research session lasted ~1.5 hours and included three areas of inquiry: 1) interview discussing investor-advisor relationships; 2) open and closed card sort to understand investor investment language literacy; and
3) a usability test on third-party agency designs for the Total Insight and Wealth Insight product lines.

Number of participants: 12 (7 male/5 female)

Age range: 22 - 74 years old.



Usability Test

Introduction to testing

What we are going to do now is work through a few scenarios in a prototype. What I’m going to do is read you a few scenarios and what I want you to do is talk aloud as you’re working your way through. Remember, you are not being tested; we are looking for ways to improve the site and through your help we will be better able to do that. Please give your open and honest feedback. I didn’t design this so don’t feel like you need to sugarcoat anything. You won’t hurt our feelings.

- Probe: Do you have any questions before we start?

[Open with a tab open so they can’t see the site.]

Brief Scenario

Before we jump in, what do you think you’ll see when you enter this web site? What types of things do you think you’ll see? (Features, information, etc.)

Now let’s see what the site holds. You’ve just entered the Wealth Investment web site.

Brief Page

What do you think is going on in this page? What strikes you about this page? Does this look different than what you imagined? How is it different? Can you show me?
What do you think you would click on first?

Ok now we’re going to try doing some specific tasks.

You’re curious about your mix of investments. How would you see this mix?

- Success: Clicks on Allocation.

Related Document

User Research Guide PDF

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Card Sorting/Mental Models

To test investment literacy and the understanding of terms on the Total Insight and Wealth Insight websites, I performed an open and closed card sort with participants within the user research sessions. This activity provided us a way of peering into how investors look at the world - a mental model.

We used the results of these card sorts/mental model work to help derive insights within the problem space.

Card Sorting - Mental Models

Definition Phase
Each user received a stack of financial concepts. All participants were asked to define what the concept meant, in their own words.

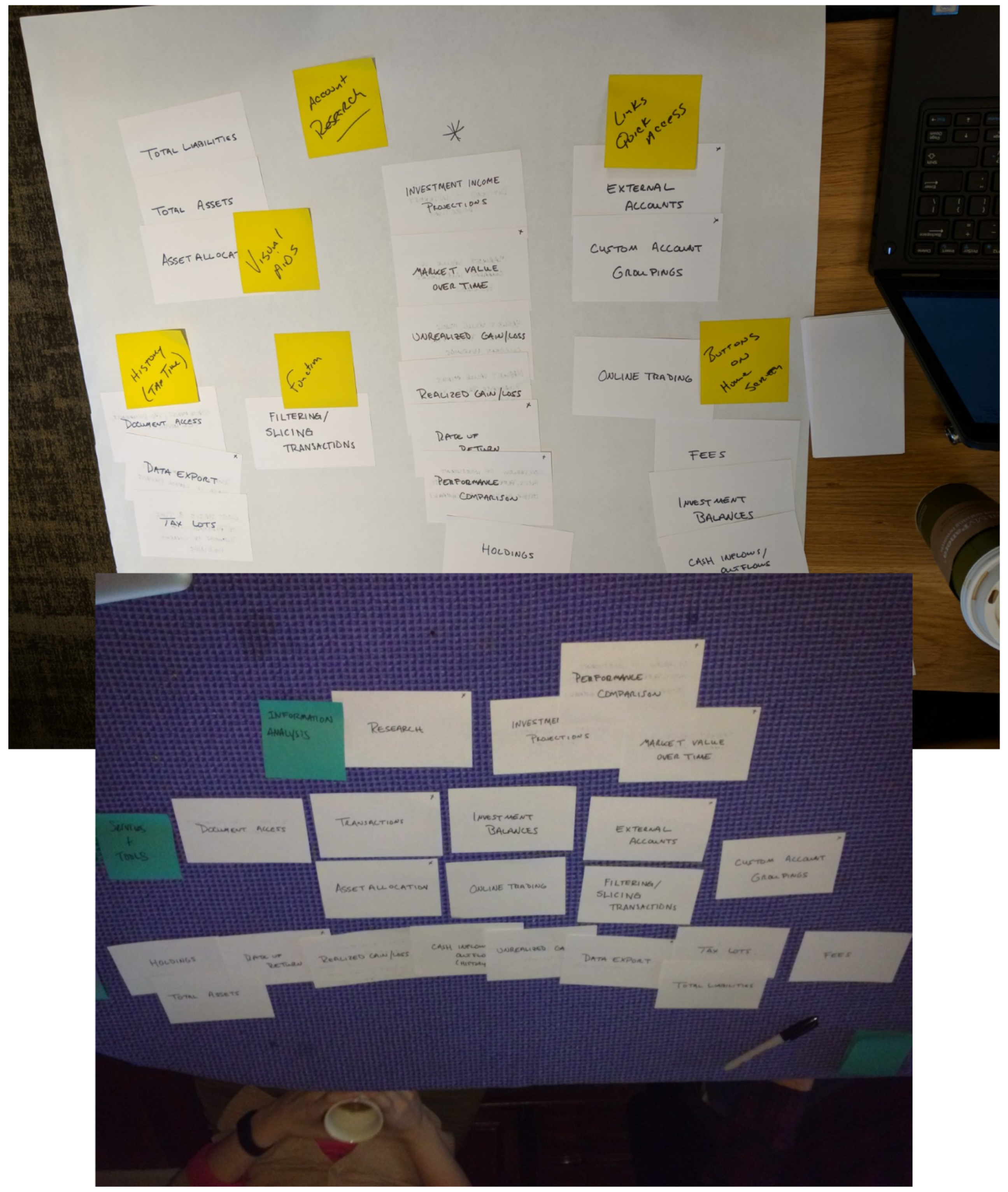
Open Card Sorting Phase
Each participant was asked to form groups or clusters of similar concepts. Some participants formed a group by cards in proximity, while other participants created new groups.

Closed Card Sorting Phase
Once these groups were formed, the participant were then given the opportunity to move concepts to the new groups or stand pat.

Card Sorting Materials
Index cards with concepts written on the front and definitions on the back. Each participant was supplied with Sharpies, Post-It Notes, and a blank canvas to work.

Goal of Exercise
The goal of this exercise was to assess, in some small way, financial literacy of common terms used on the PNC Total Insight and Wealth Insight web sites.

What begun as a way of investigating terminology quickly became a mental model exercise, where each participant gave each category/group their own meaning, which assisted us tremendously when it came to defining insights within the problem space.



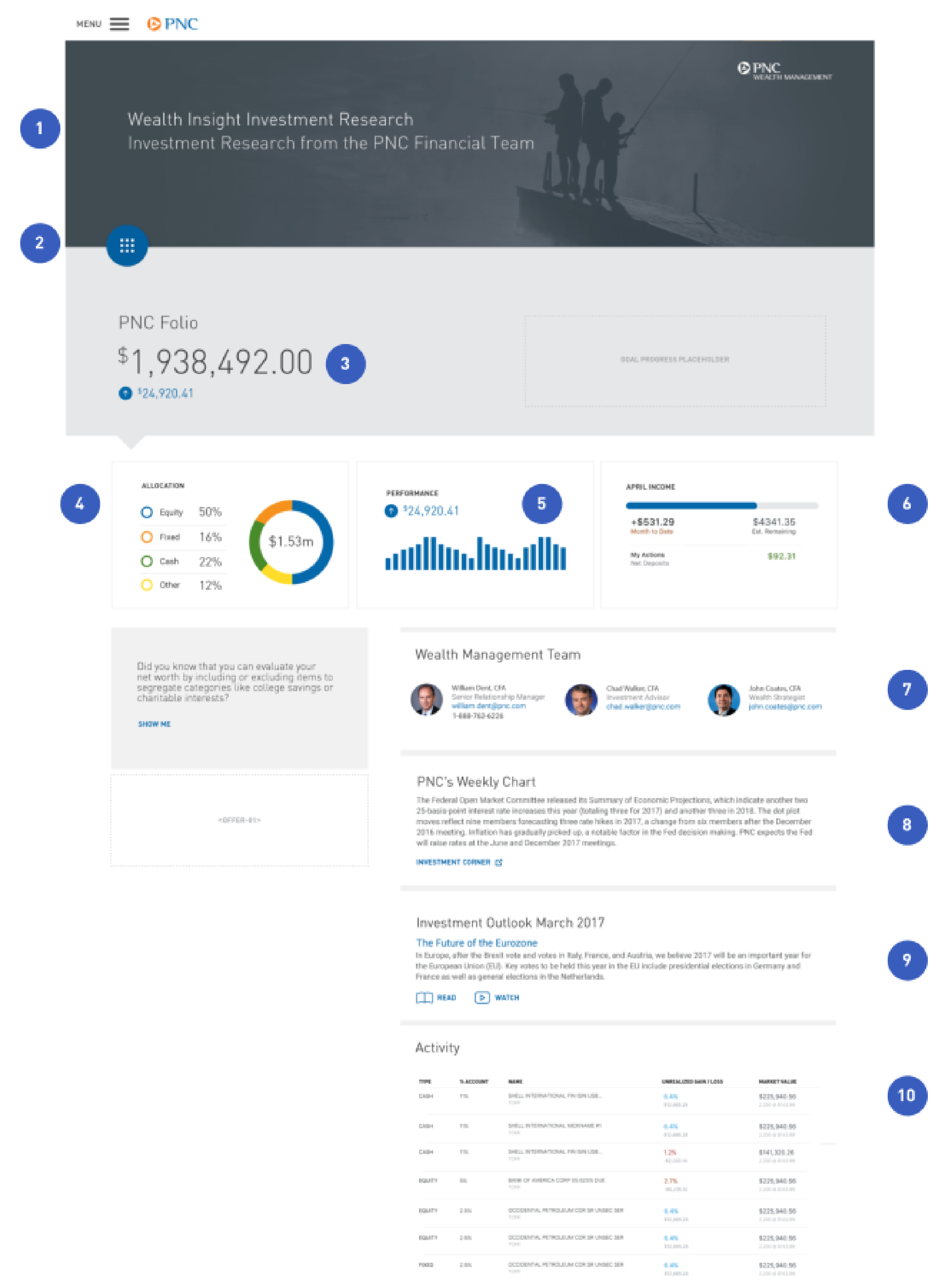
EMPATHIZE

Usability Testing

In order to gain buy-in from the project stakeholders (Asset Management Group, PNC Digital, and PNC Investments), I wrote a usability test results report to communicate out usability issues, their severity, and recommendations for proposed changes.

This report was well-received by the stakeholders and was **pivotal to the redesign effort by securing an additional $80M USD funding for designers and development, as well as $10M USD for the Hawthorn redesign effort.**

BRIEF/DASHBOARD PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Shrink the header section so that the user knows there is something to see on the desktop experience.	Eleven of twelve participants were initially perplexed as to why they couldn't see anything below the fold.	High
2	Consider a label or a new way of accessing the W&I menu.	All twelve participants were confused as to what would happen when this button was clicked. To navigate to another part of the experience, they expected to click on "Menu" or the hamburger button.	High
3	Provide a CTA for the Folio. The user shouldn't have to click on the numbers to reach the Folio.	Half of the participants (n=6) did not know what Folio referred to. Another quarter of the participants (n=3) could not accurately identify the number as the overall balance of all of the accounts. Also, many found this far too low in the screen hierarchy.	High
4 5 6	Provide a CTA for the Allocation section in the desktop experience. Provide a CTA for the Performance section in the desktop experience. Provide a CTA for the Income section in the desktop experience.	Participants could accurately describe what was displayed within each content block, but they did not know you could click on the area to get to the respective section.	High
10	Move Activity further up the screen in the desktop experience.	All twelve participants wanted to see this information as the second or third item on the screen. They thought it "ridiculous" that it would be buried this far down the screen - when this is the "meat and potatoes" of what is going on with one's investments.	High
7 8 9	Move Wealth Management Team, Weekly Chart, and Investment Outlook to the left column or to another portion of the screen.	All twelve participants felt that these two sections were something they would not be interested in seeing on the dashboard page. It just wasn't relevant to their needs.	Medium

4

Related Documents

Usability Test Report APPENDIX

Define

Process: Quotes Sort & Analysis / Thinking Styles (Personas) / Empathy Maps / Assumptions Revisited / Customer Journey Maps (Current State) / POV (Problem) Statement & HMW Questions

DEFINE

Quotes Sort

After the user research study came to a close, I performed a quote sort (grouping and analysis) on investor quotes to identify similarities and differences within the attitudes and behaviors of the participants.

The quotes sort exercise led to the creation of thinking styles (behavioral persona profiles) and empathy maps focusing on four types of users: Betsy, Jack, Chet, and Basil (advisor).

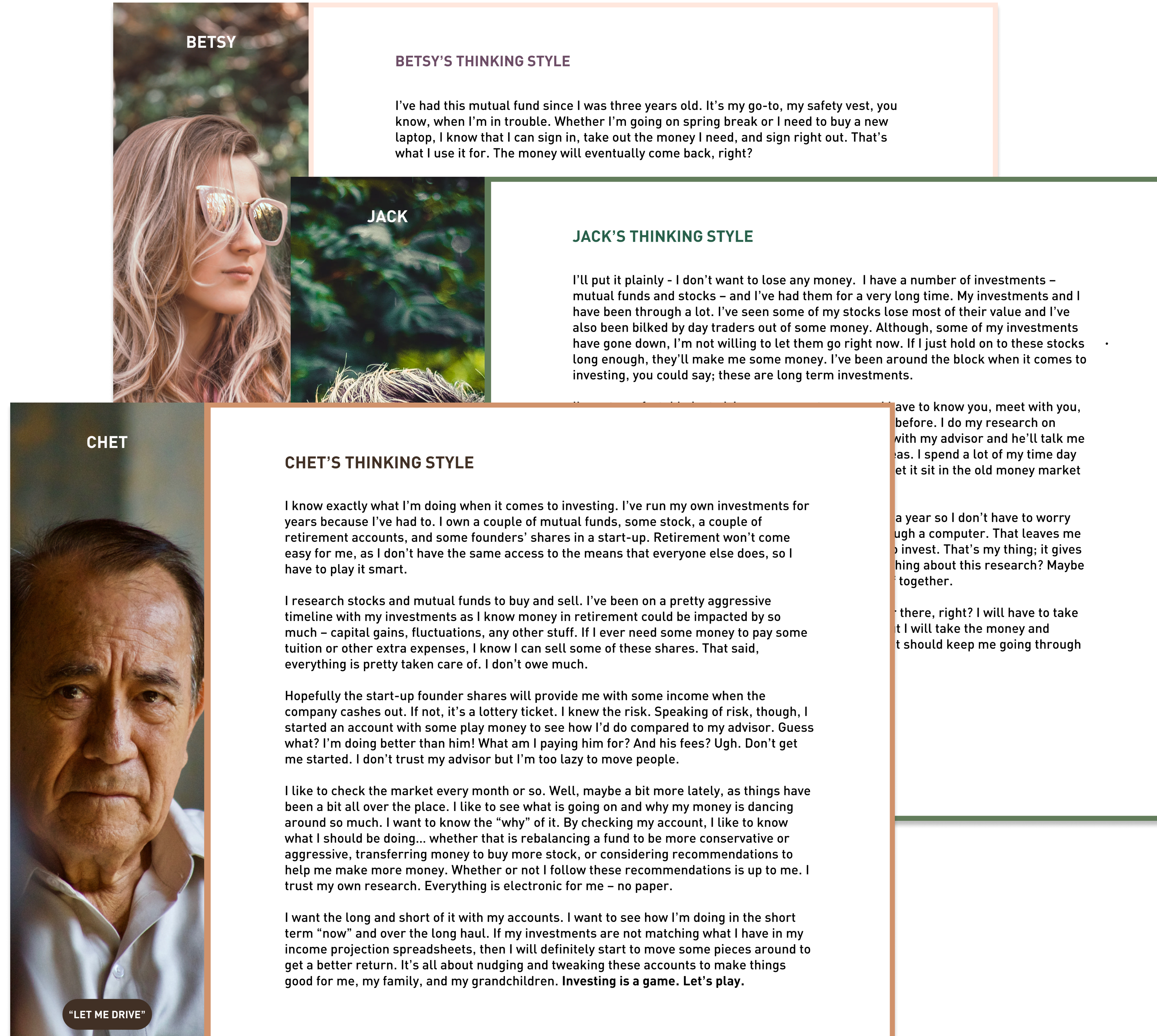
Code	Summary	Original Information/Quote
100	Frustrated about current managed investment strategy.	**Middle of the road satisfaction because I should be richer than I am.**
101		The market goes up 50%, my money goes up 12%. How is that?
102		$15K account. I started five years ago. More for goofiing around.
103	Invests own money.	**I do better than my broker.**
	Earns more on investments than broker.	
104		Florida for retirement
105		Arizona for retirement
106		Twentieth Anniversary with wife - March 28
107		Fifty years old
108		Works as a Pharmacist.
109		From Sept 2017 to present, worked for Triad Isotopes.
110	Works as a consultant.	No 401K yet - doesn't know how long he will be there.
111		Works in Nuclear medicine. 60-70% of the heart.
112		**Consultant**
113		Had to be smart about investments
114	Self-funds investements.	Opened a SEP account. How do I get the biggest tax break now?
115		**It's up to him to feed retirement.**
116	Cannot invest in 401K if I work as a consultant.	Got away from 401k.
117		**Frustrated with advisor**
118		**Hasn't moved advisors because I am lazy.**
119		Florida or Arizona
120		Weather
121		Plays golf
122		"You save all your life, you have to enjoy it somewhere."
123	Expects to never fully retire.	**Get kids through school.**
124		**Have enough so I can stop working so hard.**
125		**I'll semi-retire at 55.**
126		**I'll never be done**
127		Quarterly meeting with advisor
128		Go through accounts.
129		I track the overall balance monthly.
130	Compare to last year.	**Asks: How much did I have it in it last year?**
131		Overall rate of return
132		**As a consultant, I deal with it. X amount of money and we're going to live with it.**
133		**When the market is doing poor, let me get a feel of how it is doing.**
134		Check twice a week.
135	Don't trust my advisor.	**He doesn't trust people with his money.**
136	Keep my advisor honest.	**Use an old checkbook to reference how he is doing.**
137	Track my own investments.	**I use my Etrade account to keep up with the market.**
138		Gives me the market and what it did, as well as stocks.
139		Fingerprint takes me directly to my account.
140		**Ease of use.**
141	On my mobile phone.	Doesn't use desktop.
142		**I look at fees.**
143		Fees in absolute dollars or basis points.

DEFINE

Thinking Styles (Behavioral Personas)

Using Indi Young's version of personas, **thinking styles**, I sought to tell the story of each persona as distilled directly from direct quotes from the research sessions. In my view, this gives much more substantive detail to the persona.

Each thinking style was then used to generate empathy maps and customer journey maps, thus giving the team varied detail into how these individuals live their lives and manage their investments.



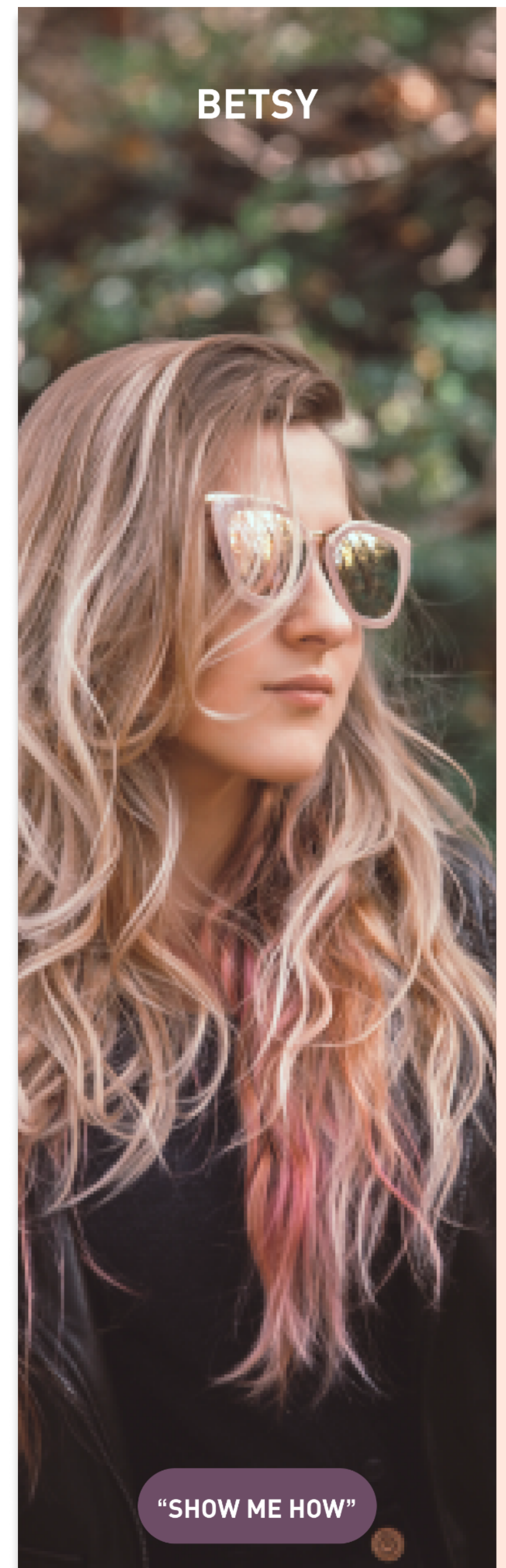
Related Document

Thinking Styles APPENDIX

DEFINE

Empathy Maps

Using the structure of empathy maps, I was able to frame and articulate out to the team and our stakeholders each persona's thoughts, behaviors, goals, pains, and gains to enhance their understanding and empathize with each persona's unique perspective.



SAYS

- Fund opened by a relative
- Owns one mutual fund
- Doesn't know how mutual funds work
- Her mutual fund has been making money
- Has a boyfriend/fiancé
- Lives in apartment
- She's a personal trainer.

THINKS

- Her fund is free money
- Doesn't understand investing
- Knows investing is important
- Helps others control their lives, but can't control her own.
- Video explanations would help
- Doesn't want to study investing but wants to just "get it."
- She will invest more when she is married.

DOES

- Wants face-to-face in-person conversations
- Talks to advisor barely at all
- Doesn't want more advisor contact
- Receives paperless statements
- Looks up balances to see if replenishing
- Transfers mutual fund shares when she needs money
- Funds major trips and expenses with fund transfer
- Wants to see charts
- Sees that other people are investing more than her
- Hears advice about what investments to make.

FEELS

- Dislikes "financial-ese"
- Feels guilt over fund transfers
- Feels guilt over impact on retirement
- Uninformed and anxious
- Helpless, loss of control
- Desires control and facility.

GOAL

- Earn back what she's spent
- Understand her account
- Retire someplace warm
- Understand investing to make better choices

PAINS

- Anxious about not being able to retire
- Anxious about not being able to make smart choices
- Doesn't want to stay in Pennsylvania forever
- Frustrated about not understanding investing
- Frustrated that financial stuff is so difficult
- Fears won't be able to retire somewhere warm
- Fears won't ever understand investing
- Fears she will let her fiancé down
- Fears she will appear "stupid" or "uneducated."

GAINS

- Wants to start her own business
- Wants to get married
- Wants to retire to Florida or Arizona
- Wants to understand investing so that she can make better choices for her future
- Wants to not feel lost when she is looking at her investments
- Wants to feel capable and build from there
- Wants control and facility.

Related Document

Empathy Maps APPENDIX

DEFINE

Assumptions Revisited

To verify whether or not each assumption about investors and their behavior was true, I checked each hypothesis against the results of the user research sessions.

Of the team's eight assumptions, one proved to be correct. The rest of the assumptions were either proven false or had mixed results warranting a need for either more research or performing experiments with the designs for usability testing.

Assumptions Revisited

01 Investors possess a solid understanding of investment jargon.

False. Most of the investors we talked to of varying experience levels could not articulate clear or distinct definitions to key investment concepts.

02 Investors will look up investment definitions they don't know to gain an understanding and fill in any gaps in knowledge.

False. Eleven of twelve participants thought they correctly knew the meaning behind concepts - when they didn't. One participant attested to looking up investment terms on Google or Investopedia.

03 Young investors prefer self-directed research online to visiting or calling an advisor.

Mixed. Young investors stated that they wanted to talked to an advisor either in-person or over the phone, but then they also spoke to the desire to perform self-directed research and investing outside of advisor contact.

04 Investors have clear goals for their money.

False. Some of the participants have vague notions of what they are attempting to achieve. The most masterful of the investors ("Let Me Drive" personas) had more concrete plans, while the other two personas were adrift in what they wanted to achieve for their future or retirement.

05 Investors check their investment performance and allocations on a monthly basis.

Mixed. Investors will check their investments when something big or catastrophic happens. Only then, will they begin to think of taking action and rebalancing their allocations for a more favorable outcome.

06 Investors work with advisors to establish their retirement goals.

False. Most of the investors typically have a one-and-done relationship with their advisors. They have annual calls, but it seems that these calls are more of a matter of course than investor want or need.

07 Middle-aged and older investors prefer working with advisors to self-directing investing on the Internet.

Mixed. More conservative investors ("Let It Ride" persona) feel the need to check-in with their advisor to get advice prior to making a trade. The "Let Me Drive" investors do not want to speak with their advisors, at all.

08 Investors perform performance and allocation tasks the most out of all their investment activities.

True. The most knowledgable investors visit performance and allocation when they sign in to their investment accounts.

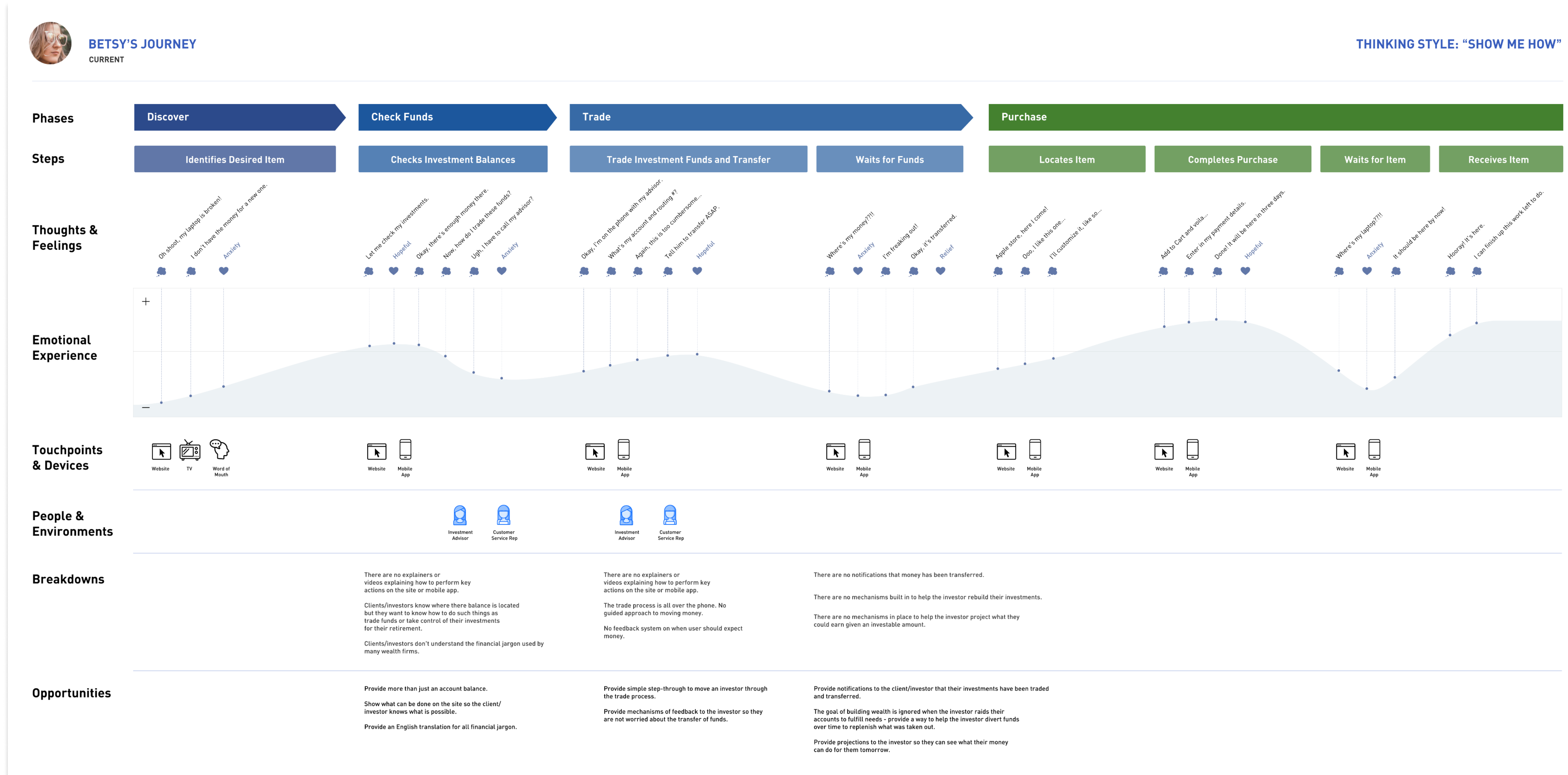
Related Documents

Assumptions APPENDIX

DEFINE

Customer Journey Maps (Current)

Using the notes from the user research sessions, the team and I documented the experience of each persona over various touchpoints to capture the current state of the journey. This map helped the team and stakeholders see where pain points existed within each point of the journey with possible opportunities.



Related Document

Customer Journey Maps - Current State APPENDIX

DEFINE

HMW and POV Statements

To frame the problem and create possible solutions for Betsy, Jack, and Chet, I wrote POV statements & HMW questions. These gave the entire team a lens by which to understand the problem space from the user's point of view before heading into the ideation phase.

INSIGHTS	NEEDS	POV	HMW
Users are motivated to learn how to invest for their retirement but they don't understand investment language or jargon.	An effective way to understand investment concepts in everyday language.	Betsy needs a way to understand investment concepts in everyday language because she doesn't understand enough to know what is happening with her investments.	How might we make investment concepts more understandable to investors?
Users spend a lot of time using multiple decision tools across multiple platforms to make calculated and informed decisions on their investments.	An effective way to access and use decision tools on one platform.	Jack needs a way to access decision tools all in one place because he spends a lot of time using multiple tools across multiple platforms to make calculated and informed decisions on his investments.	How might we empower investors to feel more confident about their investment decisions?

DEFINE

Problem Statement

Through looking through the lens of this collection of insights, user needs statements, point-of-view statements, and HMW questions, the problem space takes form:

Investors need a way to understand what is happening with their investments so that they can feel confident about their decisions.

Investors need a way to understand what is happening with their investments so that they can feel confident about their decisions.

Ideate

Process: Team Brainstorming / Importance-Difficulty Map / Priority Level Map / Design Principles / User Flows (Current State) / Site Map (Current State) / Customer Journey Maps (Future State) / User Flows (Future State) / Site Map (Future State) / Sketches / Low-Fidelity Wireframes

IDEATE

Team Brainstorm

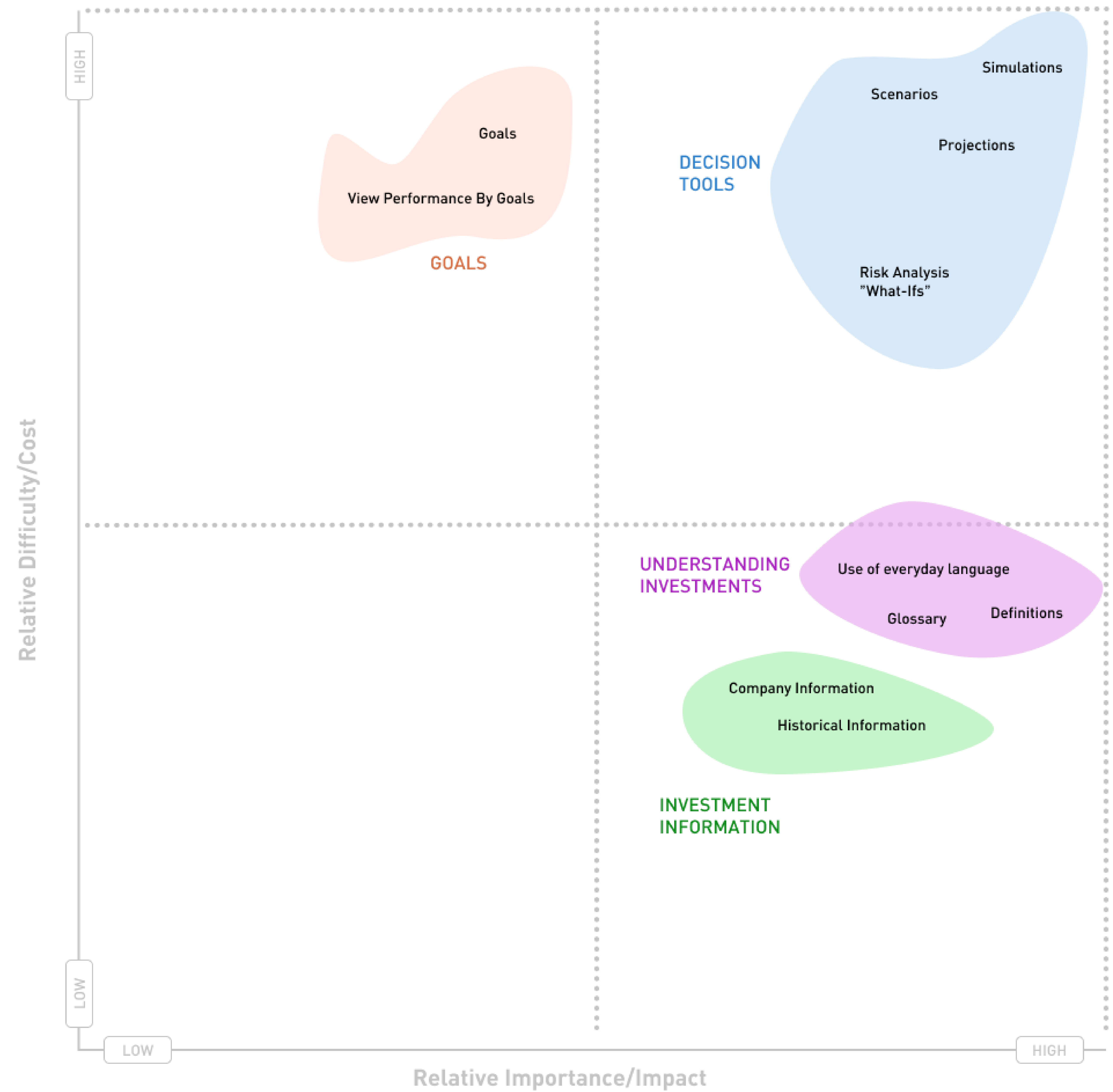
To generate a variety of ideas and solutions, I facilitated a structured ideation session using each HMW question as a provocative prompt. I made sure to encourage wild ideas and no judgment. As a team, we were able to come up with quite a bit of solutions, as shown here.

How might we make investment concepts more understandable to investors?	How might we empower investors to feel more confident about their investment decisions?
• Easy mode/Step-through • Everyday language definitions • Glossary • Explainer videos • Investment 101-type online course • Guided advisor sessions via Zoom/screenshare • Cause and effect mode (a change in X equals Y)	• Company information • Historical information • Risk analysis (What-Ifs) • Scenario analysis • Simulations • Track performance by goals • Run simulations (Monte Carlo, etc.) • View projections in performance

IDEATE

Importance/Difficulty Matrix

The team and I then performed an Importance-Difficulty Matrix exercise to group solutions and decide, as a team, which of the solutions were more strategic and which ones were “quick-wins” that could be implemented within the first iteration of the MVP.



IDEATE

Priority Level Map

To prioritize features that were produced through structured ideation and the Importance-Difficulty Matrix sessions, I created a product priority roadmap. I reevaluated the business goals and our users' goals along with how each solution would integrate into the redesigned experience.

PRIORITY LEVEL	PRIORITY 1	PRIORITY 2
HMW	How might we empower investors to feel more confident about their investment decisions?	How might we make investment concepts more understandable to investors?
FEATURES	• Company information • Historical information • Risk analysis • Scenario analysis • Simulations • Performance by goals • Projections in performance	• Everyday language • Definitions • Glossary
METRICS	• Track number of risk analysis performed • Track number of scenario analysis performed • Track number of simulations performed • Track total number of goals created • Track number of goals created per user • Track conversion rate • Track add to watchlist	• Track number of definitions clicked/tapped (I or ? icon) • Track most clicked/tapped definition • Track page/view with the most definitions • Track object clicked before definition was clicked • Track object clicked after definition was clicked • Track definitions clicked on more than once during session

IDEATE

Design Principles

The design team and I met to hold a design principles workshop so that we could define the principles that would guide the project. As many of the designers were redesigning many portions of Total Insight and Wealth Insight, we needed to come together and agree on principles by which we will design.

By engaging the design team in this workshop, the designers really got behind the principles and made sure to evangelize them when each product team was getting off-track by prioritizing schedule over humans.

DESIGN PRINCIPLE 1//

Sharp and personalized

Each portfolio is different. Our products are personalized. We learn from our users who they are and what they like, delivering a tailored experience to view their investments.

DESIGN PRINCIPLE 2//

Complexity begone

Our products reduce the complexity of investment terminology by simplifying interactions and guiding our users with everyday language.

Related Document

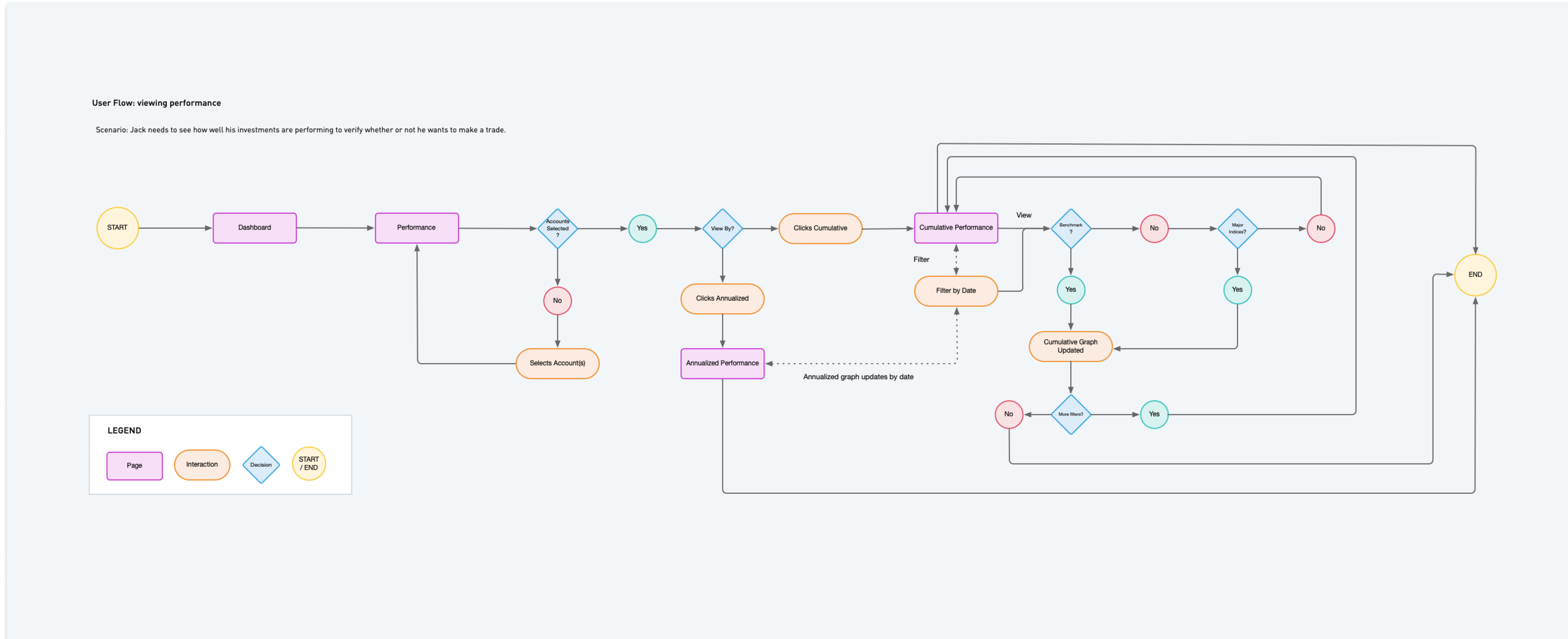
Design Principles APPENDIX

IDEATE

User Flow (Current)

To view the current state of the experience, that is, to see what we were working with, I captured user flows for Total Insight and Wealth Insight. The purpose behind this work was to visualize the experience across a scenario (for example, viewing one's performance) to identify flows that no longer meet the needs of investors.

As a result of this work, the team and stakeholders could see that the Total Insight and Wealth Insight products are largely "view-only" experiences, providing little opportunity for the investor to interact with information beyond seeing their current holdings and positions.



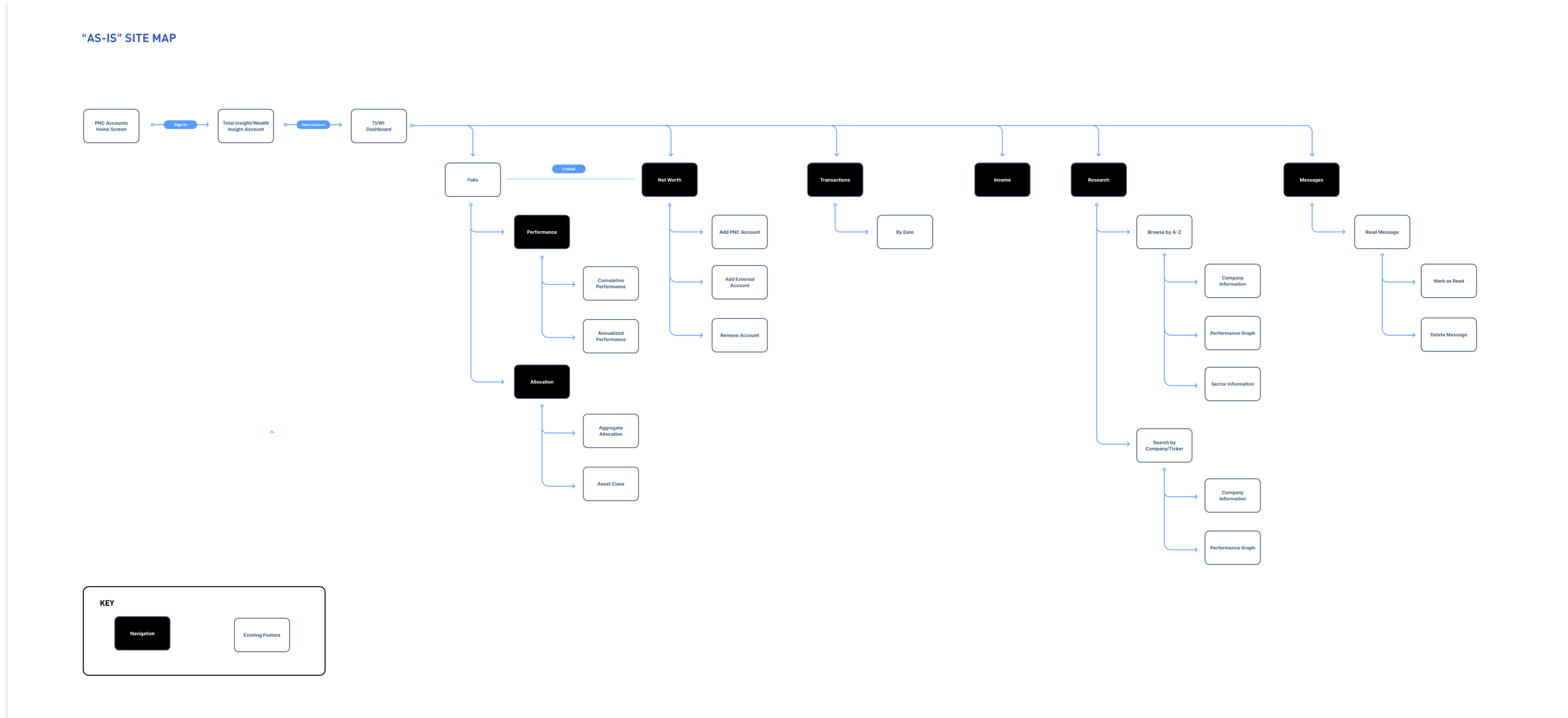
Related Document

User Flows - Current State APPENDIX

IDEATE

Site Map (Current)

To capture the current structure and information architecture of the Total Insight and Wealth Insight experience, I designed this “as-is” site map. The purpose behind this work was to view the entire navigation, as well as identify candidates/areas for change based on what we learned in the user research sessions when it comes to investment language and other insights.



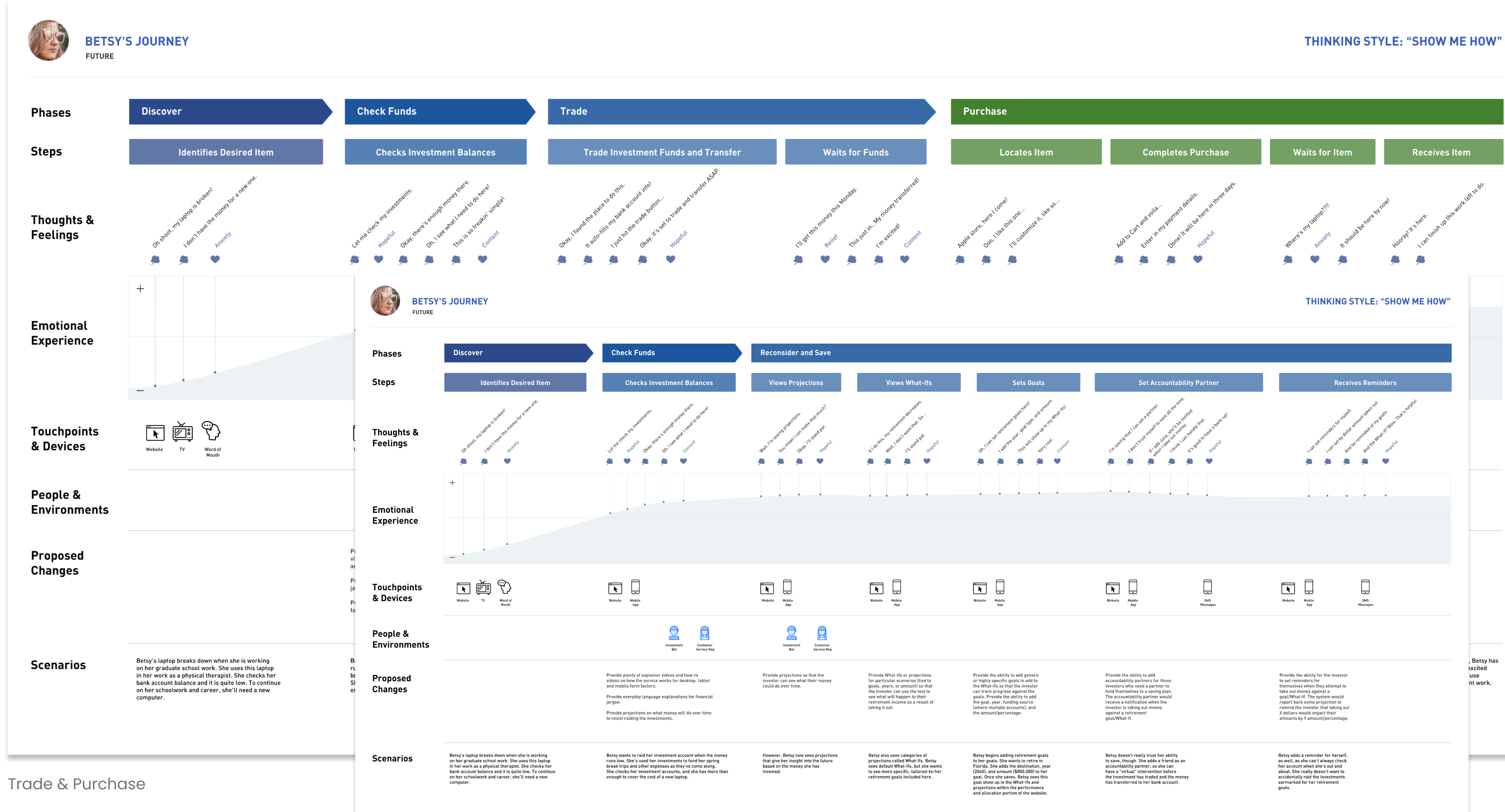
Related Document

Site Map - Current State APPENDIX

IDEATE

Customer Journey Maps (Future)

Before moving forward with sketches, I wanted to take some time and reflect upon the team's proposed changes to the experience and what each change would do to each persona's customer journey. Each journey map was changed to reflect proposed changes and the phases/steps in which they would occur.



Trade & Purchase

Reconsider & Save

Related Document

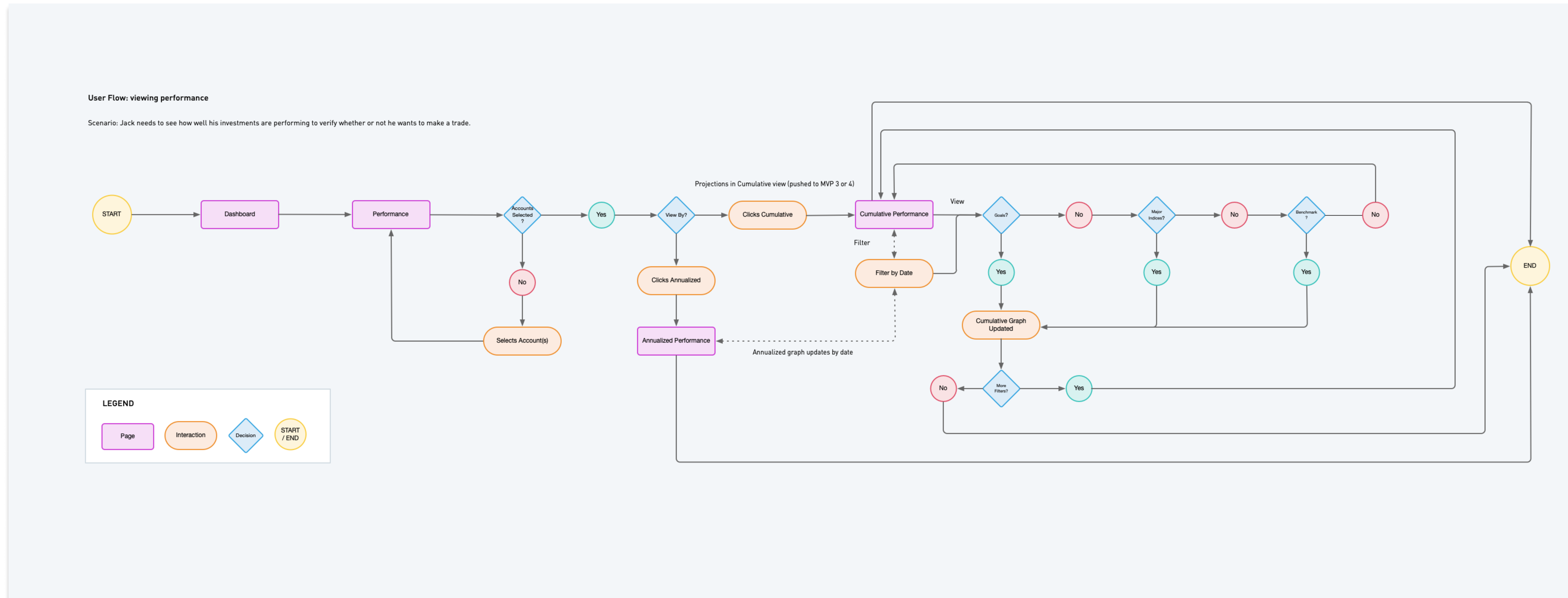
Customer Journey Maps - Future State APPENDIX

IDEATE

User Flow (Future)

To help the product team and stakeholders understand the site/app flow after the implementation of features, I designed a future state user flow for each view.

The future user flow deck is quite robust in breadth and depth and provides all agreed-upon and prioritized features to solve for investor needs and their pains and gains in the problem space.



Performance User Flow

Related Document

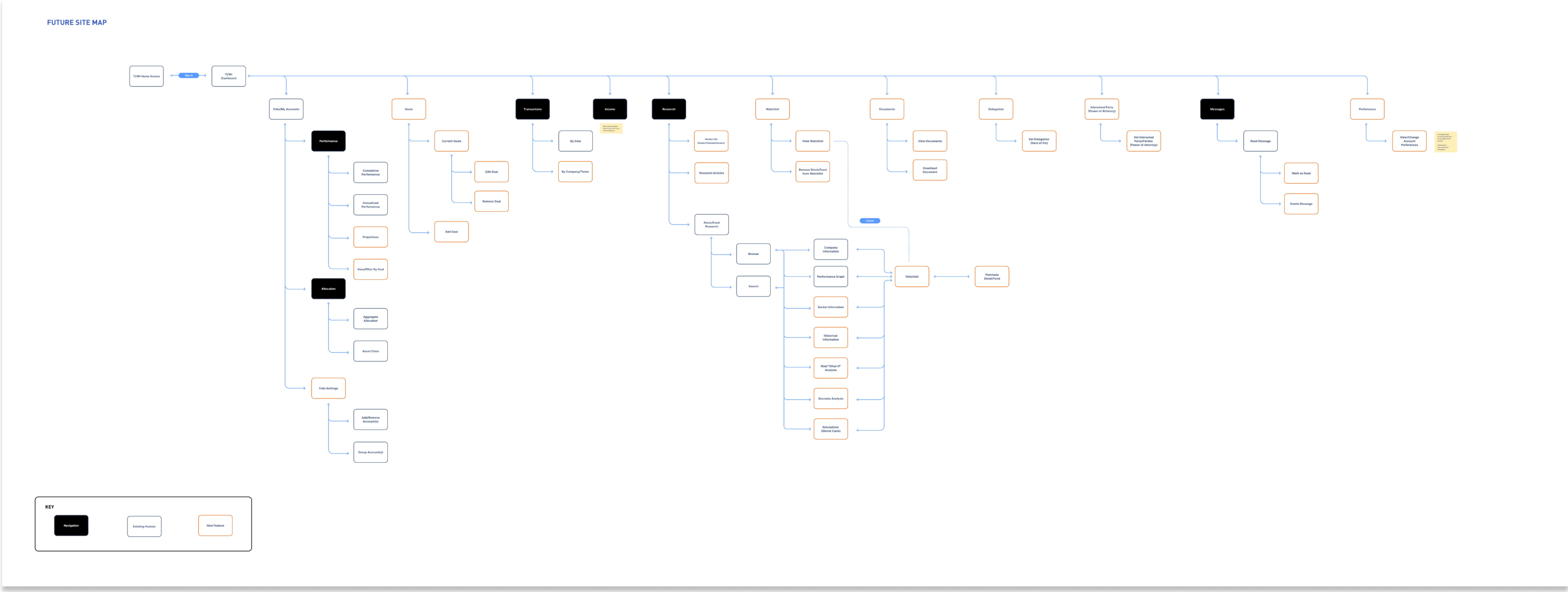
User Flows - Future State APPENDIX

IDEATE

Site Map (Future)

Changes to the site map were necessary to introduce new features and transactional interactions. To get buy-in to the proposed changes in the navigation and the overall information architecture, I designed a future state site map for presentation to the product team and the project's stakeholders. The team and stakeholders were very receptive to the changes, and we were given the green light to move toward sketching and wireframes.

Note: For MVP 1, we held back on goals and performance for the purpose of developing the backbone of the performance graph.



Related Document

Site Map - Future State APPENDIX

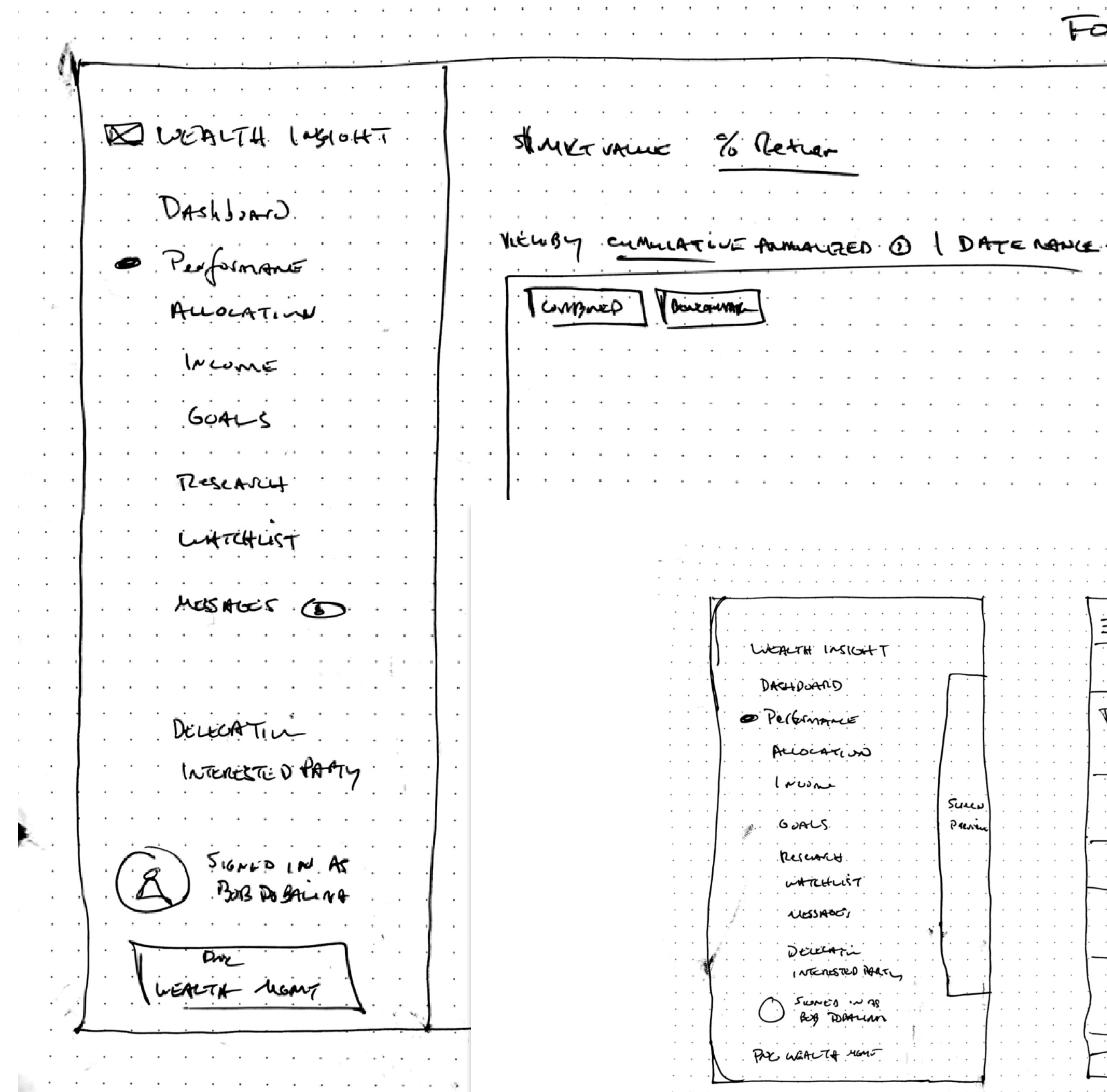
IDEATE

Sketches

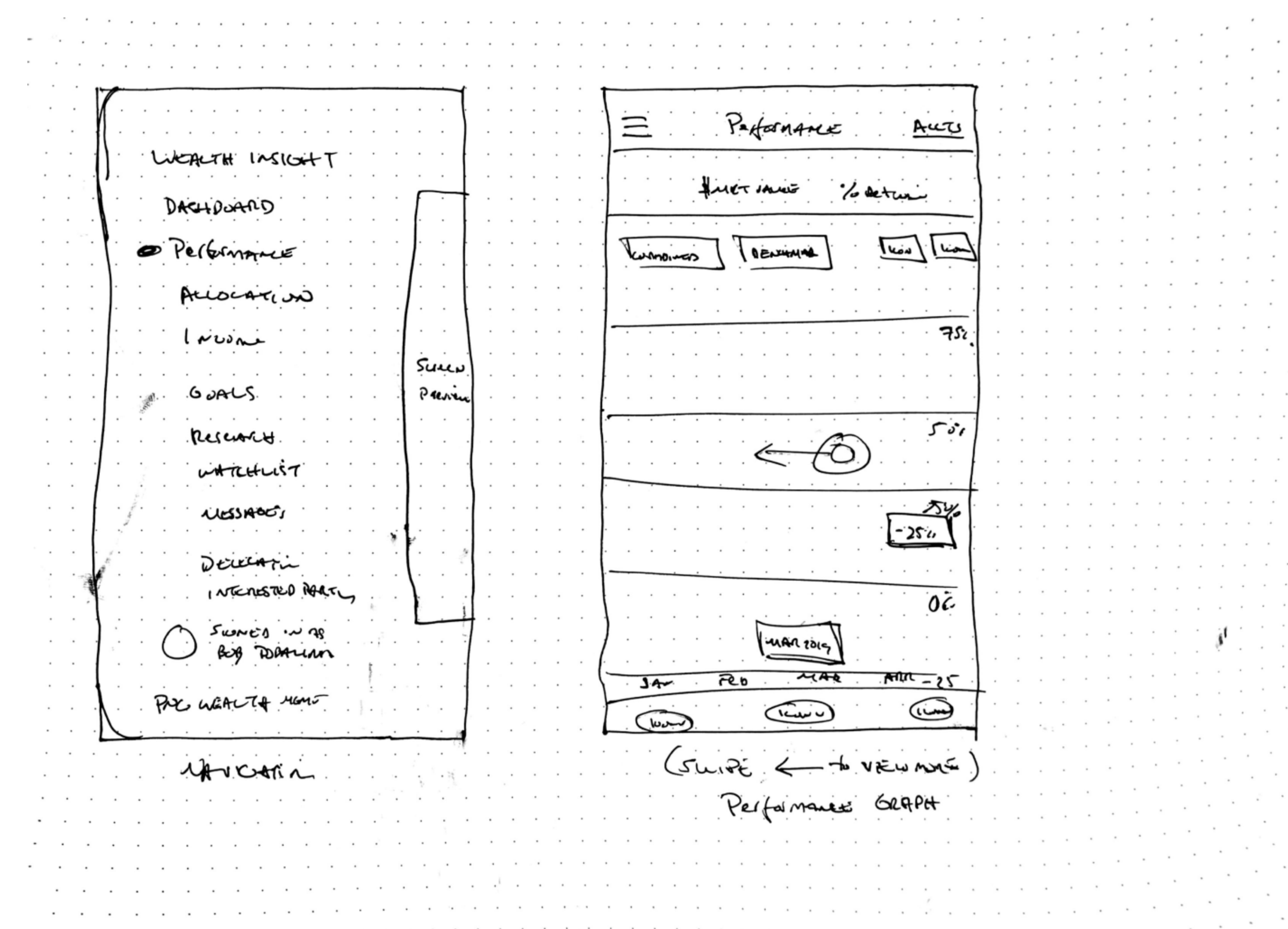
I began sketching the layout of the various responsive views (tablet, desktop, and phone) and started integrating some of the features identified throughout ideating. I ensured the layout for each screen was consistent with PNC's growing design language.

As lead designer for the Performance view(s), I set the standard for the design language and the overall look and feel of the other views within the experience.

Note/Challenge: The product team had taken away the ability to view performance by goals and projections to move performance up in the development schedule.



Tablet/Desktop - Performance



Phone - Navigation & Performance Views

Related Document

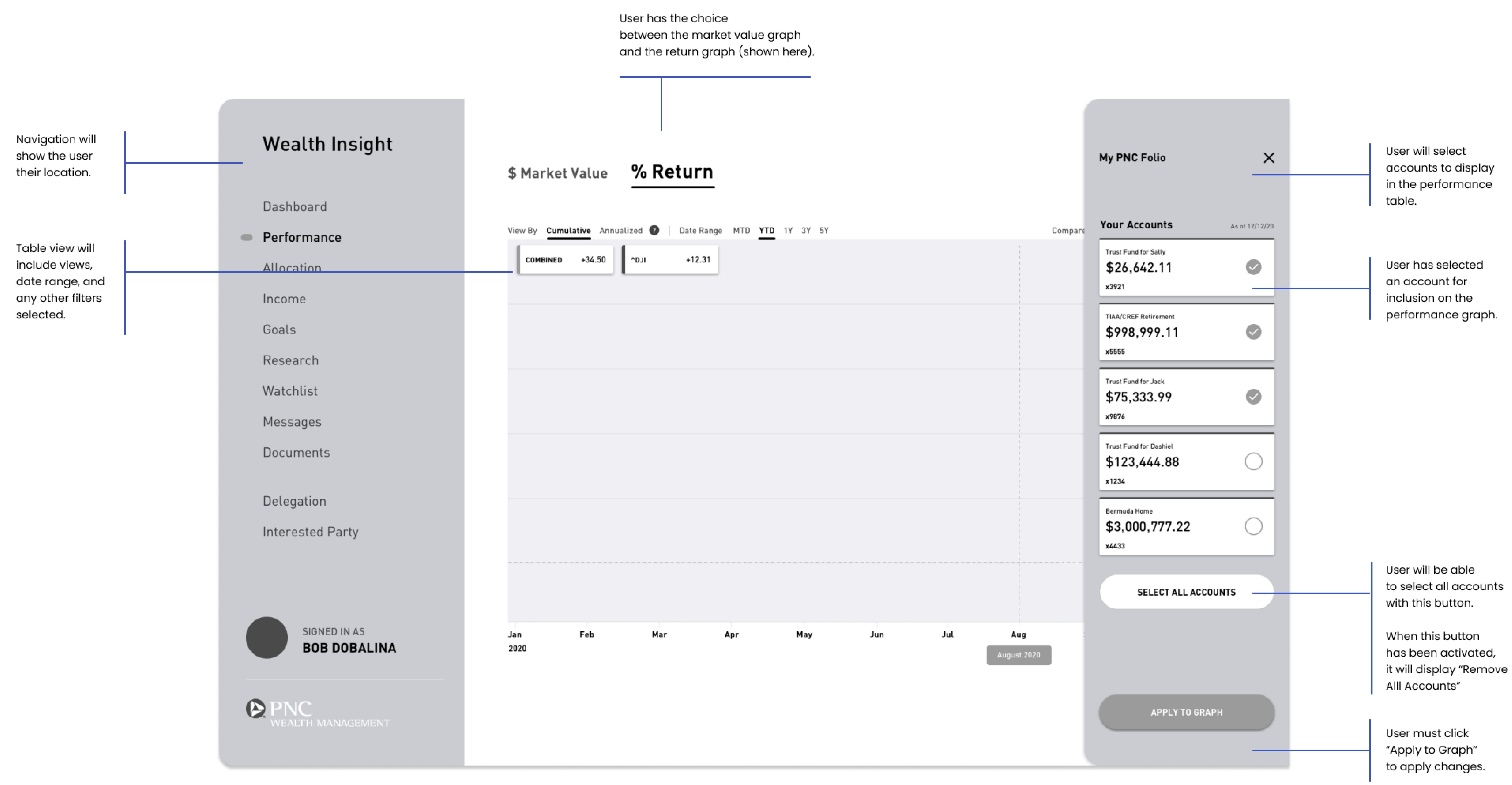
Sketches APPENDIX

IDEATE

Low-Fidelity Wireframes

After making sketches based on the user flows and site maps, I designed a set of wireframes for desktop, tablet, and phone views.

I explored the designs in grayscale wireframes in order to secure buy-in from my team and business stakeholders. I found early on that many of the stakeholders felt compelled to comment on the full-color version of the designs, so showing the grayscale brought focus to provide a proper critique based on their business needs.



Tablet - Performance View - Folio Open

Related Document

Low-Fidelity Wireframes APPENDIX

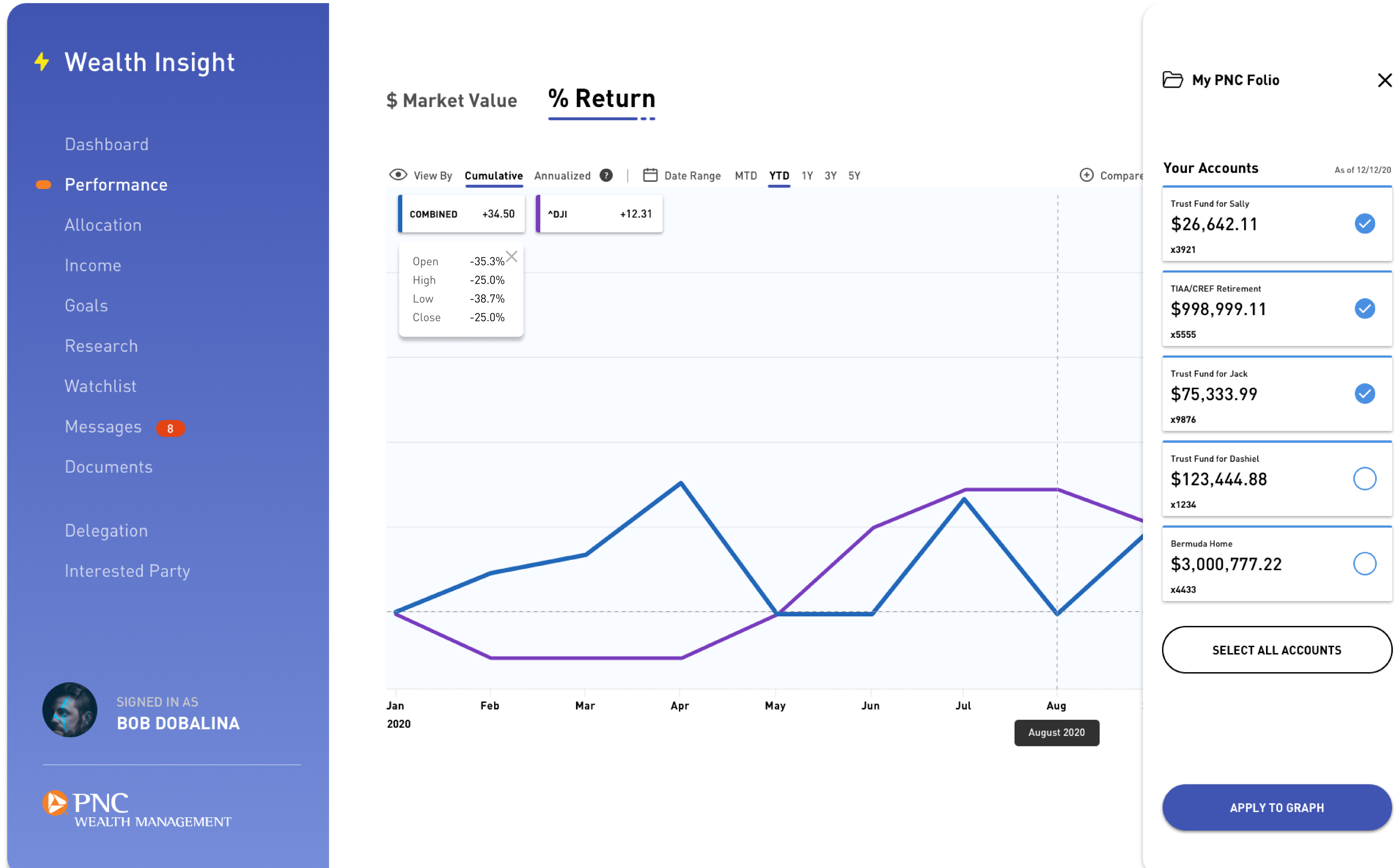
Prototype

Process: High-Fidelity Wireframes

PROTOTYPE

High-Fidelity Wireframes

After the low-fidelity wireframes had been approved, I set to work on designing the high-fidelity wireframes. Within these designs, I designed to meet accessibility guidelines for WCAG 2.1 AA so that PNC could design for anyone arriving at their screens from any device (with an added perk of reducing lawsuits). Through this work, I met regularly with the design and development teams to define Wealth & Investing design patterns for re-use in additional products.



Related Document

High-Fidelity Wireframes APPENDIX

Test

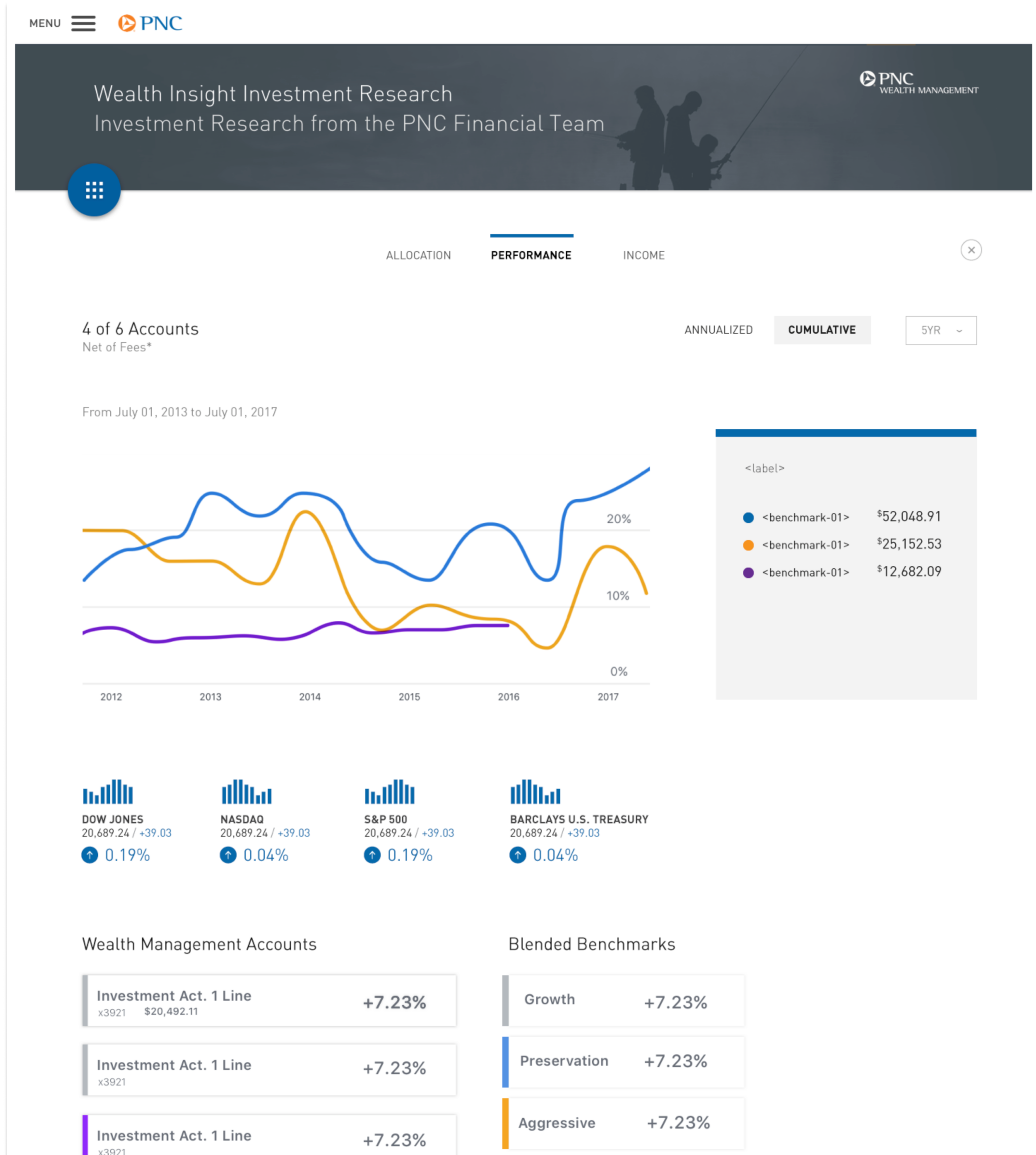
Process: Evaluative Testing - Third Party Concepts / Evaluative Testing - Rounds 1 - 4 / Evaluative Testing - Rounds 5 - 6 /

TEST

Evaluative Testing - Third Party Concepts

During the user research sessions, third party concepts were tested for usability issues. Most of the participants had issues working through the scenario for the performance view as the accounts and benchmarks were so disconnected from the performance graph.

Not only does the third party design break Fitt's Law, it was strange that the third party consultants placed more priority in the major indices over an investor's wealth management accounts or the preferred PNC's blended benchmarks. It seems creating a responsive view for the information was more important than putting the correct hierarchy of information in the investors' hands.



Related Document

Usability Test Report APPENDIX

TEST

Evaluative Testing - Rounds 1 - 4

The product manager of the team was pretty attached to this design; it was suggested that I bring the Wealth Management Accounts next to the performance graph so investors could make the connection between the accounts and graph.

In a series of four usability tests, participants worked through a series of scenarios centering on the performance view with this particular type of design. In each redesigned version of the page, participants were lost in an overloaded interface of wealth accounts, major indices, and blended benchmarks.

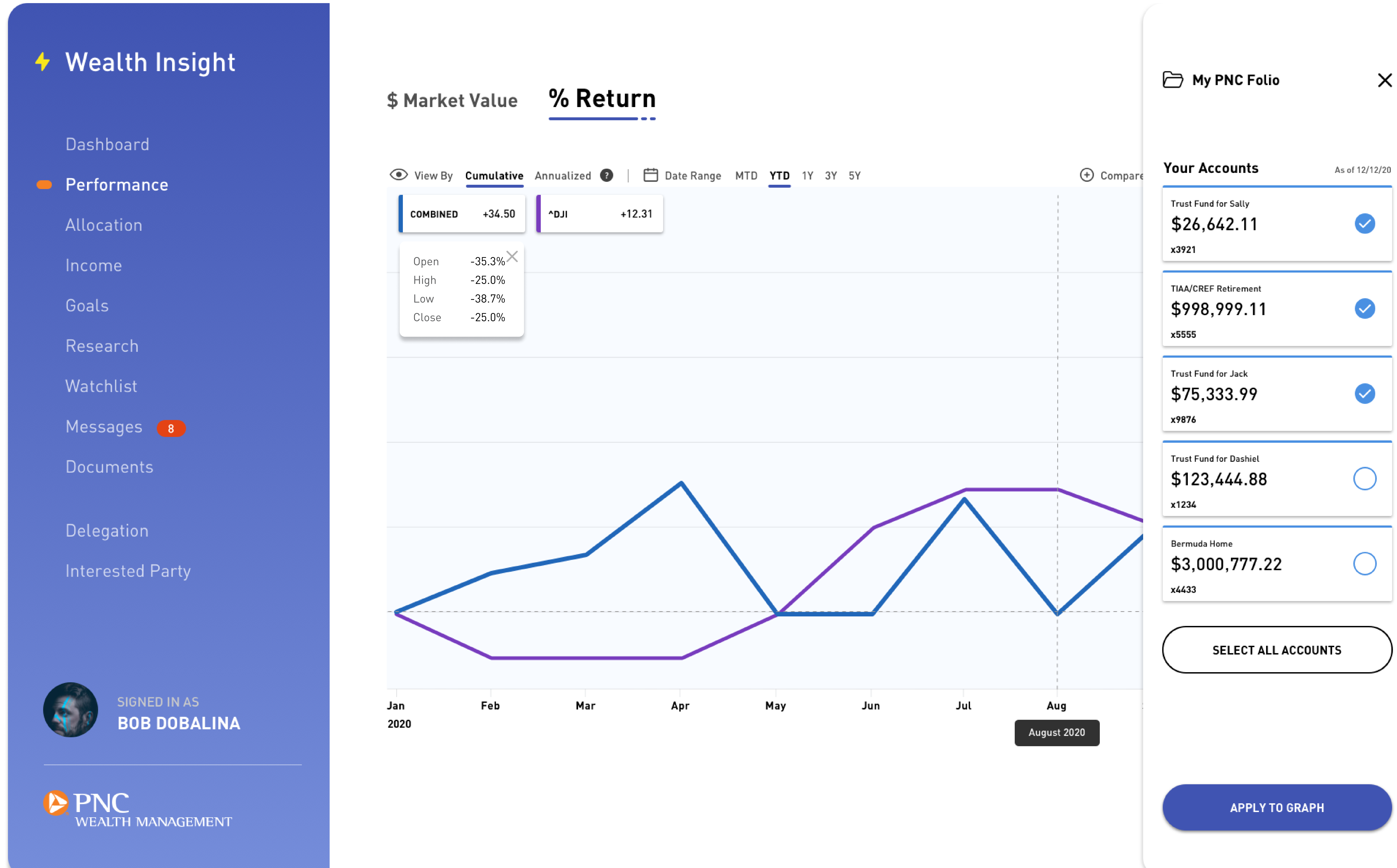
After seeing these repeating results, I challenged the view that this was the interface to go with. By showing data and playing back testing clips as evidence, I changed the hearts and minds of the product team. To make this work, we tucked some of the comparison accounts under panels and views so that we could make room for the graph and the future work for goals and projections.

TEST

Evaluative Testing - Rounds 5 - 6

For testing rounds five and six, I made a significant amount of changes based on the results of earlier usability tests and user research sessions. I designed a Folio fly-out panel, where the user can select an account/all accounts and apply them to the graph. When the Folio is tucked away, the user can work with other views (Cumulative or Annualized), date ranges, compare benchmarks from a panel, or filter based on particular features of the investment accounts.

The results of this testing sessions were quite telling. We finally achieved a 90% success rate (threshold of success = 80%) in scenario completion. The participants finally “got” the performance graph, and they were able to make their way through the graph and articulate what changed and how it changed.



Outcomes

The following outcomes were observed as a result of the design process and our iterative environment of experimentation and usability testing:

400% increase in usability for navigation scenarios

350% increase in usability for the Performance scenarios

225% increase in usability for the Folio/My PNC Accounts scenarios

What I Learned

Wealthy People Are Not “Too Busy”

Our product management team believed that wealth clients are too busy to participate in ethnographic research or usability testing. Investors enjoyed talking to our team about how they invest, their relationship with their advisor, and how they invest. In order to validate subsequent designs, we will need to tap more into this pool of potential participants.

Investors Don’t Understand Investing

Investors know how much they have in their investments, but when faced with describing investing concepts they grasped at meanings that had nothing to do with the concept. Our product team and ux writing teams are working together to provide everyday language definitions and translations of investing concepts so that, at the very minimum, investors know what they are reading and what it means to them and their decisions for the future.

Show People the Future

In order to build confidence, it’s very helpful and useful to show investors projections of what they could earn over a particular timeframe. Giving investors the ability to define goals and dedicate investment dollars to meeting that goal is particularly useful for those investors who have a hard time seeing the connection between investments (an abstraction) and meeting their retirement (a goal).

APPENDIX

Assumptions

Assumptions

Together, the product team and I came up with the following list of assumptions to capture what we think we know about the investor and what we need to investigate:

01 Investors possess a solid understanding of investment jargon.

02 Investors will look up investment definitions they don't know to gain an understanding and fill in any gaps in knowledge.

03 Young investors prefer self-directed research online to visiting or calling an advisor.

04 Investors have clear goals for their money.

05 Investors check their investment performance and allocations on a monthly basis.

06 Investors work with advisors to establish their retirement goals.

07 Middle-aged and older investors prefer working with advisors to self-directing investing on the Internet.

08 Investors perform performance and allocation tasks the most out of all their investment activities.

Assumptions Revisited

01 Investors possess a solid understanding of investment jargon.

False. Most of the investors we talked to of varying experience levels could not articulate clear or distinct definitions to key investment concepts.

02 Investors will look up investment definitions they don't know to gain an understanding and fill in any gaps in knowledge.

False. Eleven of twelve participants thought they correctly knew the meaning behind concepts - when they didn't. One participant attested to looking up investment terms on Google or Investopedia.

03 Young investors prefer self-directed research online to visiting or calling an advisor.

Mixed. Young investors stated that they wanted to talked to an advisor either in-person or over the phone, but then they also spoke to the desire to perform self-directed research and investing outside of advisor contact.

04 Investors have clear goals for their money.

False. Some of the participants have vague notions of what they are attempting to achieve. The most masterful of the investors ("Let Me Drive" personas) had more concrete plans, while the other two personas were adrift in what they wanted to achieve for their future or retirement.

05 Investors check their investment performance and allocations on a monthly basis.

Mixed. Investors will check their investments when something big or catastrophic happens. Only then, will they begin to think of taking action and rebalancing their allocations for a more favorable outcome.

06 Investors work with advisors to establish their retirement goals.

False. Most of the investors typically have a one-and-done relationship with their advisors. They have annual calls, but it seems that these calls are more of a matter of course than investor want or need.

07 Middle-aged and older investors prefer working with advisors to self-directing investing on the Internet.

Mixed. More conservative investors ("Let It Ride" persona) feel the need to check-in with their advisor to get advice prior to making a trade. The "Let Me Drive" investors do not want to speak with their advisors, at all.

08 Investors perform performance and allocation tasks the most out of all their investment activities.

True. The most knowledgable investors visit performance and allocation when they sign in to their investment accounts.

Competitive Review & Analysis

Competitive Review & Analysis - Overview: PNC Total Insight & Wealth Insight

Competitors	URL	Year Founded	Competitive Advantage	Heuristic Evaluation	General Notes	Questions/Notes to the Team
Direct Competitors						
Morgan Stanley	https://www.morganstanley.com/what-we-do/wealth-management	2009	Morgan Stanley is known for its name recognition, advising, planning, and self-directed tools. Among these, the Goals Planning System (GPS) seems to be quite robust and useful for investors and investors-to-be. Provides optimal allocations, projections, after-tax recommendations, and tools to help you change the course.	Accounts, Markets + Research, Transfers, Payments, Trade, Services. Fairly intuitive. Accessibility issues with color on dark blue background. All too similar to what our third party vendor has provided to us. Dollar amounts seem to come from one data source. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Overall, this site has a tab structure (for instance, within an account, you have access Holdings, Activity, Realized Gain/Loss, Portfolio Reports, and Documents), using what looks like Material design. Morgan Stanley is smart about putting quick actions where you can find it, as well as Print, Download, and Definitions.	Questions about advisor workflow. What do they work with?
J.P. Morgan	https://am.jpmorgan.com/us/en/asset-management/gim/adv/home/	1935	J.P. Morgan is the name in finance. J.P. Morgan is known for its name recognition, advisors, and staid presence within the markets. What-If Analysis: This feature allows you to see what would happen when you make a purchase of a stock or fund.	Overview, Transactions, Analytics, Statements, Dividends, Reports. This site is very table based. It has a very dated feel to it relative to some other interfaces I have seen. Exhaustive transactions filters - seems like a lot for a user to take in. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	A decent site but it has that dusty feel of a wealth management division slowly plodding its way into the future. The What-If feature was very nicely done relative to the design system in use.	Questions about advisor workflow. What do they work with?
Wells Fargo	https://www.wellsfargo.com/the-private-bank/?linkLoc=fn	1972	Wells Fargo has been in the banking business for over a century. Within the Private Bank offering, one will find stock finder tools and market commentary. Not too much of an advantage as all investment firms are providing marketing commentary and comparison tools.	Brokerage Overview, Portfolio, Research, Customer Service. It feels like quite a bit of the navigation is tucked under each of these sections. Good use of big numbers but still retains the feel of the data table layout of statements sent to the investor. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	This site is impoverished relative to those above. Yes, there are big numbers and tools, but the overall look and feel makes the experience feel quite lackluster. The product tucks functionality under a very narrow navigation (four links), making it hard to find what you are looking for.	Questions about advisor workflow. What do they work with?
Charles Schwab	https://si2.schwabinstitutional.com/SI2/SecAdmin/Logon.aspx	1971	Schwab has been in the market since 1971. Schwab gets by on name recognition and advisor-based tools. Big numbers, large charts coupled with data tables. Intelligent portfolios (like Morgan Stanley's GPS above).	Accounts, Trade, Research, Products, Guidance, Service, Messages, Contact Us. Big numbers, large charts, projections, all make the experience that much better with Schwab. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Even though the main sections are a mishmash of verb and noun terminology, I feel like it makes sense given what we know thus far about the investor and their mental model.	Questions about advisor workflow. What do they work with?
UBS	https://onlineservices.ubs.com/olsauth/ex/pbl/ubso/dl/	1998	UBS is responsible for US$781 billion of invested assets. The UBS name is one of advice and distinction. UBS provides investment projections and a deep-dive into allocation information. The "Wealth Plan" seems interesting and distinct from other competitors.	Performance, Wealth Plan, Transactions. Light blue on brown is not accessible. Brown doesn't really work all that well for navigation. Extremely narrow navigation to place "all the things." Where would an investor find Allocations, Research, and other sections/pieces of information? **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	This site might be on-brand, but the brown doesn't work as a color. Emphasis seems to be on the advisor helping rather than self-service. Overall, it just seems ugly - not attractive to investors and potential investors.	Questions about advisor workflow. What do they work with?
BNY Mellon	https://www.bnymellonwealth.com	2007	BNY is known for its name and brand recognition. BNY Mellon has at least US$1.7 trillion in assets under management. What BNY Mellon brings is a distinct visual presence and experience in an industry that largely looks the same.	Dashboard, Investments, Private Banking, Transfers, and other areas to keep the user focused within a view. A use of background images helps the information panels stand out from the background. A use of big numbers also is distinctive. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	BNY Mellon makes use of serif type that brings a level of distinction not seen in the other direct competitors.	Questions about advisor workflow. What do they work with?
Indirect Competitors						
Acorns	https://www.acorns.com	2012	Acorns was built for the person looking to get into investment. There are no investment minimums. Robo-advising works by rounding up and taking what is left and investing in selected portfolios. Over time, this money will potentially accrue. For example, you can have $5.00 invested weekly which will be invested within a particular risk target. Over time, this amount "could" go up based on market conditions. What is particularly unique is that, through some retail and purchaser agreements, the investor can buy products on a particular website/service and then the retailer will invest back into your account. This is definitely a unique value proposition.	This site provides a very nice responsive experience. The panels break quite nicely to stack on top of each other. There is a soothing green color throughout the experience with blue panel call outs to denote Performance. There are calls to action for Potential, Offer Details, Performance, a Retirement account (Acorns Later), and opening account for your child/children. The hierarchy of these particular content pieces feels a bit disjointed or clumsy. It feels like this information was tacked on later without a lot of thought. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	The panels and offer details are nice, but it's hard to see the entire experience by way of the navigation.	No advisor workflow. Robo-advisor.
Personal Capital	http://personalcapital.com	2009	Personal Capital is another low-cost, low-entry investment product for potential investors. Personal Capital touts its features of the Retirement Planner, Net Worth, and Investment Check-up as the real value for investors. Personal Capital provides advisors on-hand to chat, video call, or text with any questions.	The CTAs are very clear: Overview, Banking, Investing, Planning, Advice. However, if I was to create an investment service, I would lead with those products and have Banking follow later in the display sequence. The Investment Check-Up allocation graph is very unique and some investors would appreciate this visual display of information. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	High fees would keep investors away from this service.	Questions about advisor workflow. What do they work with?
Robinhood	http://robinhood.com	2013	Robinhood's value proposition is to provide commission-free trades for everyday investors. The company makes money based on a percentage taken on its Robinhood Gold product. Robindhood provides five products: Cash Management; Stocks & Funds; Options; Crypto; and Gold (their more robust product).	Robinhood provides perhaps one of the cleanest layouts of the indirect competitors. However, the navigation is too lacking: Home, Notifications, Account are just too thin for the work needed to understand what is happening to one's money. **See Competitive Review & Analysis - Nielsen's Heuristics and Tog's Heuristics documents for more details.**	Upon looking at the value proposition, I can see why so little is offered to the investor when it comes to the very segmented views of stocks and funds, money management, options, and cryptocurrency.	No advisor workflow. Robo-advisor.

Heuristic Evaluation - Nielsen

Heuristic Evaluation - Nielsen's Heuristics: PNC Total Insight & Wealth Insight

KEY: — Not Applicable · ● Missing · ● Poor · ● Fair · ● Good

Heuristic	PNC 3rd Party	Morgan Stanley	J.P. Morgan	Wells Fargo	Charles Schwab	UBS	BNY Mellon	Acorns	Personal Capital	Robinhood	Notes
Visibility of system status											
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.	Poor	Fair	Fair	Fair	Good	Good	Good	Good	Fair	Fair	PNC designs seriously lacks in system status indicators.
Match between system and the real world											
The system should speak the users' language, with words, phrases and concepts familiar to the user.	Poor	Good	Good	Fair	Good	Fair	Good	Fair	Good	Fair	PNC designs do not speak in the investors' language - experience or inexperienced.
Follow real-world conventions, making information appear in a natural and logical order.	Poor	Good	Good	Fair	Good	Good	Good	Good	Good	Good	PNC designs use a mobile-first metaphor which jumbles the presentation order in a way that does not make sense to the user.
User control and freedom											
Users will need a clearly marked "emergency exit" to leave the unwanted state.	Not Applicable	Good	Good	Fair	Good	Good	Good	Good	Good	Good	Many sites provide a good way of exiting an interaction or unwanted state. PNC does not provide this capability.
Support undo and redo.	Not Applicable	Good	Good	Poor	Good	Poor	Good	Poor	Good	Poor	PNC does not provide this action to investors.
Consistency and standards											
Users should not have to wonder whether different words, situations, or actions mean the same thing.	Poor	Good	Good	Poor	Good	Poor	Good	Poor	Fair	Poor	PNC uses a lot of ambiguous and investment language/jargon to confuse new and experienced investors.
Error prevention											
Provide a design which prevents a problem from occurring in the first place.	Poor	Good	Good	Poor	Good	Poor	Good	Poor	Good	Poor	Total Insight and Wealth Insight has not been designed to keep errors from occurring.
Eliminate error-prone conditions or check for them and present with a confirmation before they commit to the action.	Poor	Good	Good	Fair	Good	Fair	Good	Fair	Good	Fair	Total Insight and Wealth Insight has not been designed to keep errors from occurring.
Recognition rather than recall											
Minimize the user's memory load by making objects, actions, and options visible.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	Many options are provided, but they are decontextualized from graphs or what they do within the interaction design.
The user should not have to remember information from one part of the dialogue to another.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	The onus is on the user to remember what is to be done within a spartan interface.
Instructions for use of the system should be visible or easily retrievable whenever appropriate.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	As it stands, there is little in the way of instructions for the user in the Total Insight and Wealth Insight re-design.
Flexibility and efficiency of use											
Use of accelerators such that the system can cater to both inexperienced and experienced users.	Not Applicable	Good	Good	Not Applicable	Fair	Fair	Good	Fair	Fair	Fair	No such accelerators exist for experienced or inexperienced investors.
Allow users to tailor frequent actions.	Poor	Good	Good	Fair	Fair	Fair	Good	Fair	Fair	Fair	The redesign doesn't really provide for frequent actions to be tailored by the investor.
Aesthetic and minimalist design											
Dialogues should not contain information which is irrelevant or rarely needed.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Dialogues have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Every extra unit of information in a design competes with the relevant units of information and diminishes their relative visibility.	Poor	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	The PNC redesign is fairly spartan in some respects, but then provides a lot of decontextualized data/information that is visually noisy to the investor.
Help users recognize, diagnose, and recover from errors											
Error messages should be expressed in plain language (no codes).	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Error messages should precisely indicate the problem.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Error messages should constructively suggest a solution.	Poor	Fair	Fair	Fair	Fair	Fair	Good	Poor	Fair	Fair	Error messages have borrowed largely from the current system - error codes which give the investor no context or information about what just happened.
Help and documentation											
Help documentation should be easy to search.	Not Applicable	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	Not Applicable	No help documentation exists within the delivered redesign assets.
Help documentation should be focused on the user's task.	Not Applicable	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	Not Applicable	No help documentation exists within the delivered redesign assets.
Help documentation should list concrete steps to be carried out.	Not Applicable	Poor	Poor	Fair	Poor	Poor	Fair	Not Applicable	Fair	Not Applicable	No help documentation exists within the delivered redesign assets.
Help documentation should not be too large.	Not Applicable	Poor	Poor	Fair	Poor	Poor	Fair	Poor	Fair	Not Applicable	No help documentation exists within the delivered redesign assets.

Heuristic Evaluation - Tognazzini

Heuristic Evaluation - Tog's Heuristics: PNC Total Insight & Wealth Insight

Heuristic	PNC 3rd Party	Morgan Stanley	J.P. Morgan	Wells Fargo	Charles Schwab	UBS	BNY Mellon	Acorns	Personal Capital	Robinhood	Notes
Anticipation											
Bring to the user all the information and tools needed for each step of the process	N	Y	Y	N	Y	Y	Y	Y	Y	Y	PNC 3rd party designs provide not all of the information and tools that investors self-describe as needing.
Autonomy											
Enable users to make their own decisions, even ones aesthetically poor or behaviorally less efficient	Y	Y	Y	Y	Y	Y	Y	N	N	N	
Exercise responsible control	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Use status mechanisms to keep users aware and informed	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Status mechanisms are not provided in the 3rd party designs.
Keep status information up to date and within easy view	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Ensure status information is accurate	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	PNC provides two separate views of data meaning that the investor and advisor are not viewing the same dollar amount.
Color Blindness											
Any time you use color to convey information in the interface, you should also use clear, secondary cues to convey the information to those who cannot see the colors presented	N	Y	Y	N	Y	Y	Y	N	Y	Y	Supplied designs for the redesign do not meet WCAG 2.1 AA or AAA requirements.
Color as a vital interface element											
Do not avoid color in the interface just because not every user can see every color	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Do not strip away or overwhelm color cues in the interface because of a passing design fad	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Consistency											
The most important consistency is consistency with user expectations	N	Y	Y	N	Y	Y	Y	N	Y	Y	Supplied design views are not what users/investors would expect (as reported during usability tests in user research sessions).
The importance of strict consistency varies	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
It is just important to be visually inconsistent when things act differently as it is to be visually consistent when things act the same	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Defaults											
Defaults within fields should be easy to "blow away"	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Defaults should be "intelligent" and responsive	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Discoverability											
If the user cannot find it, it does not exist	N	Y	Y	N	Y	Y	Y	N	Y	Y	PNC redesign suffers from buried navigation and nested views and table views.
Controls and other objects necessary for the successful use of software should be visibly accessible at all times	N	Y	Y	N	Y	Y	Y	N	Y	Y	Controls are buried in drop-downs and selects in the redesigned assets.
With the exception of small mobile devices, controls do not belong in the middle of the content area	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Efficiency of the User											
Consider user's productivity, not the computer's	N	Y	Y	N	Y	Y	Y	N	Y	Y	
Keep the user occupied	N	Y	Y	N	Y	Y	Y	N	Y	Y	
Maximize everyone's efficiency.	N	Y	Y	N	Y	Y	Y	Y	Y	Y	
The great efficiency breakthroughs in software are to be found in the fundamental architecture of the system, not in the surface design of the interface	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Error messages should actually help	N	Y	Y	N	Y	Y	Y	Y	Y	Y	
Explorable Interfaces											
Give user roads & landmarks, but allow exploration	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	The views provided do not allow the user to explore. Each view is essentially a sand trap.
Give user stable cues for a sense of "home"	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Home is buried in the hamburger menu and by the words "Brief."
Allow undo	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	No undo is provided.
Allow a way out	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	No way out of committed action.
Fitt's Law											
The time to acquire a target is a function of the distance to and size of the target	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Human Interface Objects											
Human-interface objects appear within the user's environment	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Controls are largely hidden from view (even in the desktop view).
They can be seen, heard, felt, or otherwise perceived	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Human-interface objects have standard resulting behaviors	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Human-interface objects should be understandable, self-consistent, and stable	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Latency Reduction											
Reduce the user's experience of latency	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Push latency into the background	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Learnability											
All applications and services have a learning curve	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Limit trade-offs between usability and learnability	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	The PNC redesign suffers from the fact that it is not very usable and not very learnable given an absence of contextual cues.
Metaphors, Use of											
Choose metaphors well to enable the user to grasp the conceptual model.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Bring metaphors "alive" by appealing to people's perceptions–sight, sound, touch, and proprioception/kinesthesia–as well as triggering their memories	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Protect Users' Work											
Ensure that users never lose their work	N	Y	Y	N	Y	Y	Y	N	Y	N	The PNC redesign does not maintain state (where you left off). Each sign-on/sign-off returns the user to the Brief.
Readability											
Text that must be read should have high contrast	N	Y	Y	N	Y	Y	Y	N	Y	N	The text in the PNC redesign is not large enough to see or contrasting enough for accessibility concerns.
Use font sizes that are large enough to be readable on standard displays	N	Y	Y	N	Y	Y	Y	N	Y	N	The text in the PNC redesign is not large enough to see or contrasting enough for accessibility concerns.
Don't forget those with special needs	N	Y	Y	N	Y	Y	Y	Y	Y	N	The text in the PNC redesign is not large enough to see or contrasting enough for accessibility concerns.
Simplicity											
Balance ease of installation vs. ease of use	N	N	N	N	N	N	N	N	N	N	
Use Progressive Revelation to flatten the learning curve	N	Y	Y	N	Y	Y	Y	Y	Y	N	No progressive revelation as users don't know what they are working with or what they are doing when it comes to getting started.
Do not simplify by eliminating necessary capabilities	N	Y	Y	N	Y	Y	Y	Y	Y	N	
State											
Make clear what you will store & protect the user's information	N	Y	N	N	N	N	Y	Y	Y	Y	
Because many of our browser-based products exist in a stateless environment, we have the responsibility to track state as needed	N	Y	N	N	N	N	Y	Y	Y	Y	
Visible Navigation											
Make navigation visible	N	Y	Y	Y	Y	Y	Y	N	Y	Y	The navigation is buried in both a FAB button and a hamburger button. Both are hidden navigation schemes that do not fit the users' mental model.
Limit screen counts by using overlays	N	Y	Y	Y	Y	Y	Y	N	Y	Y	

Usability Test Report

Usability Test Report

Wealth Insight & Total Insight

Joshua Line

Background Summary

Brief Summary
A third-party design was tested with participants within the time frame of April to May 2018 to check for usability problems and if the design made sense to clients/investors given their respective needs.

Testing Team
Josh Line - lead researcher & facilitator
Jay DiNitto - note taker

Testing Materials
The testing prototype consisted of a clickable InVision prototype. Each test was performed on a Macbook Pro.

Goal
The goal of the sessions was to validate the usability of the site/assets, as no user research or usability testing preceded the production of these third-party assets.

Methodology

Twelve investors/participants were contacted. The participants had varying amounts of experience with investing (little to no, many years of experience, life-long investor) and varying amounts of money invested.

The usability tests were run as part of a three-part study: (1) an interview to discuss the investor's relationship with their investment advisor; (2) a card-sorting exercise involving definitions of investment concepts; and (3) a usability test (clickable prototype) covering the following eight scenarios:

(1) Allocation mix
(2) Performance of accounts
(3) Monthly income
(4) Income composition
(5) Folio composition
(6) Research
(7) Market news
(8) Research article composition

The participants were asked to explain what was happening on the screen as well as work through these scenarios. A scenario was considered "passed" if it achieved an 80% or higher pass rate across all participants.

Usability Test Summary

12 participants **8 scenarios**

Participants	Allocation	Performance	Income 1	FAB	Folio	Research	Market News	Research Article
1	✓	✓	✓	✓	—	✓	✓	✓
2	—	✓	—	—	—	✓	✓	✓
3	✓	✓	✓	✓	—	✓	✓	✓
4	—	✓	✓	✓	—	✓	✓	✓
5	✓	✓	✓	✓	—	✓	✓	✓
6	—	✓	✓	✓	—	✓	✓	✓
7	✓	✓	✓	✓	—	✓	✓	✓
8	✓	✓	✓	✓	—	✓	✓	✓
9	✓	✓	✓	✓	—	✓	✓	✓
10	—	✓	✓	✓	—	✓	✓	✓
11	—	—	—	—	—	✓	✓	✓
12	—	—	—	—	—	✓	✓	✓
Success	6	10	9	9	0	12	12	12
Completion Rates	50%	83%	75%	75%	0%	100%	100%	100%

Usability Test Scenarios

Every Page - General Questions
What do you think is going on in this page? What strikes you? What would you click on?

Allocation
You're curious about your mix of investments. How would you see this mix?
Success Criteria: Clicks on Allocation.

Performance
Okay, we've looked at your investment mix, but let's say you still have questions about how your accounts are doing over time. How would you look at this information?
Success Criteria: Clicks on Performance.

Income
Let's say it's the middle of the month, you want to see how your money (prompt: not investment) is doing this month to date. How would you find that?
Success Criteria: Clicks on Income.

FAB
Let's shift gears a bit. Let's go back to the main page. How would you do that?
Success Criteria 1: Clicks on FAB and then Brief
or
Success Criteria 2: Clicks on Menu and then Brief.

Folio
If you wanted to see your overall investment balance and more detailed information, what would you do first?
Success Criteria 1: Clicks on Big Number to open Folio.
or
Success Criteria 2: Clicks on FAB/Menu and then Folio.

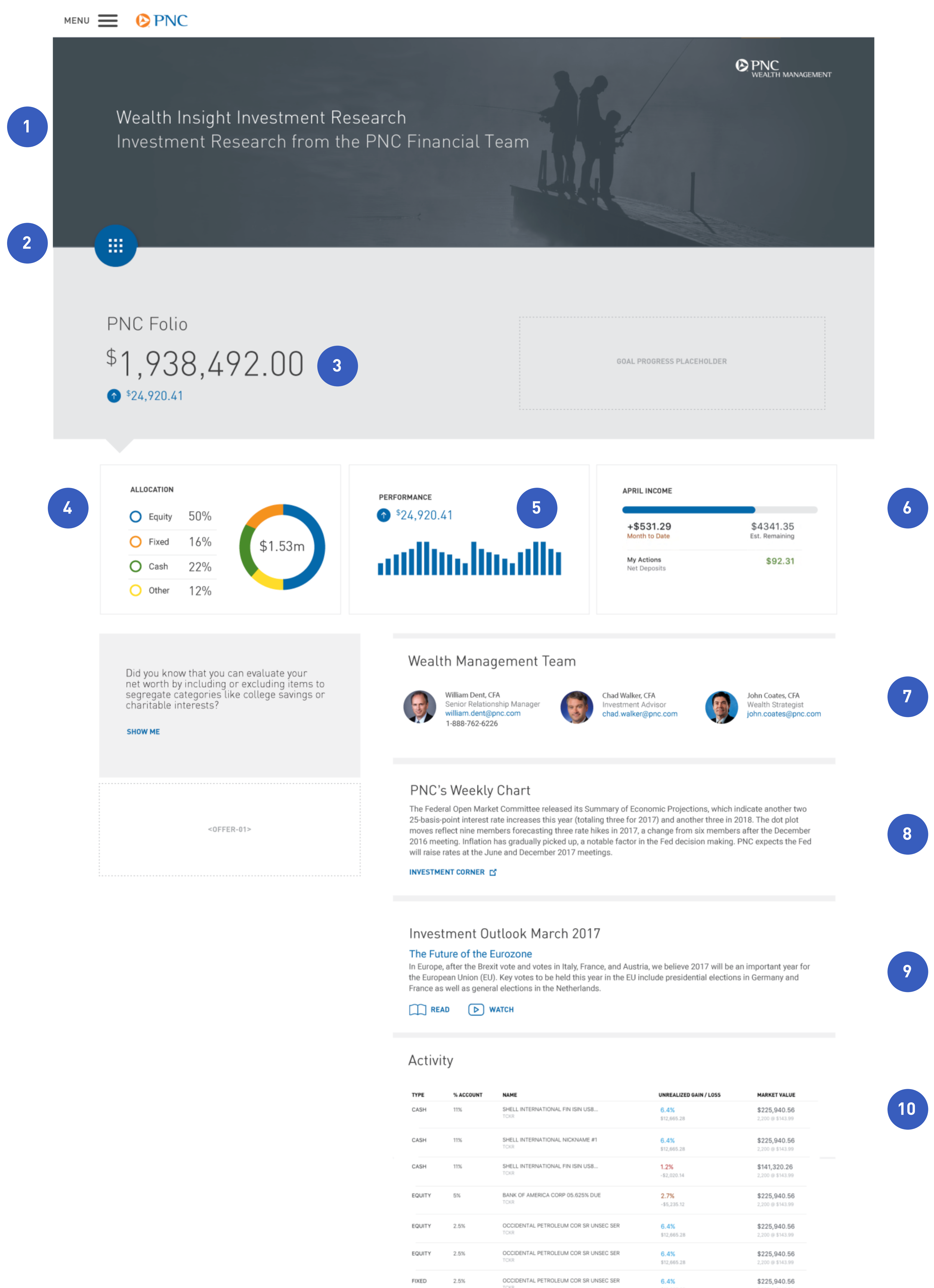
Research
Lets's shift gears one last time. In this scenario, you're curious about doing some research on a stock/mutual fund to see if it is worth the investment.

How would you look for ways to look for more information on stocks/funds on this site?
Success Criteria: Clicks on Search Bar and Add.

Market News
You're curious about reading up on some stock picks. How would you find this information?
Success Criteria: Navigates to Market News and looks up some stocks.

Research Article
You find an article that gets you excited about a stock. How would you add stocks to research later?
Success Criteria: Clicks on Add to Watchlist CTA.

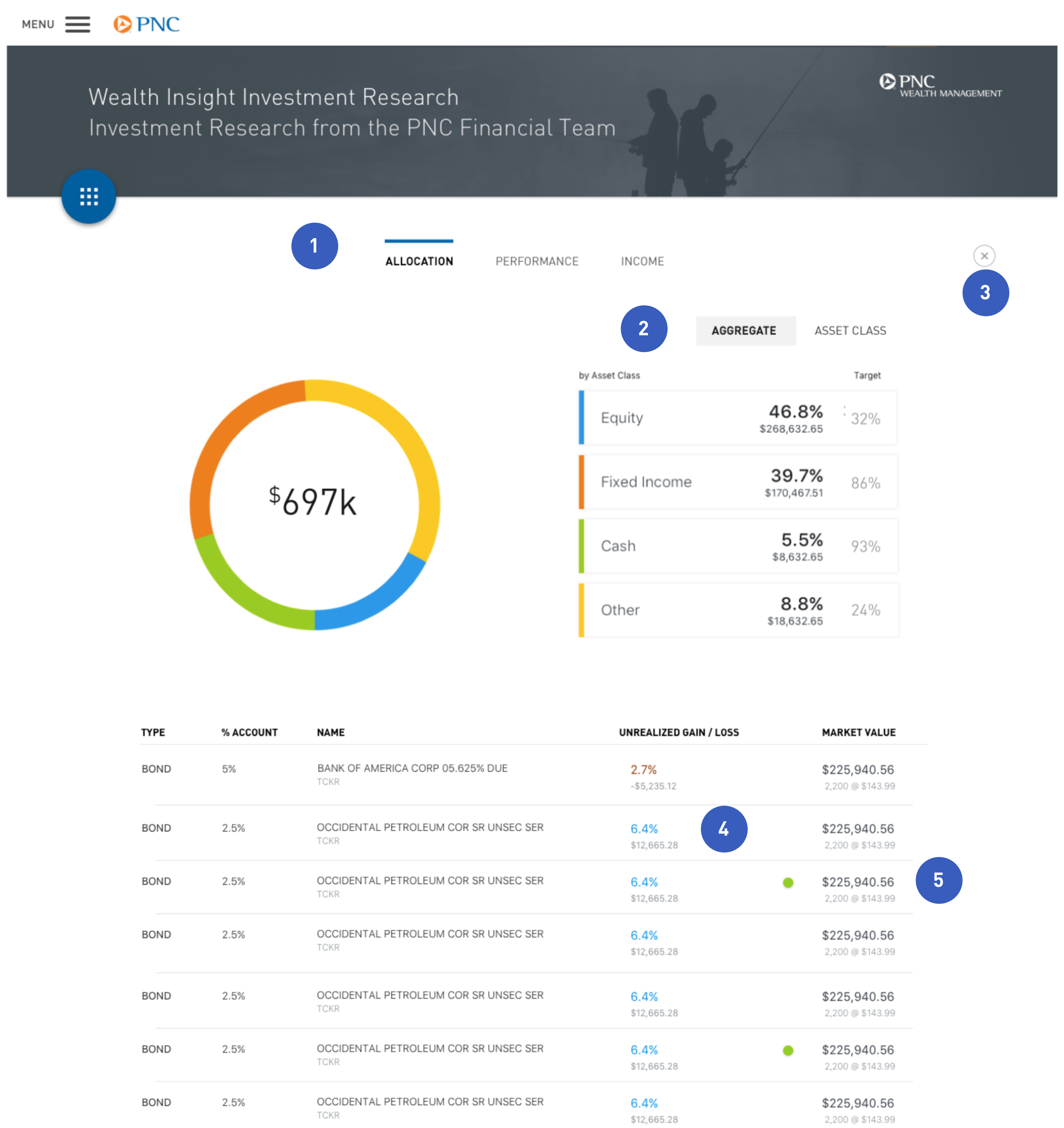
BRIEF/DASHBOARD PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Shrink the header section so that the user knows there is something to see on the desktop experience.	Eleven of twelve participants were initially perplexed as to why they couldn't see anything below the fold.	High
2	Consider a label or a new way of accessing the W&I menu.	All twelve participants were confused as to what would happen when this button was clicked. To navigate to another part of the experience, they expected to click on "Menu" or the hamburger button.	High
3	Provide a CTA for the Folio. The user shouldn't have to click on the numbers to reach the Folio.	Half of the participants (n=6) did not know what Folio referred to. Another quarter of the participants (n=3) could not accurately identify the number as the overall balance of all of the accounts. Also, many found this far too low in the screen hierarchy.	High
4 5 6	Provide a CTA for the Allocation section in the desktop experience. Provide a CTA for the Performance section in the desktop experience. Provide a CTA for the Income section in the desktop experience.	Participants could accurately describe what was displayed within each content block, but they did not know you could click on the area to get to the respective section.	High
10	Move Activity further up the screen in the desktop experience.	All twelve participants wanted to see this information as the second or third item on the screen. They thought it "ridiculous" that it would be buried this far down the screen - when this is the "meat and potatoes" of what is going on with one's investments.	High
7 8 9	Move Wealth Management Team, Weekly Chart, and Investment Outlook to the left column or to another portion of the screen.	All twelve participants felt that these two sections were something they would not be interested in seeing on the dashboard page. It just wasn't relevant to their needs.	Medium

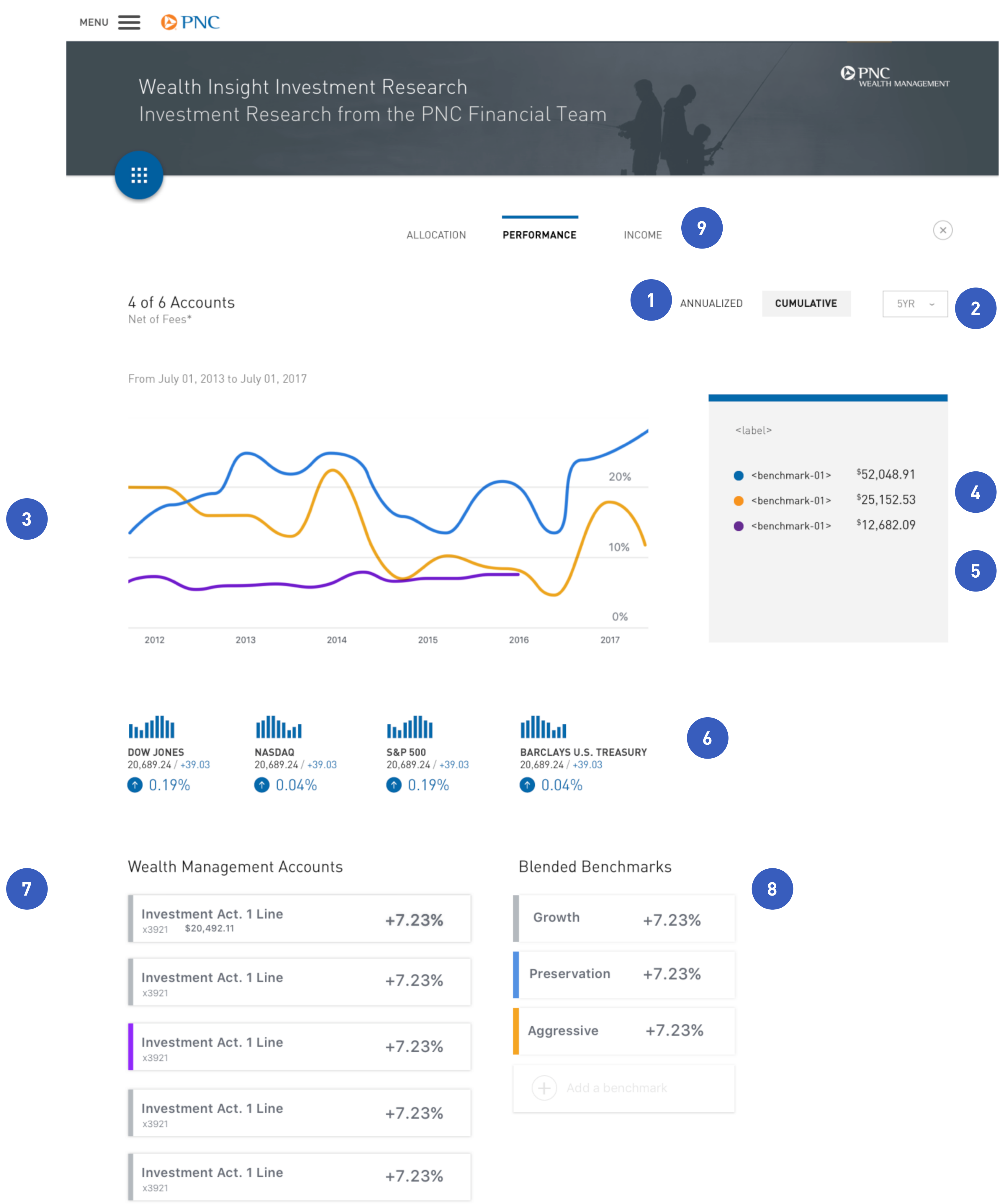
ALLOCATION PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
3	Remove the X button.	All the participants were confused about the use of the X button on this screen.	High
2	Provide either everyday language explanations or rephrase to meet mental model.	All participants knew what they were seeing by the graph/visualization, but they were confused about the difference between an aggregate view and an asset class view. These views require a significant amount of cognitive load to understand the financial concepts.	High
1	Consider an alternate or more prominent treatment for the navigation.	Ten of twelve participants were initially confused about where they were and what they were seeing. With some orienting, ten of twelve participants successfully clicked on Performance to complete the scenario.	Medium
4	Consider other colors to denote gains and losses.	Eleven of twelve participants were confused about the colors of gains and losses in the table. “They don’t look right.”	Medium
5	Use another visual indicator for the green dot so that it fits the user’s mental model.	All the participants were confused as to what this green dot represents.	Medium

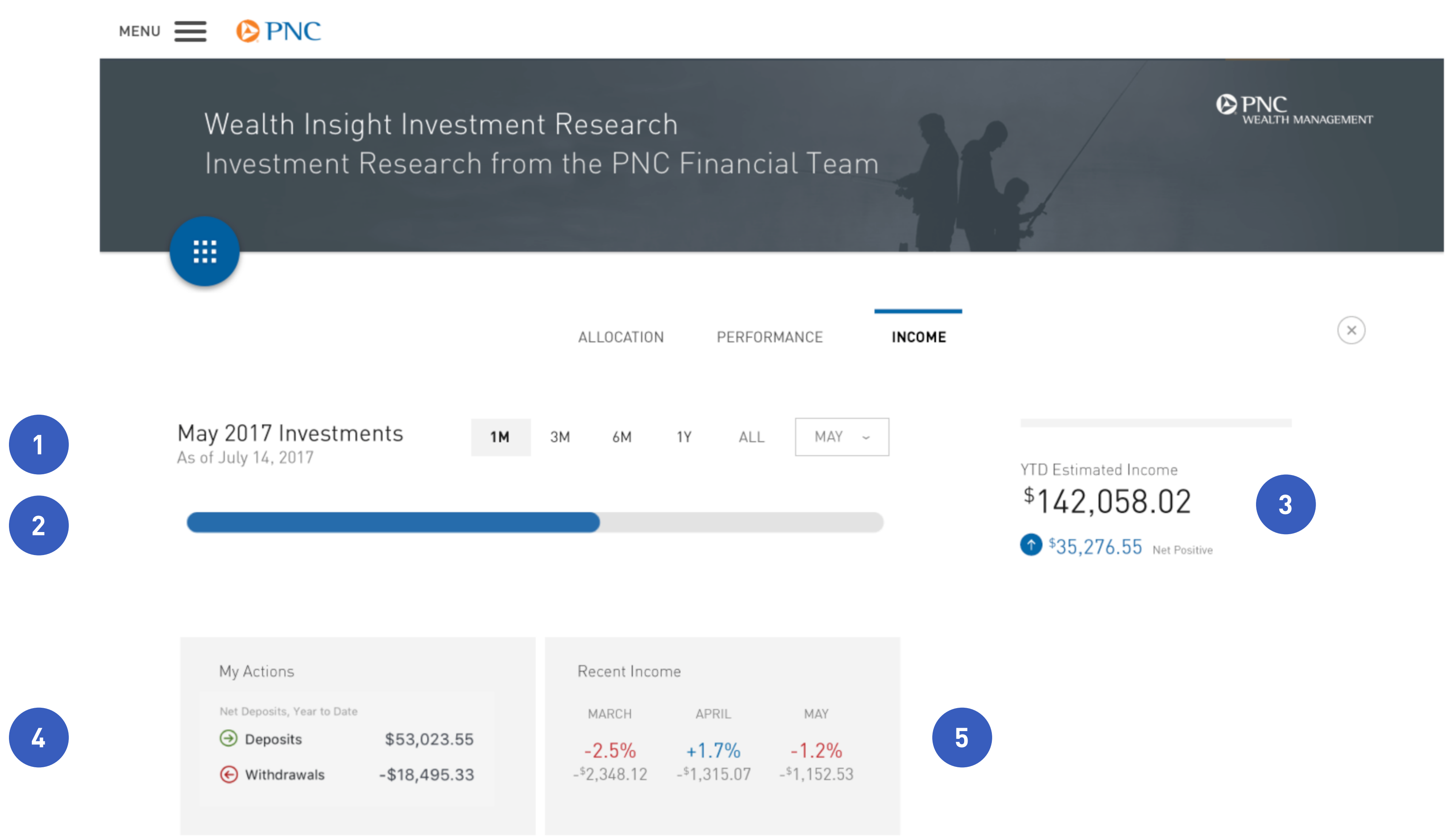
PERFORMANCE PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Provide everyday language explanation for Annualized and Cumulative views.	Ten of twelve participants did not know the difference between the annualized and cumulative views thus hindering their understanding of the data and graph.	High
2	Consider another presentation and color so that the user can see all of the options before them.	Eight of twelve participants missed this drop-down. Many thought that the select was too light of grey to view on any screen.	High
3	Performance graphs should display numbers on the graph.	Nine of twelve participants were surprised that there were little to know numbers on the graph. The participants had to extrapolate a number from the placement of the line on the graph.	High
7	Consider placing wealth management accounts next to the graph.	All twelve participants thought this information was considerably too far down the page. They wanted to see this information next to the graph and not see the dollar amount in this view.	High
8	Consider placing blended benchmarks closer to the graph.	All twelve participants were confused by Blended Benchmarks both as a concept and their placement on the screen. Many thought they should be further up the page but were confused as to what they represent.	High
9	Consider making the navigation more prominent by way of size and color.	Nine of twelve participants (75%) completed the scenario by clicking on the Income CTA in the navigation.	High
4 5	Present the choice to show dollar or percentage amount.	Dollar and percentage amounts are discrete views in the original design.They cannot be decoupled in the current experience. The participants were confused why both dollars and percentages were shown simultaneously.	High
6	Consider putting market values on the graph line.	Nine of twelve participants found value in showing market values, but they would prefer seeing them as a line on the graph.	Medium

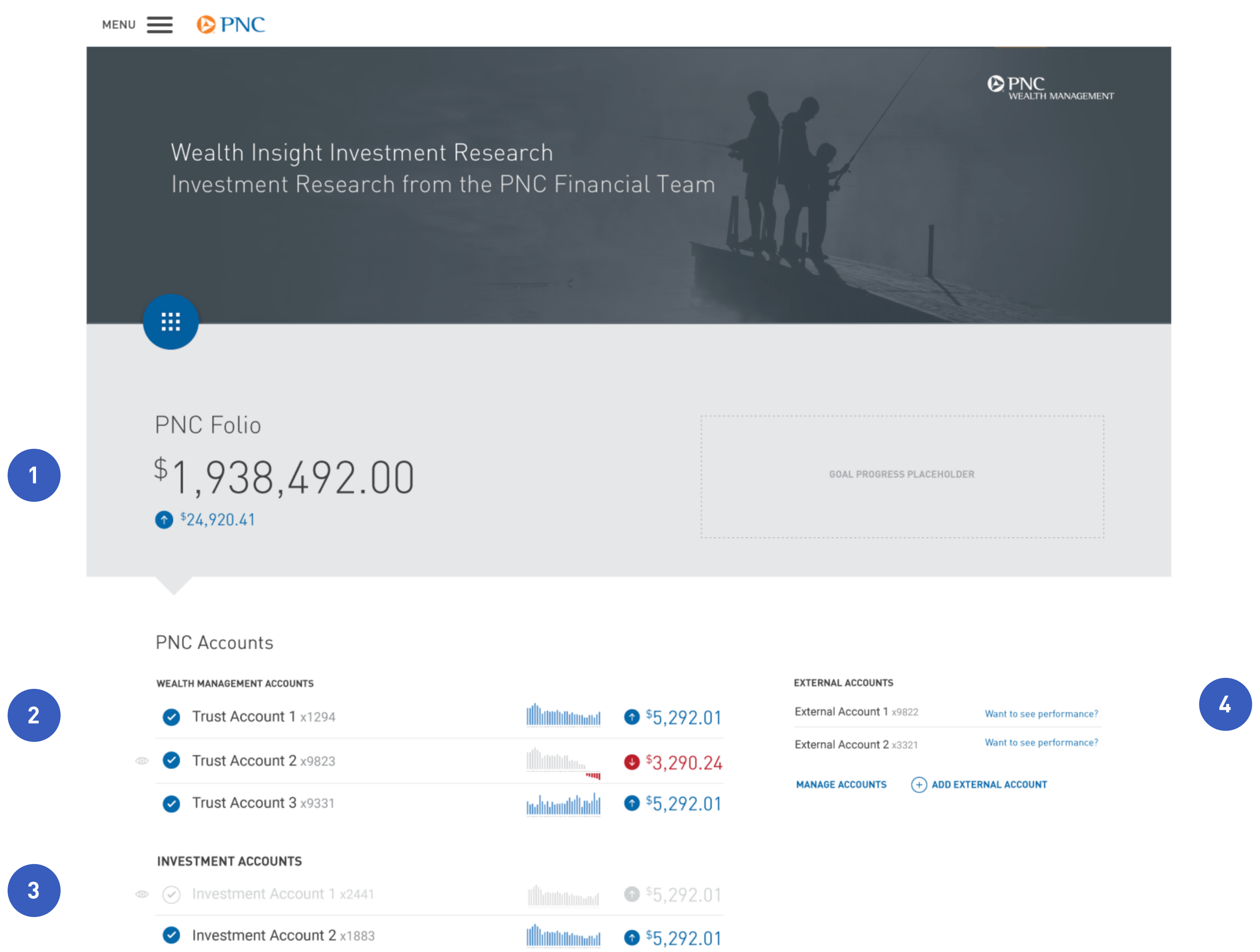
INCOME PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
2	Consider a different display of the Income Bar.	All twelve participants were very confused about what this bar represents. Without a number, they are left to guess what this represents by way of their income.	High
3	Consider changing the name of My Actions.	All twelve participants thought this section was mislabeled. This section feels like Transactions, many reported.	High
4	Consider making the Estimated Income more clear with messaging about time span.	Ten of twelve participants thought this was the estimated income for the year. Many thought it was a projection, as well.	High
5	Change the colors to fit the user mental model on gains and losses.	Most of the participants (n=10) understood the information but wanted to see something that indicated more of a gain-or-loss feel.	High
1	Consider using this layout for all date selections for the entire desktop experience.	Most of the participants (n=10) mentioned preferring this type of date selection to the drop-down method.	Medium

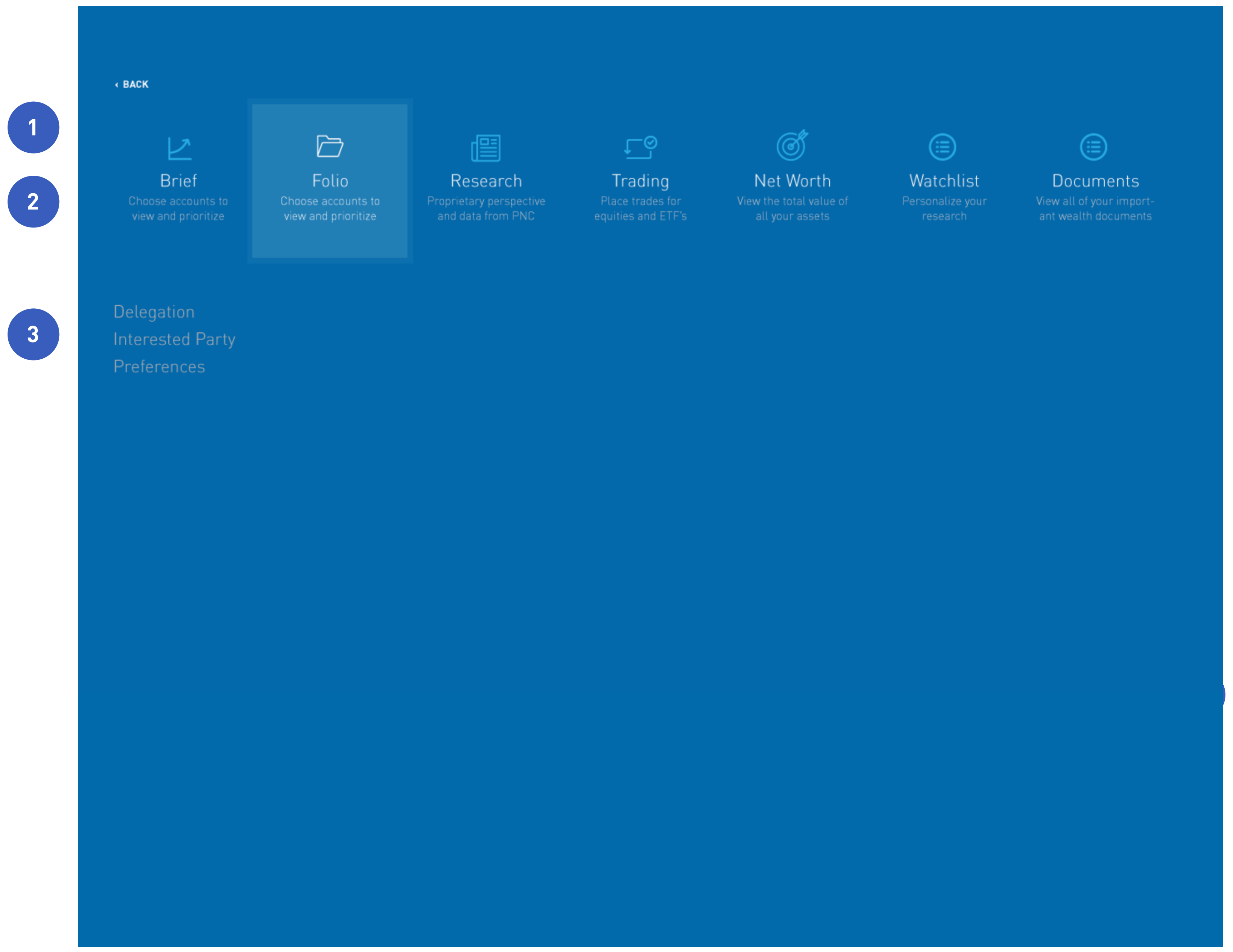
ACCOUNTS PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Create a CTA for the Folio dollar amount.	All twelve participants did not know that you could interact (click or tap) with the dollar amount to open this Folio area.	High
2, 3	Consider changing the color of the account information to make the data and visualizations more visible.	Eleven of twelve participants stated that the light grey color is too light to see. Also, issues with blue representing a gain.	High
4	Consider changing the eye icon to something that would fit the user mental model.	Eleven of twelve participants wanted to know what the eye represented. It represents power of attorney but that is not well represented here or understood by the participants.	High

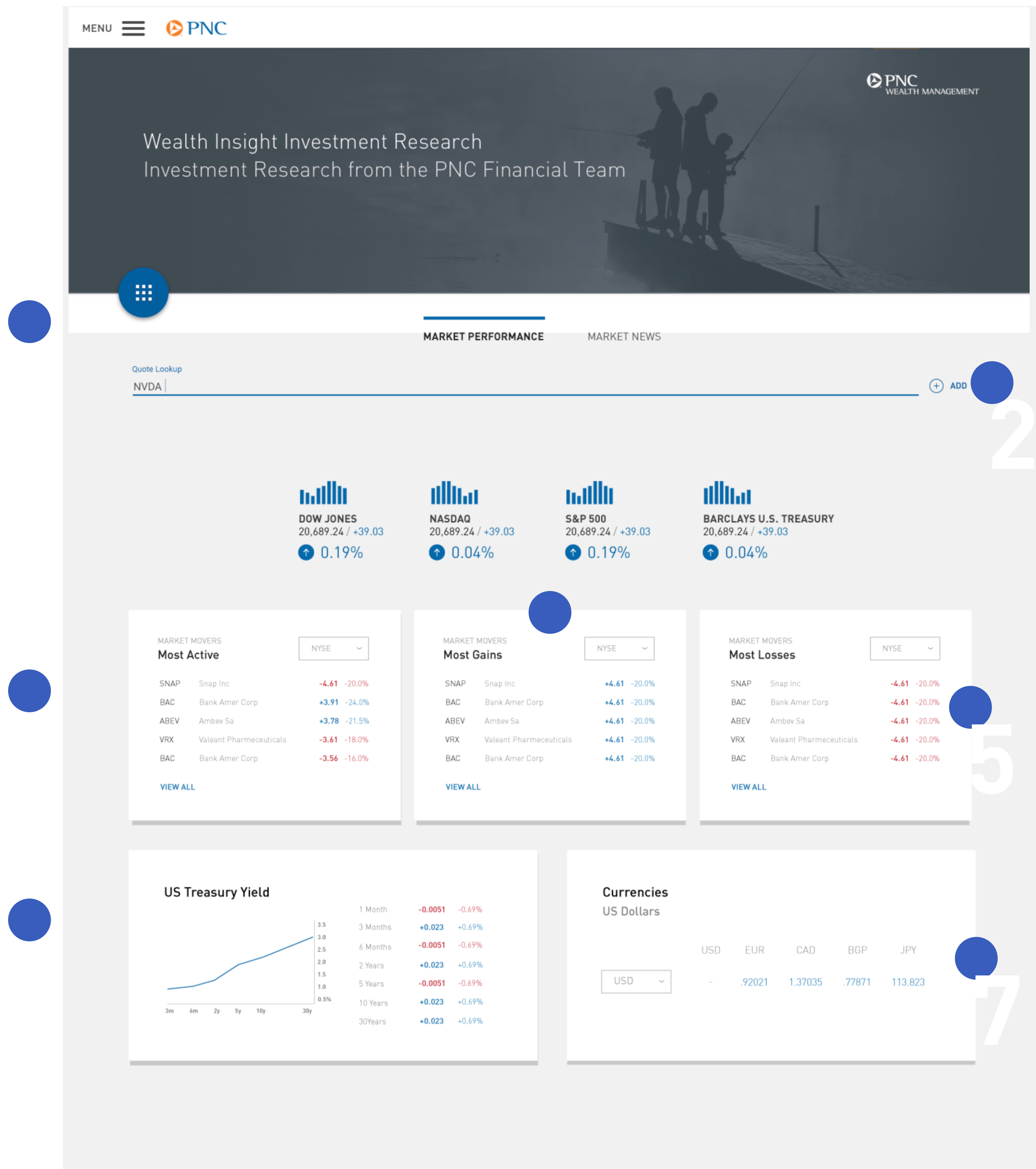
FAB/NAVIGATION



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Change the width of the icons and reconsider color choices within the navigation.	This display does not pass accessibility. Light blue on blue and grey on blue will not pass WCAG 2.1 AA standards.	High
2	Change the width of the icons for readability. Consider distinct icons for each area.	Six of twelve participants wanted each icon to be distinct. Many thought these icons were too thin.	High
3	Consider giving these sections an icon and a description.	Many of the participants (n=10) did not know what delegation or interested party meant so an icon and a description could assist them. Preferences/Settings needs to be more prominent for findability.	High

RESEARCH PAGE



ISSUES & RECOMMENDATIONS

Number	Recommendation	Justification	Severity
1	Consider changing the name of the area to “Market Research”.	Six of twelve participants were confused about what they are seeing in the Research page. 1) They are not seeing Research anywhere on the screen; and 2) they were confused about seeing Market Performance and Market News as split views.	High
2	Consider changing the CTA so that it is more of a search function and less of an add function.	Eleven of twelve participants were confused about what they were searching for and adding in this scenario. Are they searching for quotes or research on particular stocks/funds? Without any instruction, it is a bit confusing to each participant.	High
3 4 5	Consider changing the colors from a light grey to a darker, more accessible color. Consider changing gains and losses colors, as well.	Many of the participants (n=10) did not know what delegation or interested party meant so an icon and a description could assist them. Preferences/Settings needs to be more prominent for findability.	High
6 7	Consider removing US Treasury Yield and Currencies views	Ten of twelve participants thought this was something they could find on Google or Yahoo Finance. Two participants questioned the value this type of information imparted.	Medium

Conclusion

Eight scenarios were tested with twelve participants from April to May 2018. The results of the usability testing involved prioritizing critical issues and examining the causes behind scenarios not being completed.

There are many areas of overall improvement for this redesign to increase usability, findability, and accessibility. There are **26 high severity items** to consider within this redesign effort. Further, there are **8 medium severity** items to be investigated and potentially rectified. Many of these issues include the following:

Everyday Language Issues
Consider implementing a glossary or explanation of what specific investments mean. More specifically, these explanations should be in everyday language. Most of the participants did not have the financial literacy to make their way through the scenarios.

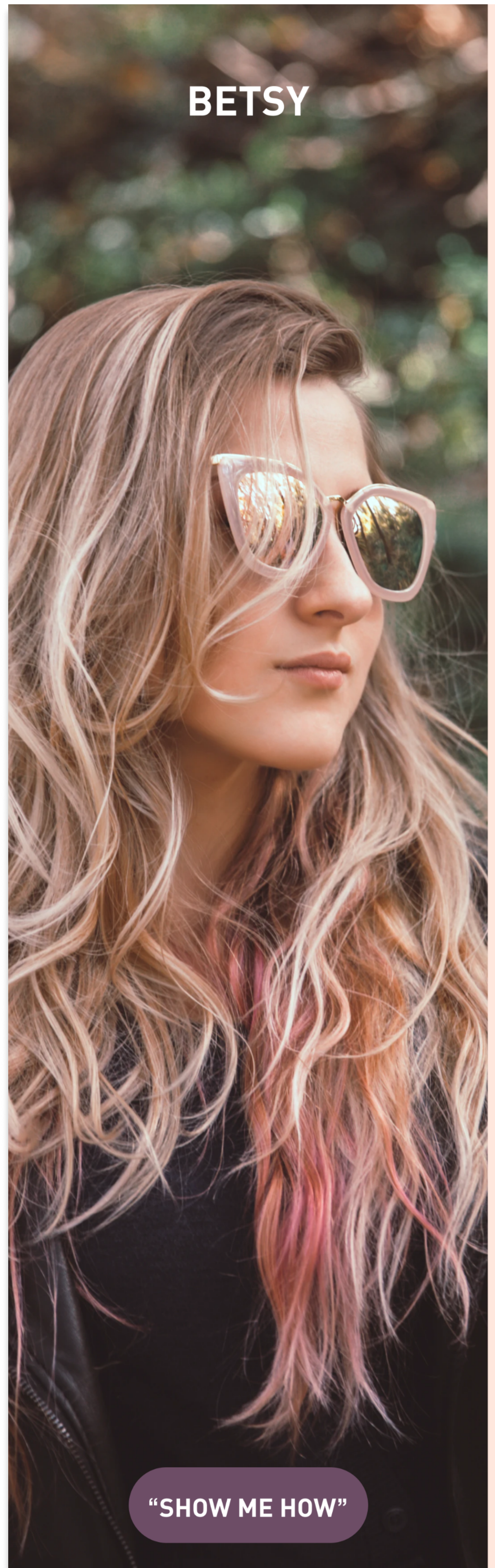
Accessibility Issues
The use of light grey, lighter blue, and lighter red doesn't do the job when it comes to complying to PNC's adherence to the WCAG 2.1 AA accessibility guidelines. Most participants had an issue reading the text, graphs, and visualizations within this design iteration.

Uncommon Interactions
The use of responsive design patterns within a desktop site kept roughly half of the participants from finishing some of the scenarios. Consider using standard interactions and buttons for the desktop experience.

Lack of Calls to Action
This particular design was clearly designed for smart/mobile devices first. Many of the content sections have little to no CTAs to pique user interest or curiosity. Consider implementing CTAs so that a user can move between sections outside of using the menu/navigation.

Graphs and Visualizations
The graphs and visualizations supplied do not meet accessibility guidelines. Further, these designs were provided with what appears to be unfinished graphs/visualizations which makes it very difficult to contextualize what information is being displayed.

Thinking Styles



BETSY'S THINKING STYLE

I've had this mutual fund since I was three years old. It's my go-to, my safety vest, you know, when I'm in trouble. Whether I'm going on spring break or I need to buy a new laptop, I know that I can sign in, take out the money I need, and sign right out. That's what I use it for. The money will eventually come back, right?

Do I know how this fund works? No. I've tried to talk to my advisor uncle but he seems more preoccupied with his bigger accounts. I understand what my balance is and I want to know what has happened in the short term if something weird has happened with my money. This is what is important to me. However, beyond this, I don't have the knowledge of investing beyond what is there and what I take out of it. My fund has done okay and I don't know why.

I have a real fear I will mess everything up if I invest either more or less. I get confused on investing terms and jargon. I wish web sites could use concepts I would understand.

I don't feel capable of making "mysterious choices." I need to know everything to take action. To do this, I want to know how and why investing works. This kind of info would give me more confidence. I'm a visual person, though, so it would have to be something I can watch again and again.

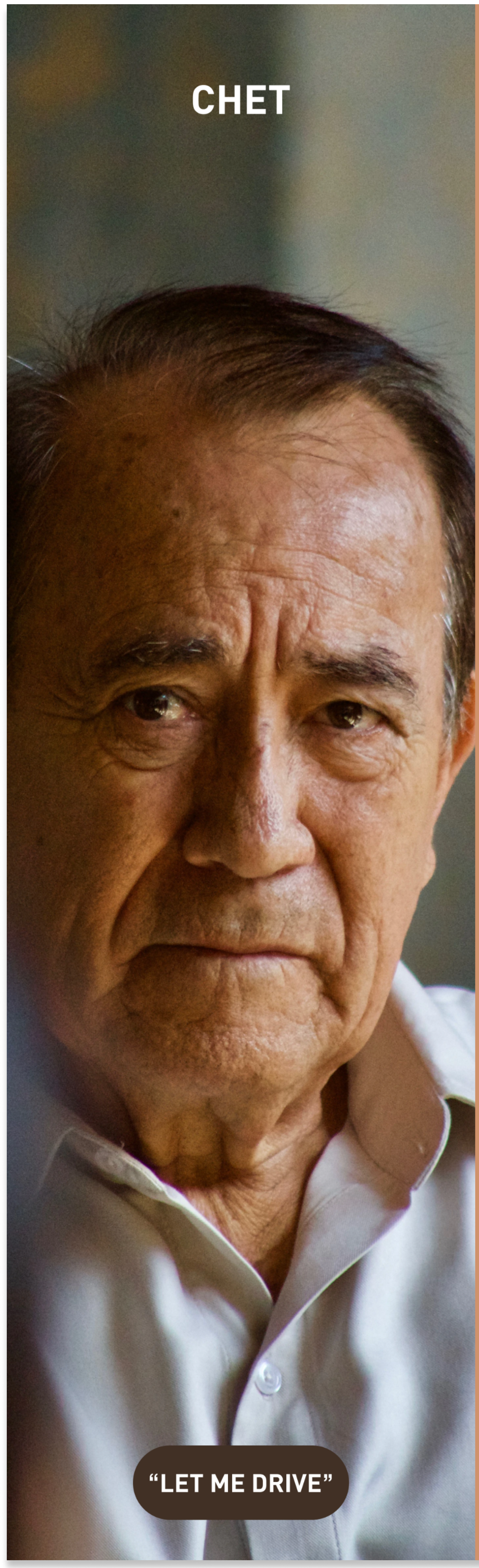
JACK'S THINKING STYLE

I'll put it plainly - I don't want to lose any money. I have a number of investments – mutual funds and stocks – and I've had them for a very long time. My investments and I have been through a lot. I've seen some of my stocks lose most of their value and I've also been bilked by day traders out of some money. Although, some of my investments have gone down, I'm not willing to let them go right now. If I just hold on to these stocks long enough, they'll make me some money. I've been around the block when it comes to investing, you could say; these are long term investments.

I'm not comfortable just giving my money to anyone. I have to know you, meet with you, and know that you're not too crazy. I have been burned before. I do my research on Google or MSN and then talk over some of these ideas with my advisor and he'll talk me down or not. That's the thing, though, these are just ideas. I spend a lot of my time day dreaming about what to put my money into but I'll just let it sit in the old money market account, anyways.

My go-to investment account rebalances several times a year so I don't have to worry about doing the research for that one. It's all done through a computer. That leaves me to do my own looking around at stocks and industries to invest. That's my thing; it gives me some delight. The question is, though: will I do anything about this research? Maybe I'll talk to my advisor about it the next time we play golf together.

I never take out any money from my accounts. It's safer there, right? I will have to take money out of these accounts for retirement, though, but I will take the money and reinvest it in other accounts. How does that sound? That should keep me going through retirement, right?



CHET'S THINKING STYLE

I know exactly what I'm doing when it comes to investing. I've run my own investments for years because I've had to. I own a couple of mutual funds, some stock, a couple of retirement accounts, and some founders' shares in a start-up. Retirement won't come easy for me, as I don't have the same access to the means that everyone else does, so I have to play it smart.

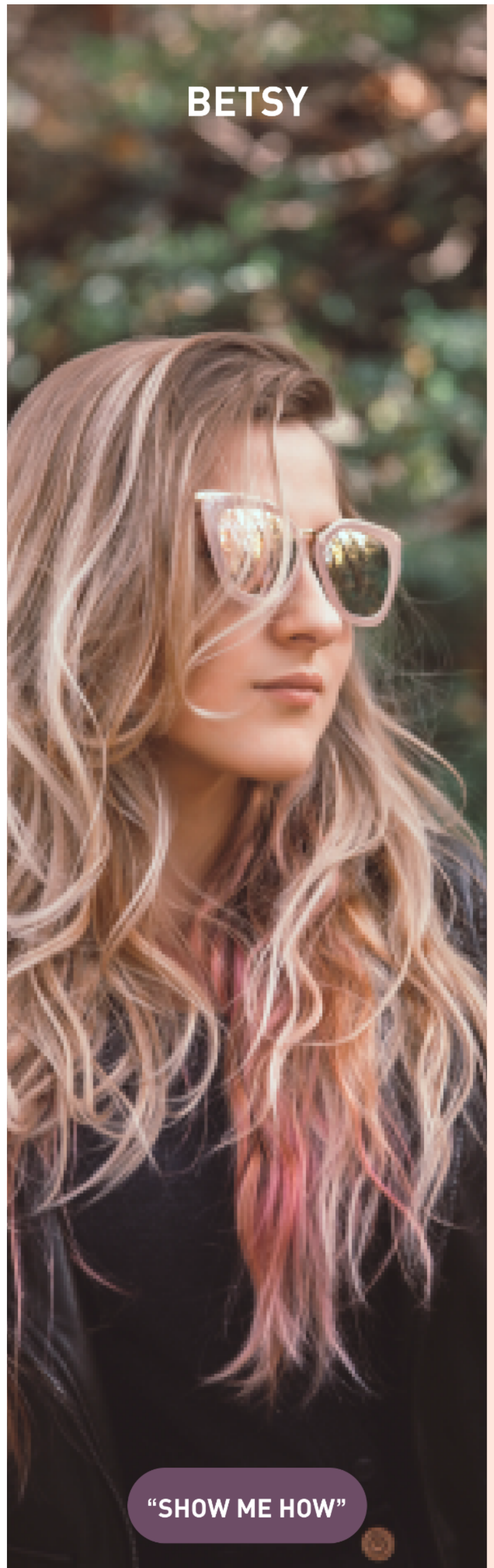
I research stocks and mutual funds to buy and sell. I've been on a pretty aggressive timeline with my investments as I know money in retirement could be impacted by so much – capital gains, fluctuations, any other stuff. If I ever need some money to pay some tuition or other extra expenses, I know I can sell some of these shares. That said, everything is pretty taken care of. I don't owe much.

Hopefully the start-up founder shares will provide me with some income when the company cashes out. If not, it's a lottery ticket. I knew the risk. Speaking of risk, though, I started an account with some play money to see how I'd do compared to my advisor. Guess what? I'm doing better than him! What am I paying him for? And his fees? Ugh. Don't get me started. I don't trust my advisor but I'm too lazy to move people.

I like to check the market every month or so. Well, maybe a bit more lately, as things have been a bit all over the place. I like to see what is going on and why my money is dancing around so much. I want to know the "why" of it. By checking my account, I like to know what I should be doing... whether that is rebalancing a fund to be more conservative or aggressive, transferring money to buy more stock, or considering recommendations to help me make more money. Whether or not I follow these recommendations is up to me. I trust my own research. Everything is electronic for me – no paper.

I want the long and short of it with my accounts. I want to see how I'm doing in the short term "now" and over the long haul. If my investments are not matching what I have in my income projection spreadsheets, then I will definitely start to move some pieces around to get a better return. It's all about nudging and tweaking these accounts to make things good for me, my family, and my grandchildren. **Investing is a game. Let's play.**

Empathy Maps



SAYS

- Fund opened by a relative
- Owns one mutual fund
- Doesn't know how mutual funds work
- Her mutual fund has been making money
- Has a boyfriend/fiancé
- Lives in apartment
- She's a personal trainer.

THINKS

- Her fund is free money
- Doesn't understand investing
- Knows investing is important
- Helps others control their lives, but can't control her own.
- Video explanations would help
- Doesn't want to study investing but wants to just "get it."
- She will invest more when she is married.

DOES

- Wants face-to-face in-person conversations
- Talks to advisor barely at all
- Doesn't want more advisor contact
- Receives paperless statements
- Looks up balances to see if replenishing
- Transfers mutual fund shares when she needs money
- Funds major trips and expenses with fund transfer
- Wants to see charts
- Sees that other people are investing more than her
- Hears advice about what investments to make.

FEELS

- Dislikes "financial-ese"
- Feels guilt over fund transfers
- Feels guilt over impact on retirement
- Uninformed and anxious
- Helpless, loss of control
- Desires control and facility.

PAINS

- Anxious about not being able to retire
- Anxious about not being able to make smart choices
- Doesn't want to stay in Pennsylvania forever
- Frustrated about not understanding investing
- Frustrated that financial stuff is so difficult
- Fears won't be able to retire somewhere warm
- Fears won't ever understand investing
- Fears she will let her fiancé down
- Fears she will appear "stupid" or "uneducated."

GAINS

- Wants to start her own business
- Wants to get married
- Wants to retire to Florida or Arizona
- Wants to understand investing so that she can make better choices for her future
- Wants to not feel lost when she is looking at her investments
- Wants to feel capable and build from there
- Wants control and facility.

GOAL

- Earn back what she's spent
- Understand her account
- Retire someplace warm
- Understand investing to make better choices

SAYS

- 38 years old
- Small business owner
- Wife and daughter
- He "lives for the now"
- Holds four accounts
- Waiting for investments to go up
- He has his advisor do all research
- Talks to his advisor every week
- Calls advisor on the phone
- Will meet advisor in-person where time
- Comfortable with a computer managing funds/stocks.

THINKS

- Burned by an advisor in the past
- Interested in buying more stock
- Money market fund is "better than nothing"
- Wants to retire but is reticent to make movement in his investments
- He knows he is being stubborn
- "If a machine could help me, I'd be open to it."

DOES

- Will glance at MSN or Google for research ideas
- Wants to talk to advisor over phone or in-person
- Looks up balances for performance
- Receives paperless statements
- Never touches investments
- Looks for solid performers but never "pulls the trigger"
- Looks up stocks and sectors
- Averse to trading online (so far).

FEELS

- Frozen, scared
- Guilt over inaction
- Guilt over impact on retirement
- Informed and frustrated
- Feels a loss of control
- Averse to debt
- Self-flagellates.

GOAL

- Save for daughter's education
- Build up small business
- Retire to Sebastian, Florida

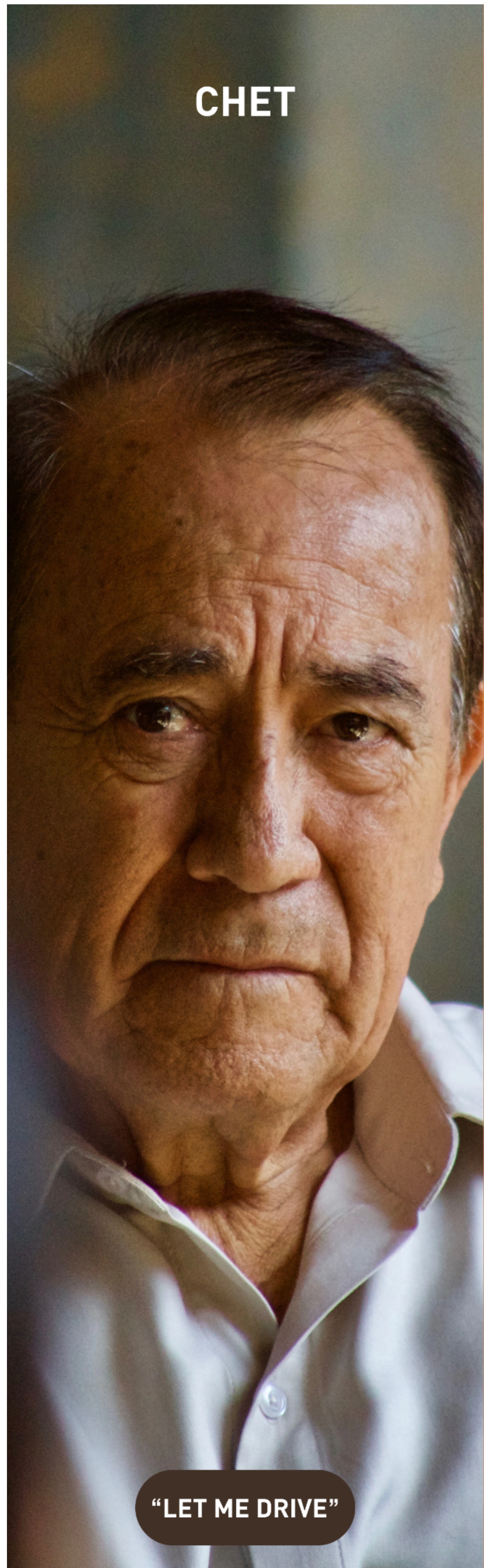
PAINS

- Anxious about not being able to retire
- Anxious about keeping his small business going
- Anxious about his daughter's education
- Frustrated about not investing sooner
- Frustrated that he is afraid to invest
- Fears won't be able to retire in Florida
- Fears he won't ever get over his inaction
- Fears that he will let his family down.

GAINS

- Wants a 20% ROI on his investment
- Wants projections to better understand stocks
- Wants risk tools to better understand risk
- Wants to run scenarios to see the future
- Wants to see the future so he feels more secure
- Wants control and facility.

CHET



"LET ME DRIVE"

SAYS

- Works full time
- 58 years old
- Debt free
- Wife and children
- Multiple accounts and 529s
- Waiting for investments to go up
- Does all of his own research
- No value in talking to advisor
- Uses $15K in play money to beat advisor
- Doesn't trust the research out there
- Only trusts own research or tips from a friend/associate.

THINKS

- "I should be richer than I am"
- "I try to teach my kids this stuff. It must be hard for some people"
- "I want to have enough so I can stop working so hard"
- I'll be damned if I am poor again.
- I'll relax when I'm dead
- Always more to be earned.

DOES

- Looks up recommendations
- Looks up sector information
- Looks up allocations for opportunities to rebalance
- Compares performance data
- Exports tax information for accountant
- Performs Monte Carlo simulations for own projections
- Views long term history on accounts
- Very active in buying/trading online
- Wife acts as delegate
- Uses smart phones to look up positions of investments
- Uses desktop computer to place a trade/buy.

FEELS

- Confident
- Motivated out of fear
- Competitive
- Frustrated - performance
- Frustrated - fees
- Averse to debt.

GOAL

- Semi-retired
- Working as a consultant
- Moving to where his kids are (Arizona)

PAINS

- Anxious about not being able to retire
- Anxious about being forced back into poverty
- Anxious about relocating to where kids are
- Frustrated with fees
- Frustrated that he constantly outperforms advisor.
- Fears that he will let his family down
- Fears that he will be forced into permanent retirement.

GAINS

- Wants to know when he can fully retire
- Wants to know how much he'll have when retires
- Wants to see external accounts
- Wants to see top 10 movers
- Wants curated research not from advisor
- Wants to view market against investments
- Wants reduced or no fees
- Wants to outperform advisor every quarter.

BASIL

SAYS

- Started this job two years ago
- Accounting major
- Doing fairly well in the role
- Noticing a disparity between what he is showing and client $ amounts
- Works out five times a week
- Investment Advisor.

THINKS

- The money should match
- Otherwise, what am I doing?
- Wants to show clients a better future
- Also, wants a promotion
- Willing to do what it takes - within bounds.

DOES

- Receives calls from clients when the money doesn't match
- Puts out a lot of fires when it comes to anxiety
- Looks at numbers to see if they align
- Most times, they don't
- Ends up calling the bank for the client to get the correct amount
- Prints and sends reports to the clients
- Prints and sends tax statements to the clients
- Occasionally will see a client - but that's rare anymore.
- Provides advice when elicited but there is so much research out there.

FEELS

- Feels useless
- Feels guilt over money not match
- Didn't get into this so I could put out emotional fires
- Anxious
- Helpless, loss of control.

PAINS

- Anxious that dollar amounts do not match up
- Anxious that the new site will not be available to him
- Doesn't want to stay a junior forever
- Frustrated about clients not talking to him
- Frustrated that the system feels so "old"
- Fears he won't get a promotion
- Fears he won't receive trusted status.

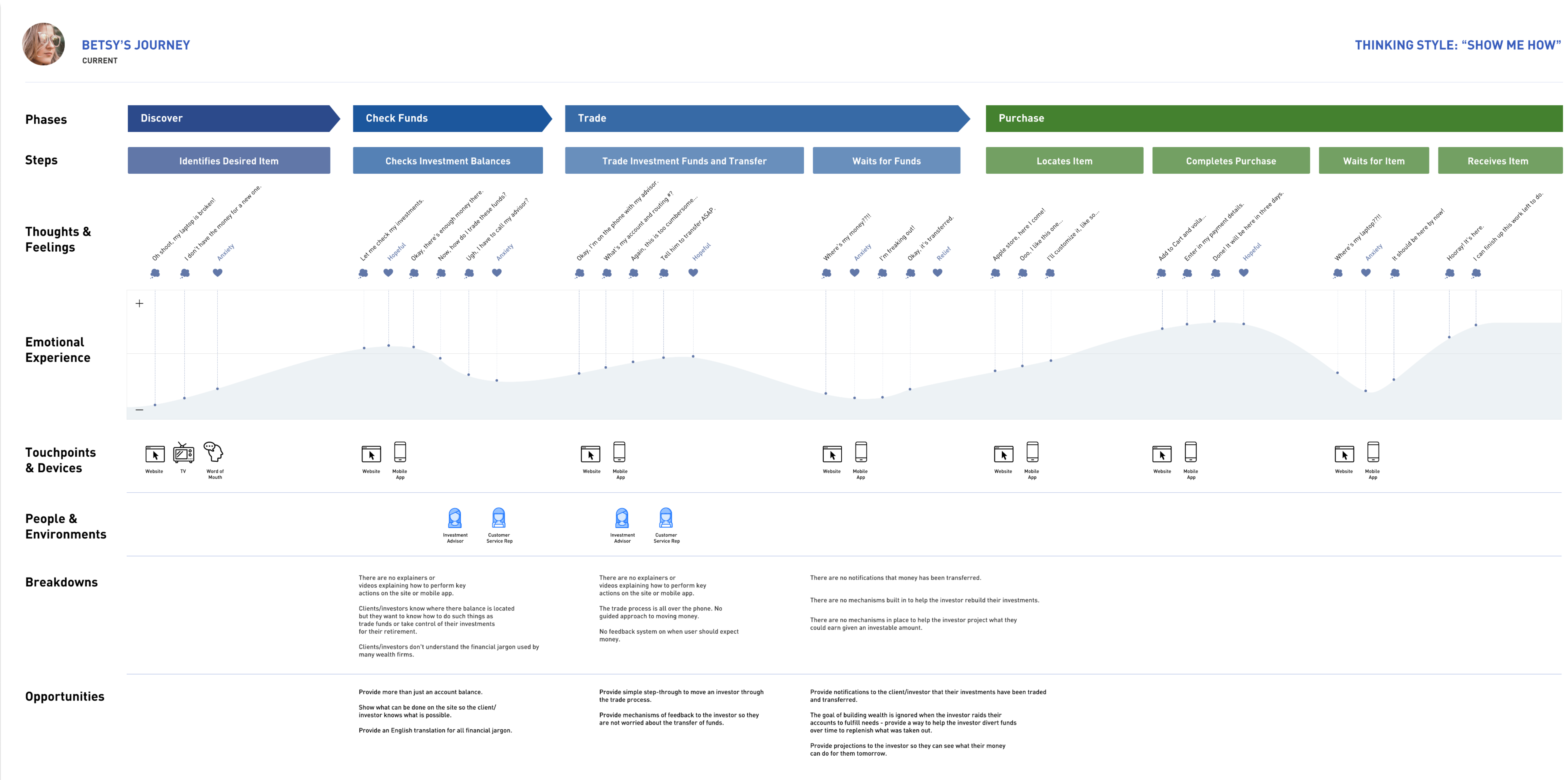
GAINS

- Wants a promotion
- Wants the money that goes along with it
- Wants to retire to Sweden
- Wants a system that reflects an accurate dollar amount so he secures more trust
- Wants a system that works but doesn't completely take away his ability to help
- Wants to feel of use to his clients.

GOAL

- Retain more business for the bank
- Maximize returns to receive preferred/trusted status
- Receive a promotion

Customer Journey Maps (Current State)



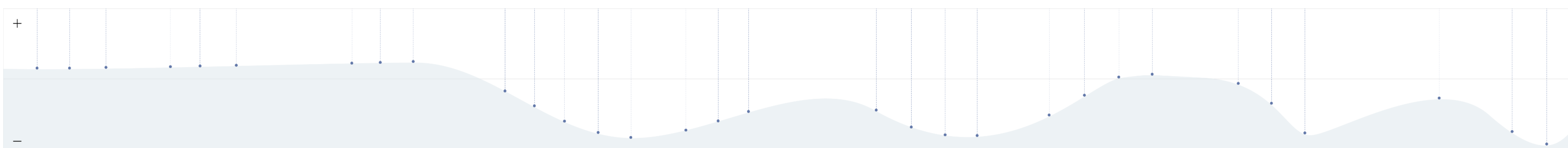
Betsy's Journey - Current

JACK'S JOURNEY
CURRENT

THINKING STYLE: "LET IT RIDE"

Phases	Steps	Thoughts & Feelings	Touchpoints & Devices	People & Environments	Breakdowns	Opportunities
Discover	Receives a Tip	Jim told me about a stock. I should investigate it a bit. Hopeful	Word of Mouth Website		The investor is forced to go out and locate their own tips or stocks/funds of interest.	The investment advisor could send along via email/SMS potential tips and research to meet the needs of the wealth client/investor (based on their risk profile, scenarios, and what they expect to earn over time, etc).
	Sees Interesting Stock	I saw this stock in an ad. I think it could go far! Hopeful	TV Website			
Consult	Checks Bank Account	What's happening with my money? Do I have enough to buy this stock? Okay, I do. Phew! Content	Website			
	Talks to Advisor	I should talk to Bob, my advisor. Okay, he says it is a good idea. I don't know though. I've been burned in the past. Anxiety	Website	Investment Advisor		Provide short URLs to the client so they can go directly to the stock/fund in question. Provide research to the investor so that they can view the stock/fund in line with all of the research and analysis.
Compare	Compares Against Portfolio	Compared to my holdings, it's good. Anxiety I don't know though.	Website		There are no explainers or videos explaining how to perform key actions on the site or mobile app. Clients/investors don't understand the financial jargon used by many wealth firms. There are no projections to show how today's performance could lead to potential gains.	Provide in-context explainers or how-to videos so the user knows what to do on the site. Use everyday language to explain hard to understand financial jargon. Provide projections to the client/advisor so they can see what their money can do for them tomorrow.
	Assess Risk of Purchase	Let's do some risk assessment. This purchase seems less risky. I don't know though. Anxiety	Spreadsheets		There is a missed opportunity to let the investor know what the risk is compared to what they already own.	Visualize risk so the investor can see the value the service is providing in their own research and analysis.
	Runs Scenarios	I'll run some scenarios on this site. This site has never been wrong. Okay, it looks good. Relief	Website		There is no scenario generation on the investment site to help investors run the numbers. The investor has to go to another source to run numbers before returning to the investment site to buy.	Provide the levers to play with various scenarios so the investor can visualize the results of their purchasing funds/stocks.
Save	Places in Cart	Where is that stock? I'll put it in my cart. Anxiety	Website		Although not necessarily expected, there is no upsell in this cart scenario. This investor is looking for clues on what to buy and not providing that information is a missed opportunity.	Provide similar stocks and funds with similar profiles (given risk and scenario-play) to provoke interest and potential investigation. If an upsell is too risky in abandoning the cart, consider funneling to buy and then upsell after the transaction.
	Forgets to Buy	When I have time, I'll buy. Did I do the right thing? Regret	Email SMS	Investment Advisor	There are no reminders to let the investor know that they have left something in their cart. There is no information letting the investor know what they could potentially earn with the purchase a stock/fund. Advisor is unaware that a purchase was abandoned.	Provide SMS and email reminders that the investor has left something in the cart. Remind the investor about potential earnings to see benefit of the purchase. Use visualizations to drive the concept home to the investor. Send notification to the advisor that the fund was left in cart to help motivate the client/investor.

Emotional Experience



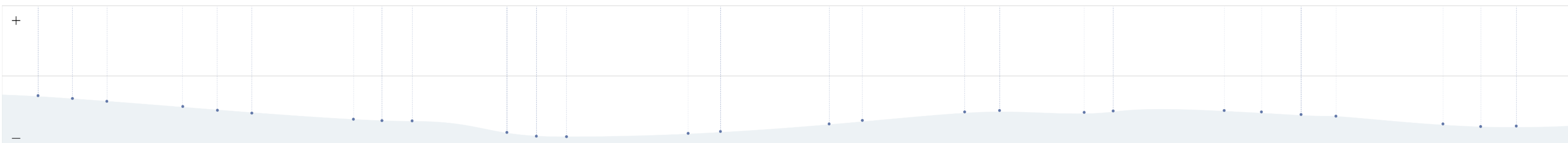
Jack's Journey - Current

CHET'S JOURNEY

CURRENT

THINKING STYLE: "LET ME DRIVE"

Emotional Experience



Phases	Steps	Thoughts & Feelings	Touchpoints & Devices	People & Environments	Breakdowns	Opportunities
Discover	Receives a Tip	Fred mentioned a new company. I should look into it. *Dubious*	Word of Mouth, Website		The investor is forced to go out and locate their own tips or stocks/funds of interest.	The experience can be enhanced to provide tips or stock/fund information to the self-serve investor.
Discover	Browses Investments	While I'm at it, I'll look at others. Ok, here are some potential picks. *Dubious*	Website		The investor is forced to go out and locate their own tips or stocks/funds of interest.	The experience can be enhanced to provide tips or stock/fund information to the self-serve investor.
Research	Looks at Industry	I can't really drill-down by industry. Where's the P/E? *Frustrated*	Website		There is no place to look for industry-wide information in the current experience.	Provide industry-wide information in a full-service API to the investor.
Research	Looks at Company Info	This site links out to the company. This isn't helpful for my research! *Angry*	Website		Very little company information is provided to the investor in the current experience. In most cases, the investor is sent to the company site for more information.	Provide company-based information in a full-service API to the investor.
Research	Looks at Historical Info	I give up. Is there no historical info? *Frustrated*	Website		There is no place to look for historical information for a company in the current experience beyond one graph.	Provide historical information by way of a robust API for this type of self-service investor.
Consider	Runs Simulations	Ok, I can run my own projections. Based on what I know, I'll compare.	Spreadsheets		The investor has no way of running projections or forecast into the future in the current experience.	Provide projections (Monte Carlo, among others) to the investor to aid in forecasting investment performance over time.
Consider	Makes a Choice	There are no choice tools on this site! *Frustrated*	Website		There are no decision tools in the current experience for the investor to make a choice. The investor has to go to another source to run numbers before returning to the investment site to buy.	Provide the levers to play with various scenarios so they can visualize the results of their purchasing funds/stocks.
Consider	Makes a Purchase	Oh, now I have to call my advisor to buy. *Frustrated*	Website, Phone Call	Investment Advisor	Investment purchases have to go through an advisor. This type of investor wants no contact with the advisor.	Implement a cart/buy system to empower investors in buying their own stocks/funds. What is more important: the touchpoint of the advisor making the sale or making the sale?
Evaluate	Views Performance/Allocation	I want to see how I'm performing. What is going on with my allocation? How can I do better? *Anxious*	Website		When the investor wants to know how their investments are performing, they head to the performance and allocation section of the web site. These are the tools available to show how one is performing in the market.	Provide graphs of performance compared to major indices. Allow for the investor to drill down into the allocation data to figure out what is performing the best for them.
Evaluate	Views After a Major Event	Something big just went down. What did this event do to my money? *Anxious*	Website		The investor will occasionally head to the website to view performance after a major event.	Provide context around major events with in-depth research.

Chet's Journey - Current

Design Principles

DESIGN PRINCIPLE 1//

Sharp and personalized

Each portfolio is different. Our products are personalized. We learn from our users who they are and what they like, delivering a tailored experience to view their investments.

DESIGN PRINCIPLE 2//

Complexity begone

Our products reduce the complexity of investment terminology by simplifying interactions and guiding our users with everyday language.

DESIGN PRINCIPLE 3//

One family

Our products make up one experience continuum or family. This family is made up of many distinct experiences across many touchpoints and devices.

DESIGN PRINCIPLE 4//

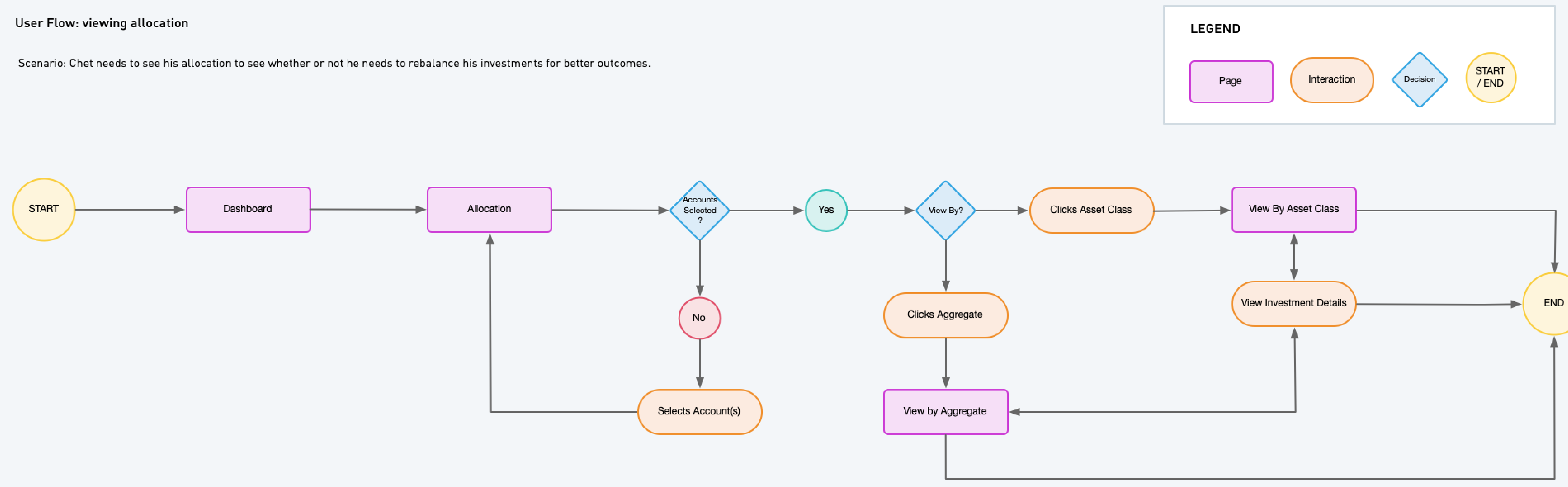
Build trust

Our products are made up of identifiable and repeatable patterns. Our products show the same dollar amounts across touchpoints to establish trust.

User Flows (Current State)

User Flow: viewing allocation

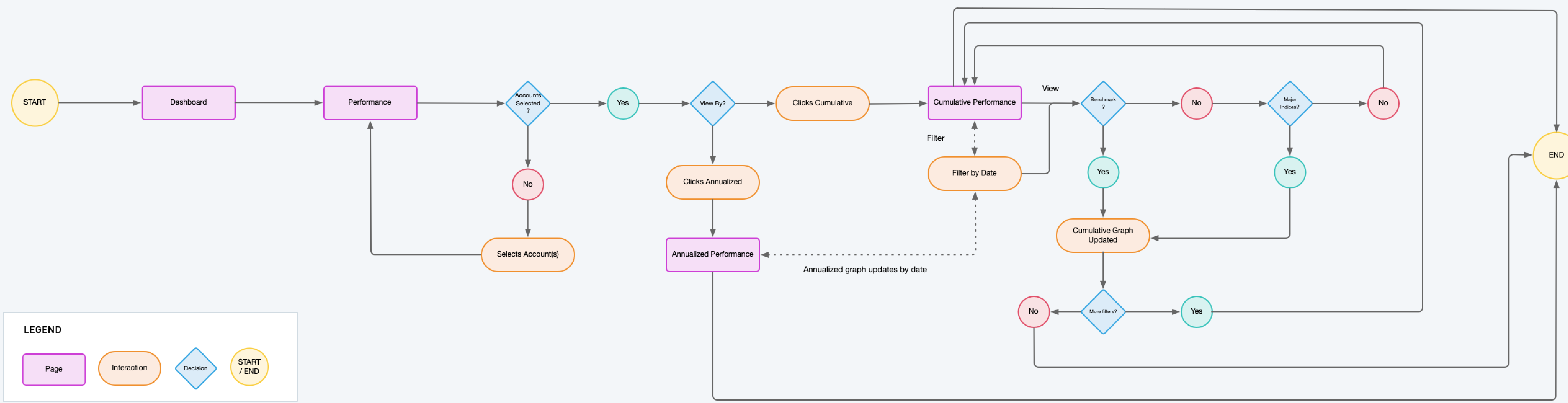
Scenario: Chet needs to see his allocation to see whether or not he needs to rebalance his investments for better outcomes.



Allocation - Current

User Flow: viewing performance

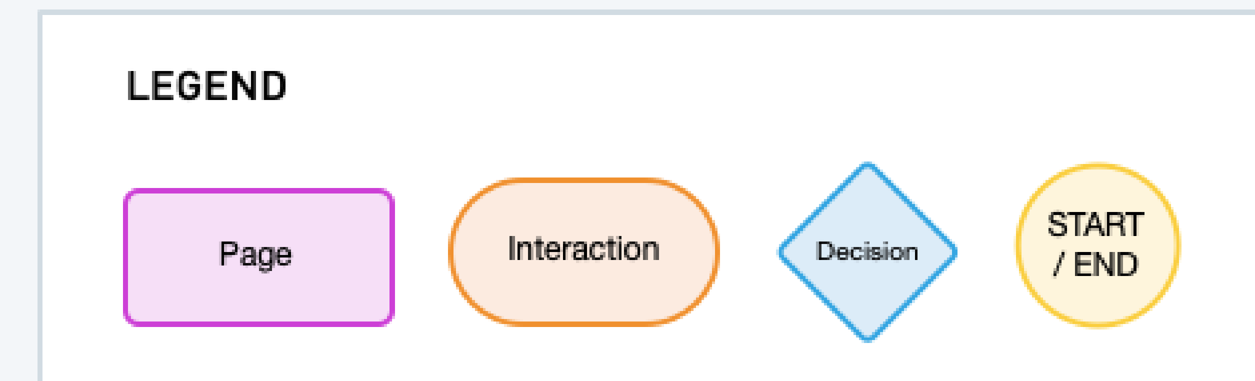
Scenario: Jack needs to see how well his investments are performing to verify whether or not he wants to make a trade.

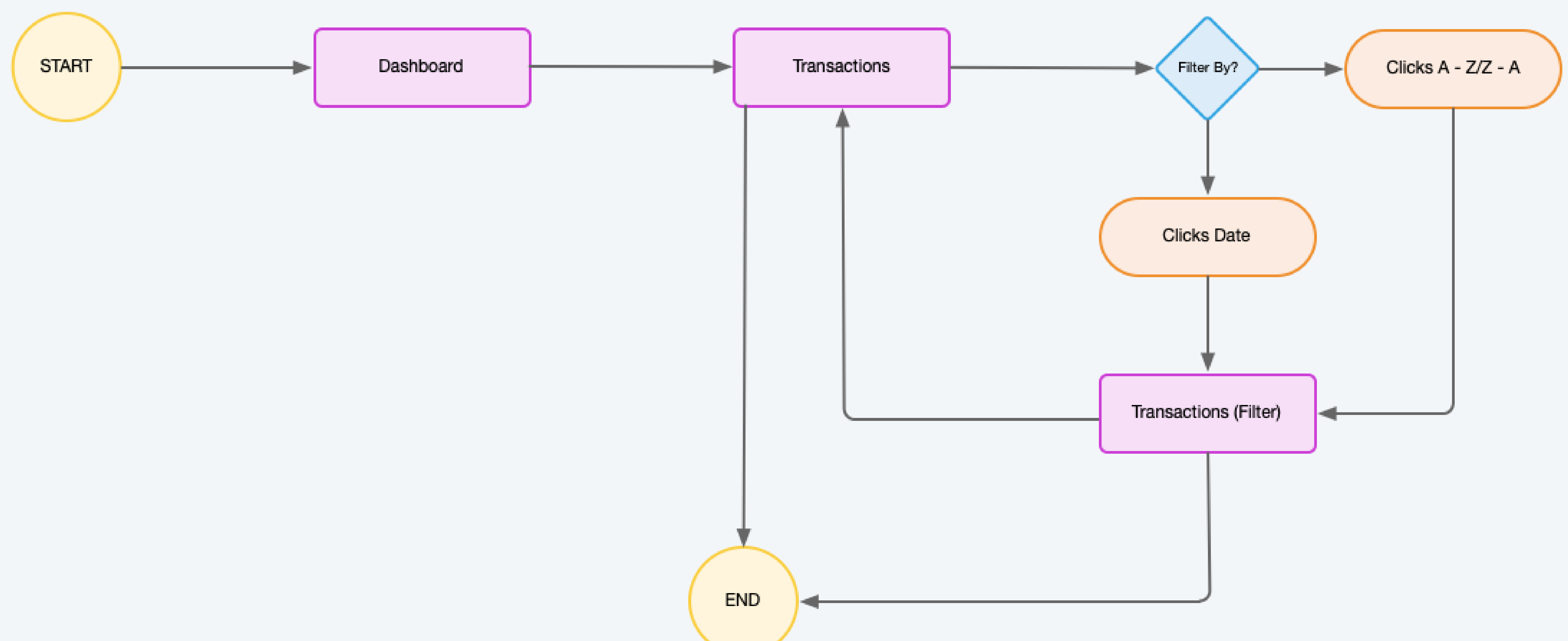


Performance - Current

User Flow: viewing transactions

Scenario: Jack needs to see his transactions to check the dividends he's received so far this year.

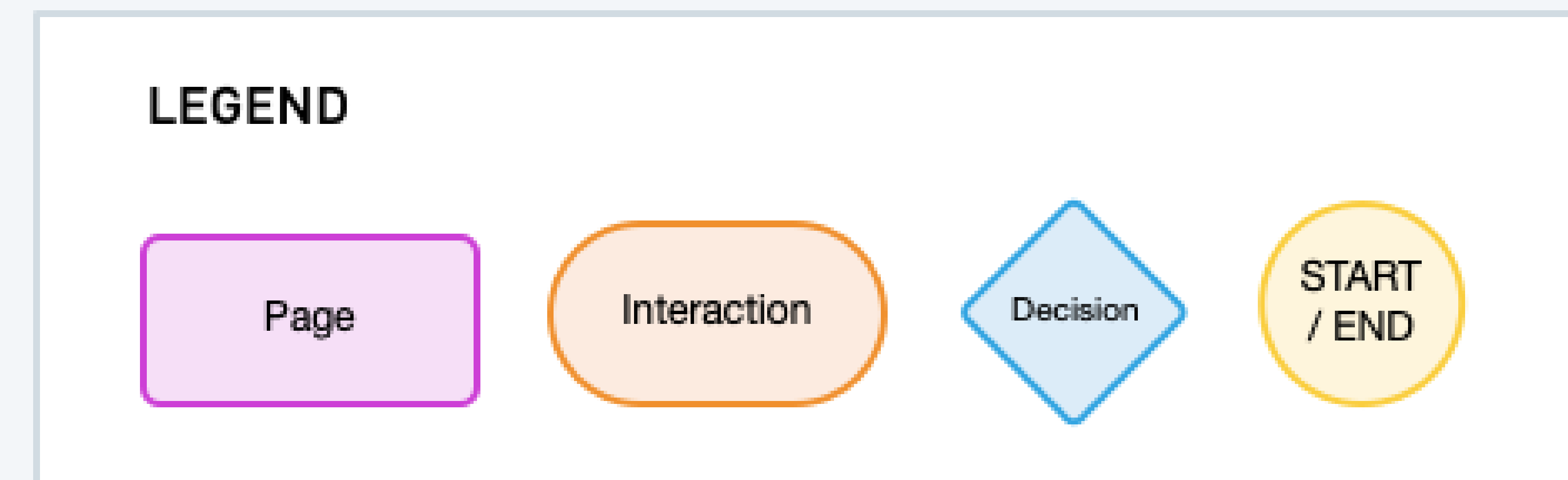




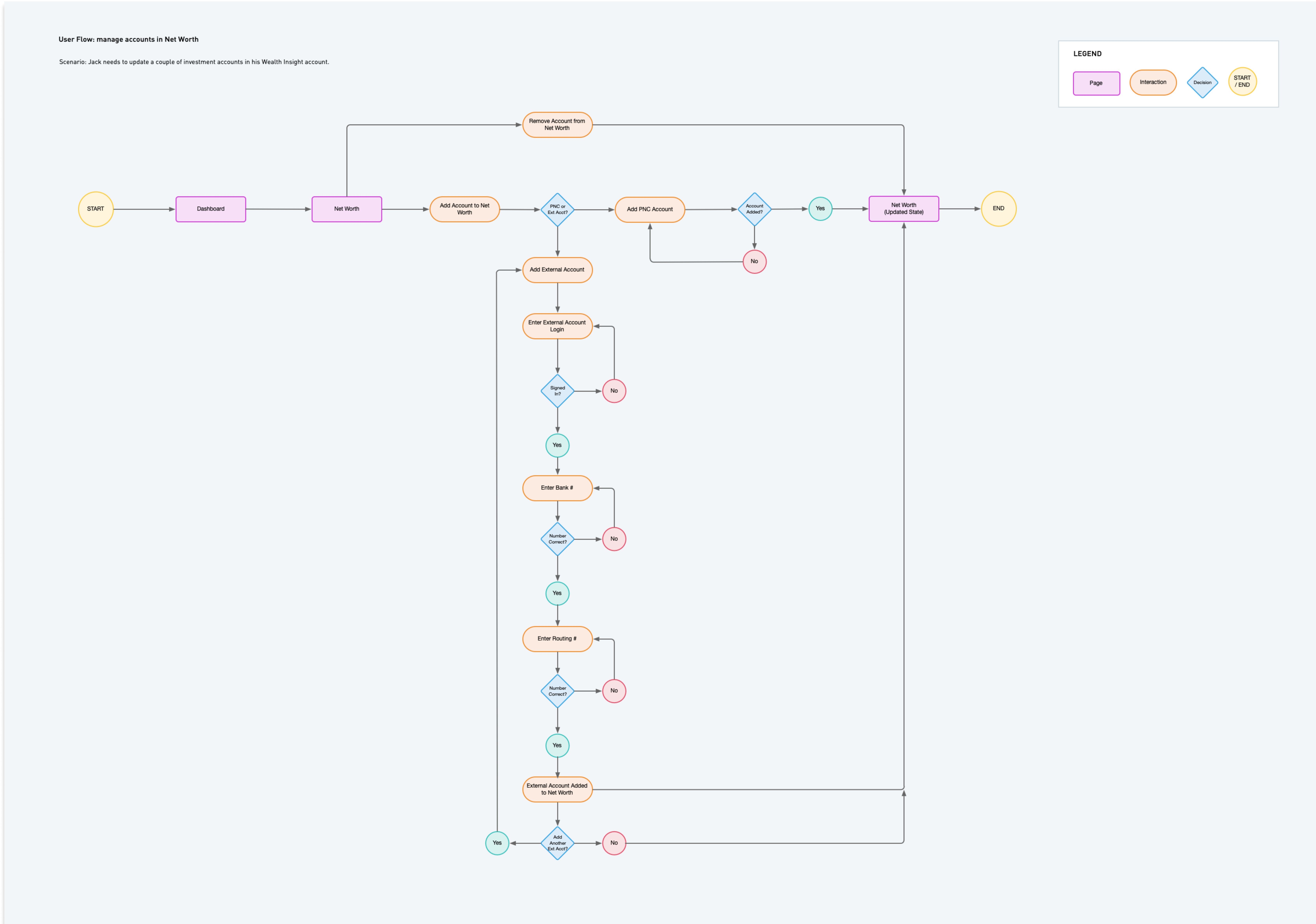
Transactions - Current and Future

User Flow: viewing income

Scenario: Jack needs to view his income for the month of April.



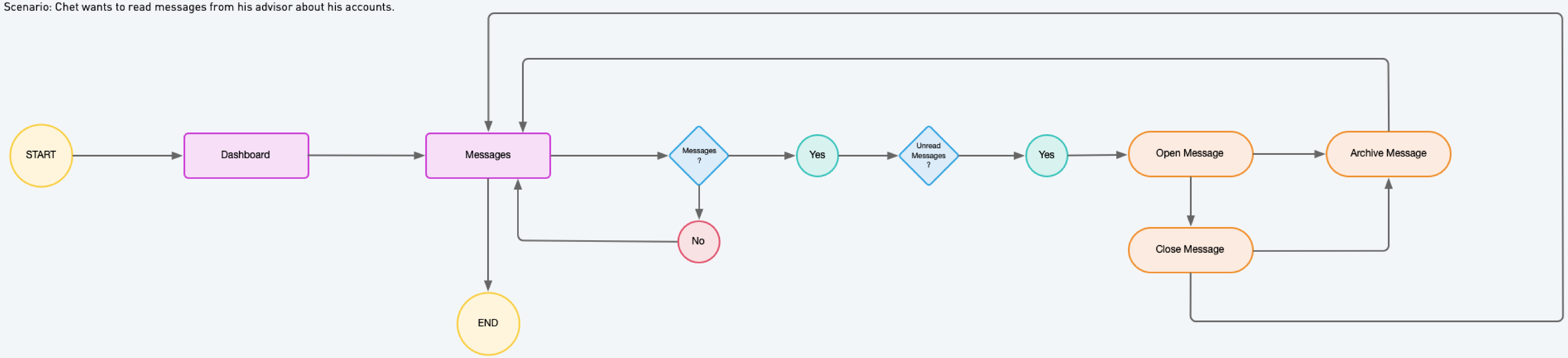
Income - Current and Future

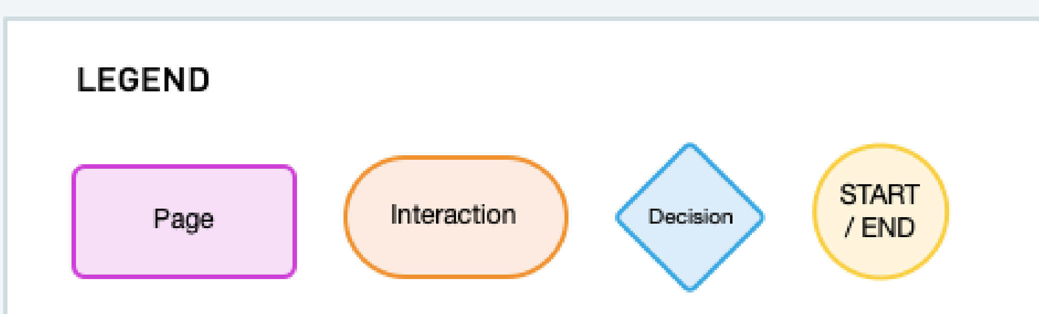


Net Worth - Current

User Flow: reading messages

Scenario: Chet wants to read messages from his advisor about his accounts.



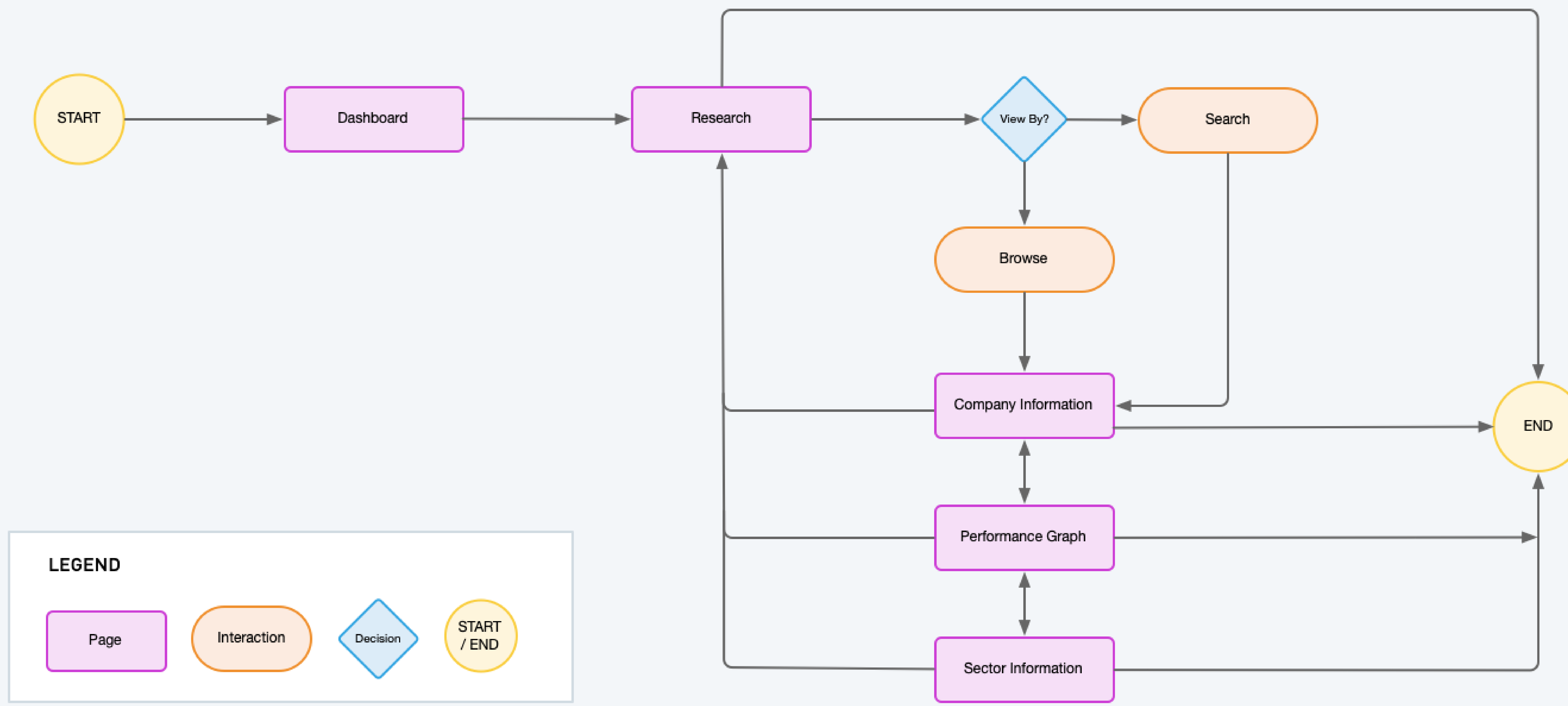


Messages - Current

Research - Current

User Flow: performing research

Scenario: Jack wants to perform some research to see if a stock or fund is worth buying.



Site Map (Current State)

"AS-IS" SITE MAP

Customer Journey Maps (Future State)

BETSY'S JOURNEY

FUTURE

THINKING STYLE: "SHOW ME HOW"

Phases: Discover · Check Funds · Trade · Purchase

Steps: Identifies Desired Item · Checks Investment Balances · Trade Investment Funds and Transfer · Waits for Funds · Locates Item · Completes Purchase · Waits for Item · Receives Item

Discover — Identifies Desired Item

Thoughts & Feelings: Oh shoot, my laptop is broken! / I don't have the money for a new one. / Anxiety

Touchpoints & Devices: Website, TV, Word of Mouth

Scenarios: Betsy's laptop breaks down when she is working on her graduate school work. She uses this laptop in her work as a physical therapist. She checks her bank account balance and it is quite low. To continue on her schoolwork and career, she'll need a new computer.

Check Funds — Checks Investment Balances

Thoughts & Feelings: Let me check my investments. / Hopeful / Okay, there's enough money there. / Oh, I see what I need to do here! / This is so freakin' simple! / Content

Touchpoints & Devices: Website, Mobile App

People & Environments: Investment Bot, Customer Service Rep

Proposed Changes:

Provide plenty of explainer videos and how-to videos on how the service works for desktop, tablet and mobile form factors.

Provide everyday language explanations for financial jargon.

Provide projections on what money will do over time to resist raiding the investments.

Scenarios: Betsy raids her investment accounts when the money runs low. She's used her investments to fund her spring break trips and other expenses as they've come along. She checks her investment accounts, and she has more than enough to cover the cost of a new laptop.

Trade — Trade Investment Funds and Transfer

Thoughts & Feelings: Okay, I found the place to do this. / It auto-fills my bank account info! / I just hit the trade button… / Okay, it's set to trade and transfer ASAP. / Hopeful

Touchpoints & Devices: Website, Mobile App

People & Environments: Investment Bot, Customer Service Rep

Proposed Changes:

Provide a guided approach to placing transfers. Consider using a bot to triage any questions on the expected transfer date.

Provide a primary CTA to perform transfers to disambiguate placement on the site or app.

Do not make transfers over-reliant on phone calls or in-person encounters.

Scenarios: Betsy easily sets up a trade to move funds from her investment funds to her saved bank account information. She sets up this trade (and transfer) to take place ASAP so that she can stop daydreaming of a laptop to placing the order.

Trade — Waits for Funds

Thoughts & Feelings: I'll get this money this Monday. / Relief / This just in.. My money transferred! / I'm excited! / Content

Touchpoints & Devices: Website, Mobile App

Proposed Changes:

Provide SMS notifications for the transfer of funds.

Provide email notifications for the transfer of funds.

Provide iOS notifications for the transfer of funds.

Scenarios: Betsy receives a series of notifications (SMS or email) that her funds have traded and transferred to her bank account. She is relieved to find that her money is ready for use in buying the replacement laptop.

Purchase — Locates Item

Thoughts & Feelings: Apple store, here I come! / Ooo, I like this one… / I'll customize it, like so…

Touchpoints & Devices: Website, Mobile App

Scenarios: Betsy ventures on to the Apple website and selects a laptop for her schoolwork and physical therapist work. After making customizations, she adds the laptop to the cart for purchase.

Purchase — Completes Purchase

Thoughts & Feelings: Add to Cart and voila… / Enter in my payment details. / Done! It will be here in three days. / Hopeful

Touchpoints & Devices: Website, Mobile App

Scenarios: After adding in her payment details to her purchase, Betsy finalizes and places the order. She sees that the order will take two to three business days to arrive at her house.

Purchase — Waits for Item

Thoughts & Feelings: Where's my laptop??!! / Anxiety / It should be here by now!

Touchpoints & Devices: Website, Mobile App

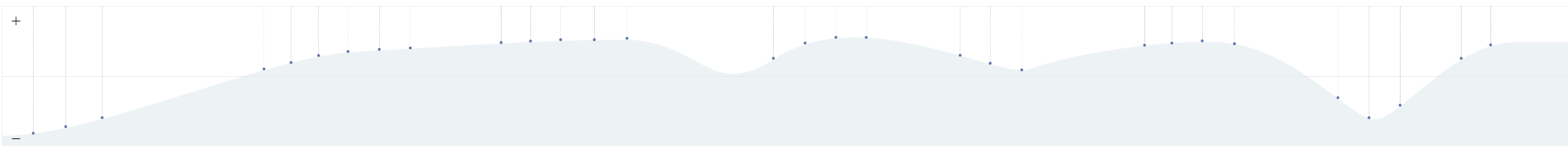
Scenarios: Now comes the hard part, the waiting. Betsy nervously awaits the delivery of her laptop from FedEx.

Purchase — Receives Item

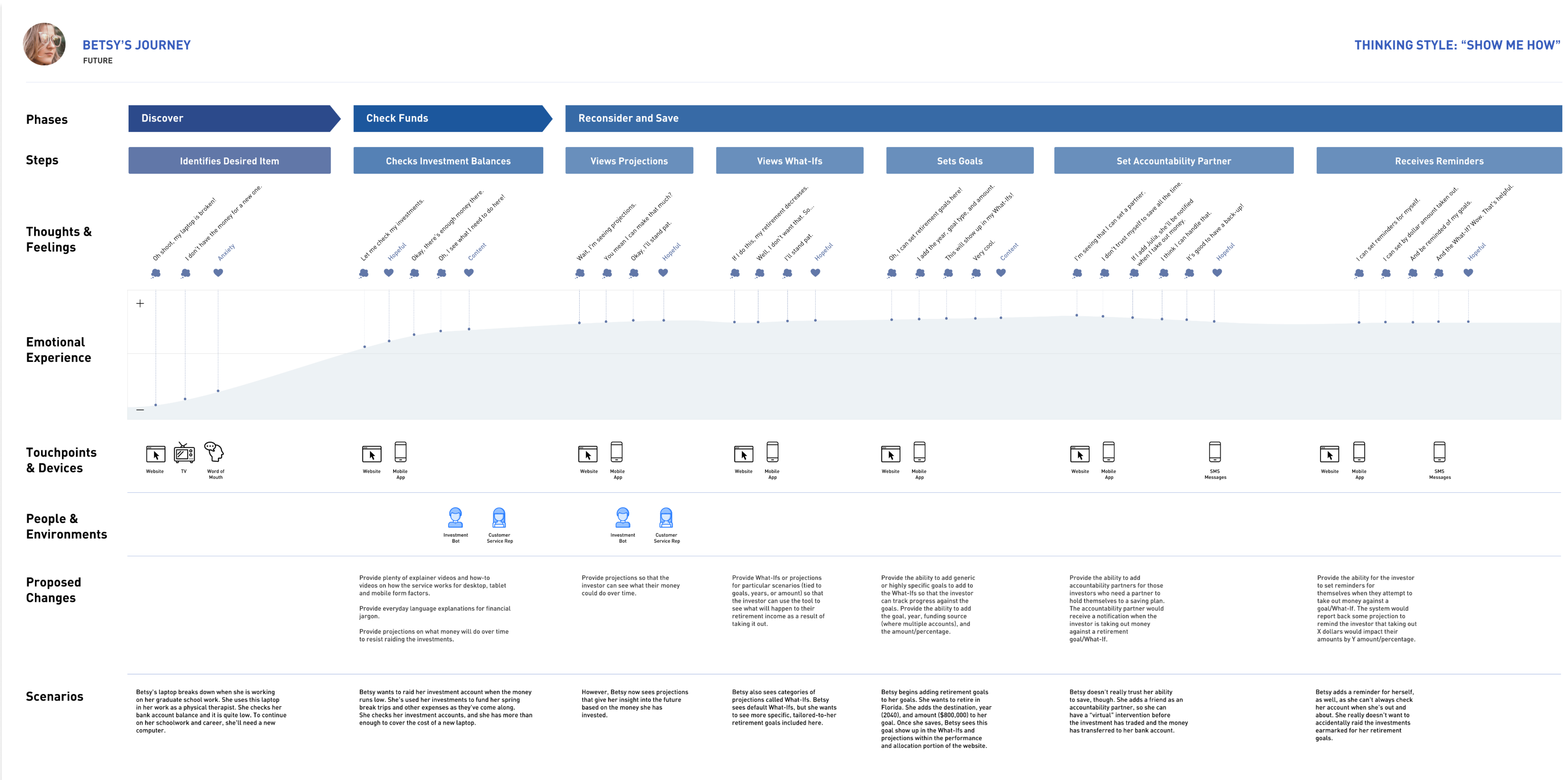
Thoughts & Feelings: Hooray! It's here. / I can finish up this work left to do.

Scenarios: After signing for her laptop, Betsy has received her laptop! She's excited to get it set-up and put it to use for her schoolwork and client work.

Emotional Experience



Betsy's Journey - Future 1

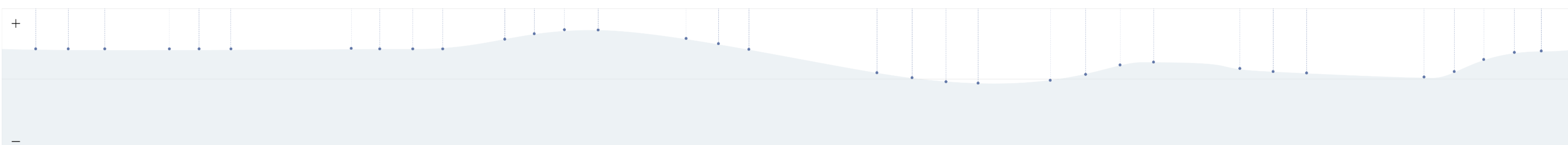


Betsy's Journey - Future 2

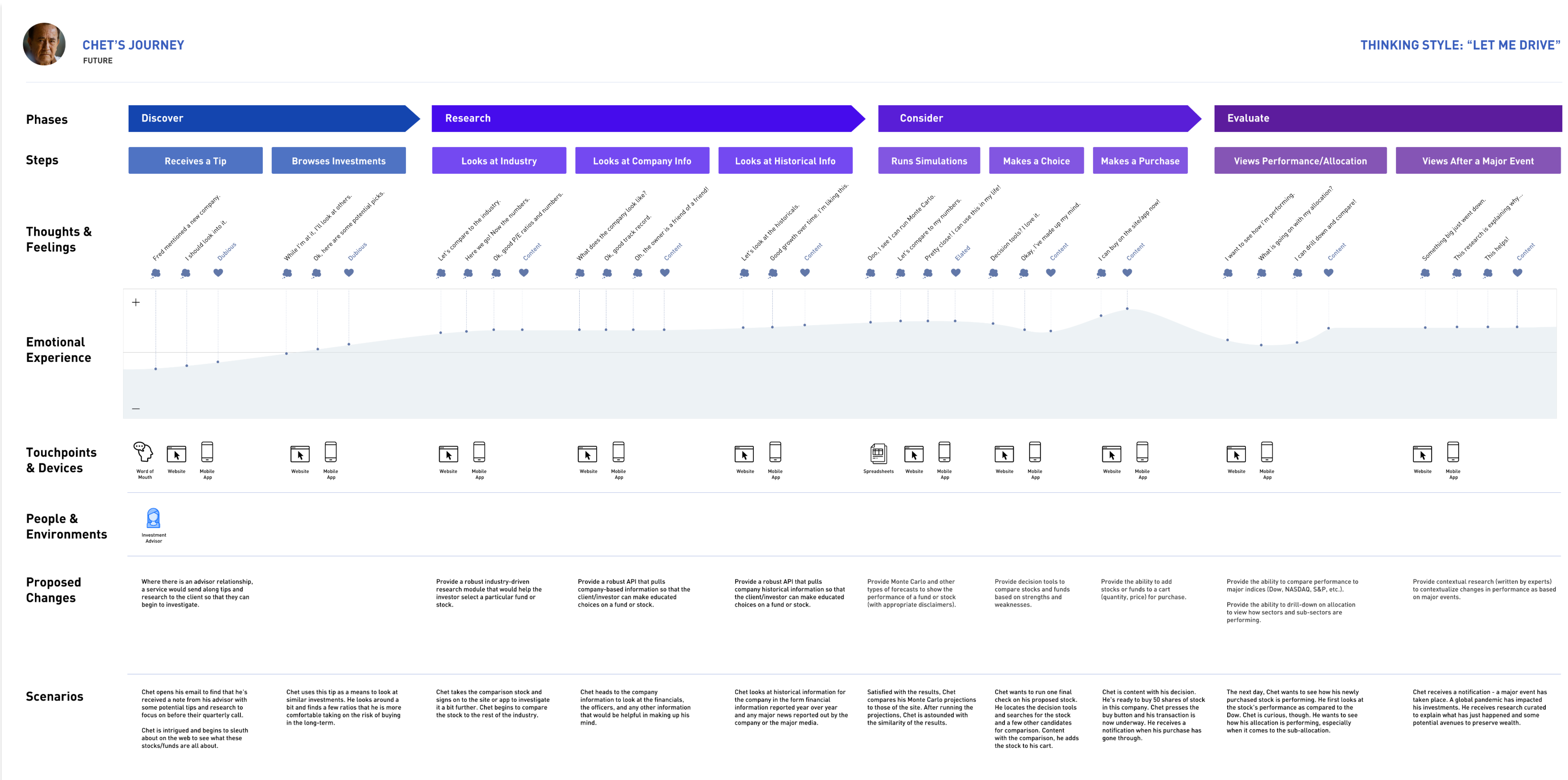
JACK'S JOURNEY

FUTURE

THINKING STYLE: "LET IT RIDE"

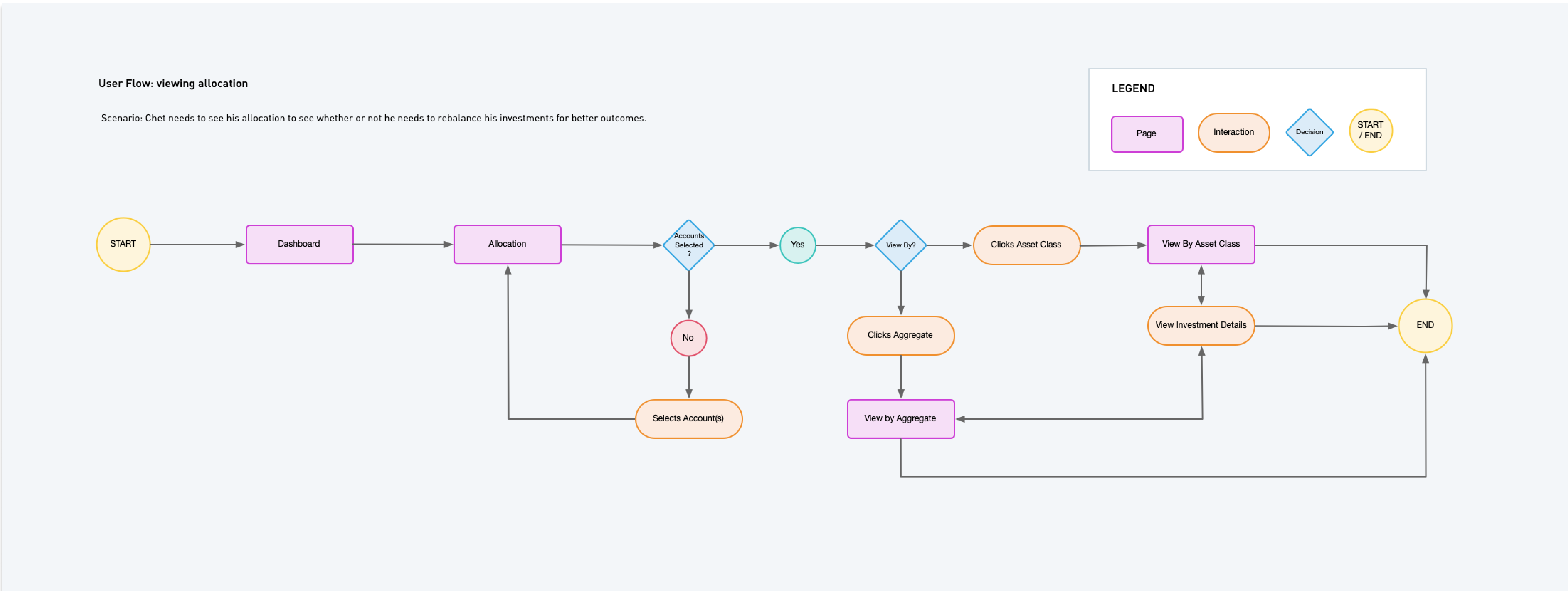
Phases	Discover		Consult		Compare			Save	
Steps	Receives a Tip	Sees Interesting Stock	Checks Bank Account	Talks to Advisor	Compares Against Portfolio	Assess Risk of Purchase	Runs Scenarios	Forgets to Buy	Buys Investment
Thoughts & Feelings	My advisor sent me this tip. I'll check it out and see if it is relevant. Hopeful	I saw this stock in an ad. I think it could go far! Hopeful	What's happening with my money? Do I have enough to buy this stock? Okay, I do. Phew! Content	I'll ask my advisor about that research. He just sent me an entire write-up. This gives me a little more confidence! Content	Compared to my holdings, it's good. Some Anxiety I don't know though.	Let's do some risk assessment. This purchase seems less risky. I don't know though. Some Anxiety	I'll run some scenarios on this site. This site has never been wrong. Okay, it looks good. Content	I'll put the stock/fund in my cart. Did I leave this in my cart? Whoops! Let me fix that!	I'll add payment details. Ok, it went through! Content Stocks/funds like this one? Intrigued
Emotional Experience									
Touchpoints & Devices	SMS Email Word of Mouth Website	TV Website	Website	Website SMS Email	Website	Website	Website	Email SMS	Website
People & Environments	Investment Advisor			Investment Advisor				Investment Advisor	
Proposed Changes	Where there is an advisor relationship, a service would send along tips and research to the client so that they can begin to investigate.		Provide a service to pull in all bank accounts so that the investor does not have to go to their bank to look up this information.	Have the advisor or a service send short URLs along curated research centered on prospective stocks/funds. Provide advisor with a reference to the research provided, so that they are not lost when the client/investor gets in contact. Dedicate a space on the client portal(s) to this information so it is referable.	Provide explainers/how-to videos to show how to compare stocks/funds to current holdings. Provide everyday language instead of financial jargon. Provide the means to project current or potential holdings to future performance.	Provide a way to compare and visualize risk across current and potential investments.	Provide the means to run scenarios (using various levers) to compare current and potential investments.	Provide reminders to the client/investor that they have left stock/fund in their cart. Provide teaser information letting them know how much they could possibly make with the stock/fund to keep them on task. Let the advisor know that they left the stock/ fund in their cart.	Provide an upsell to similar stocks/funds to the client/user after purchase.
Scenarios	Jack opens his email to find that he's received a note from his advisor with some potential tips and research to focus on before their quarterly call. Jack is intrigued and begins to sleuth about on the web to see what these stocks/funds are all about.	Jack just heard about a new tech company coming on the market via his subscription to Fast Company. This company has piqued his interest and he begins to rummage about for details to discuss with his advisor.	Jack signs on to his investment company's web site and checks his bank balances on his dashboard. He sees that he has enough to make a purchase.	Jack calls his advisor, Bob, and discusses the tech company. Bob thinks it could be a good idea, but he also refers to the research that was sent to Jack earlier. They discuss the upsides and downsides of each and formulate a plan.	Jack has a plan in place but he wants to double check these potential investments against his current holdings. He pulls up the projections and everything looks serviceable for his retirement needs.	Jack still has an inkling of doubt. He wants to check the risk of these potential investments to his current holdings. After he runs the numbers, nothing comes up too risky.	In one last check, Jack decides to run some scenarios (moving various levers) to compare the potential investments to his current portfolio. The scenarios check out and he is convinced this is a good way to go.	Jack has forgotten about the investments he left in his cart. Jack receives a reminder via email or SMS to help prompt him to finish or cancel his purchase. His advisor, Bob, receives a notification that the stocks/funds were abandoned to remind Jack at a later time.	Jack places the investments into his cart and provides payment. After the purchase, Jack is offered a few other stocks/funds similar to what was purchased. Jack is intrigued. These could help him get to his retirement that much faster.

Jack's Journey - Future



Chet's Journey - Future

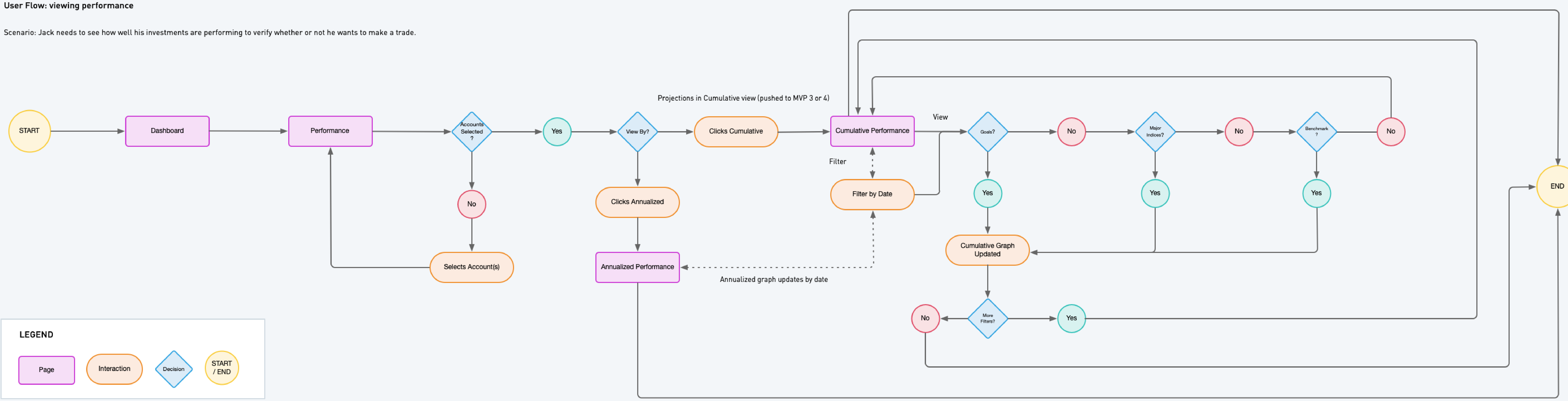
User Flows (Future State)



Allocation - Future

User Flow: viewing performance

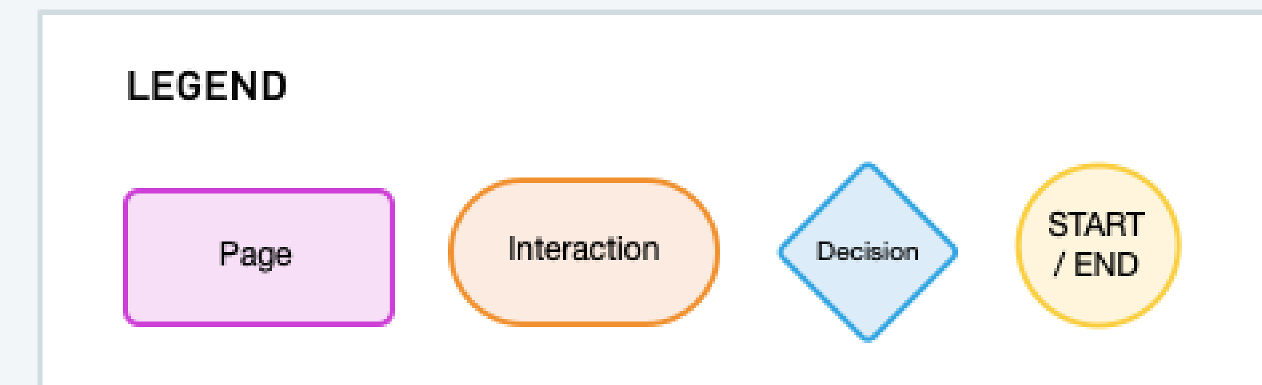
Scenario: Jack needs to see how well his investments are performing to verify whether or not he wants to make a trade.

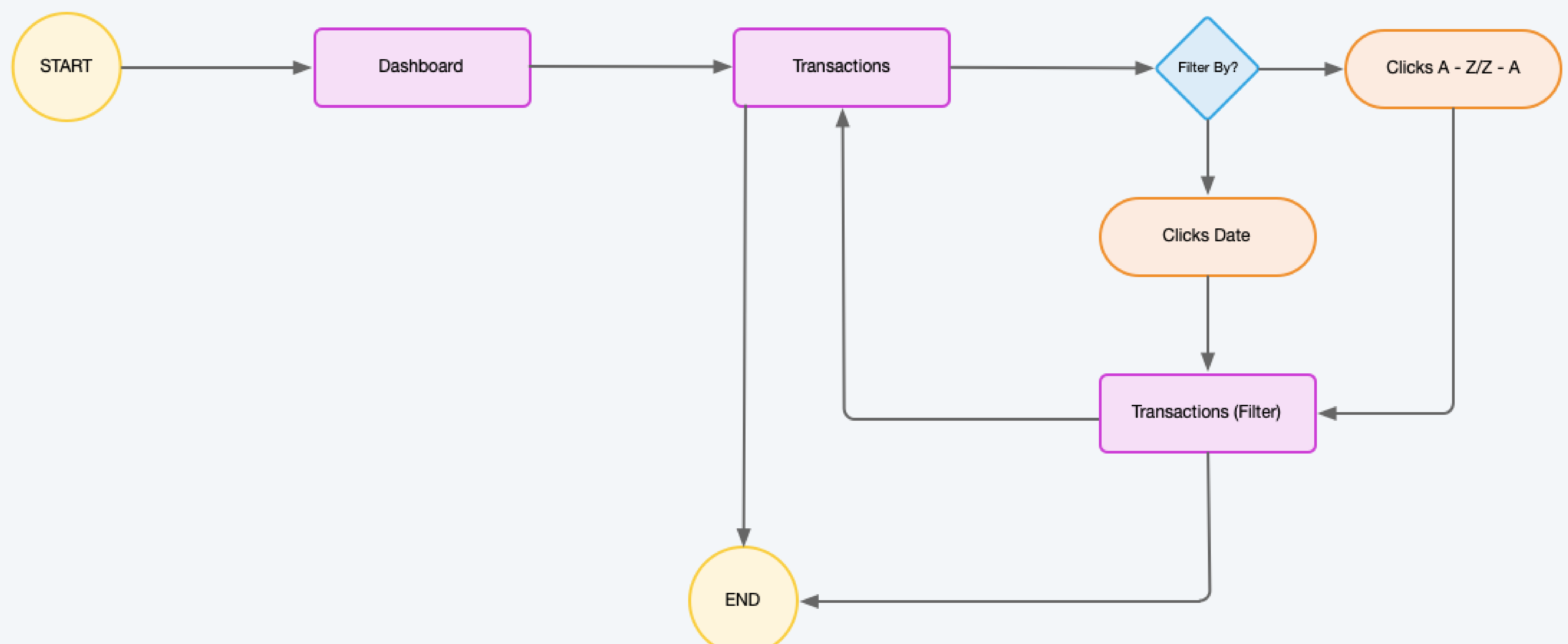


Performance - Future

User Flow: viewing transactions

Scenario: Jack needs to see his transactions to check the dividends he's received so far this year.

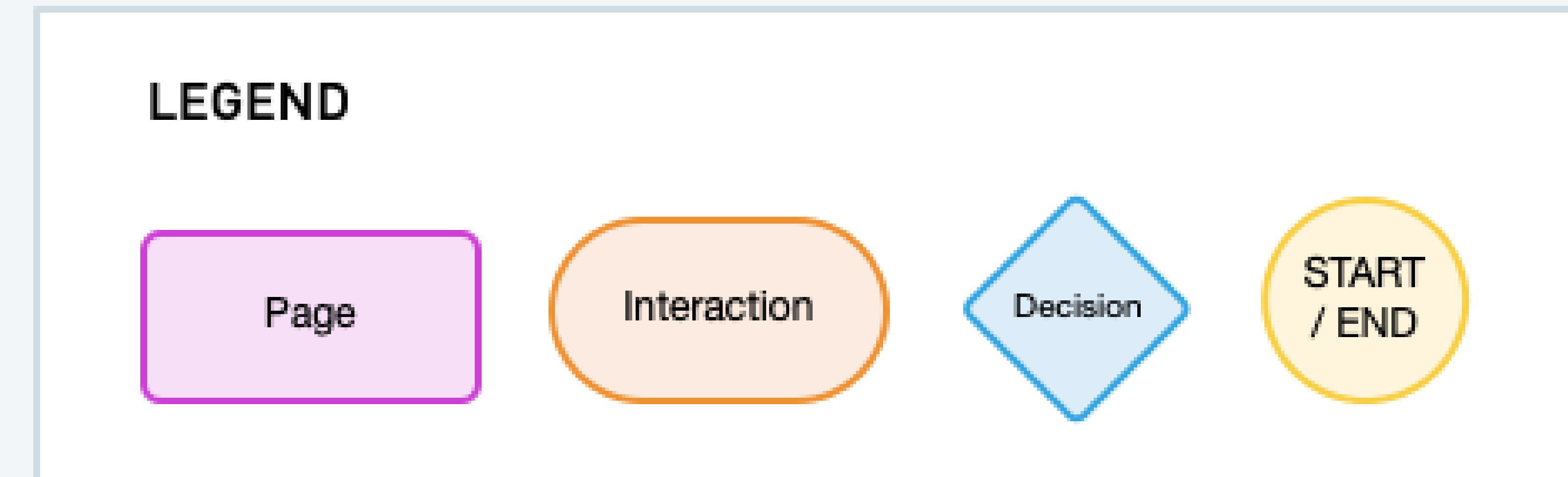




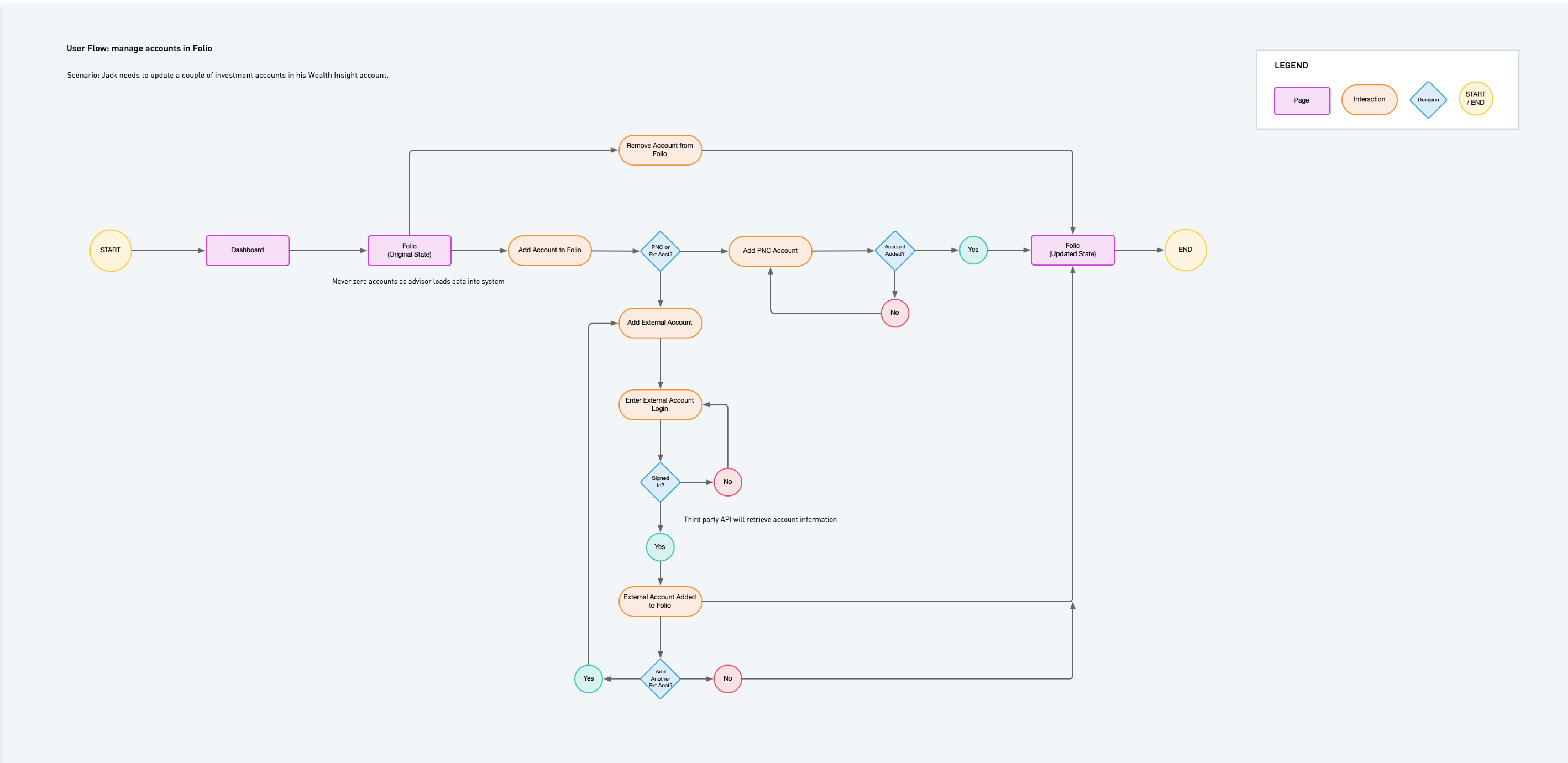
Transactions - Current and Future

User Flow: viewing income

Scenario: Jack needs to view his income for the month of April.



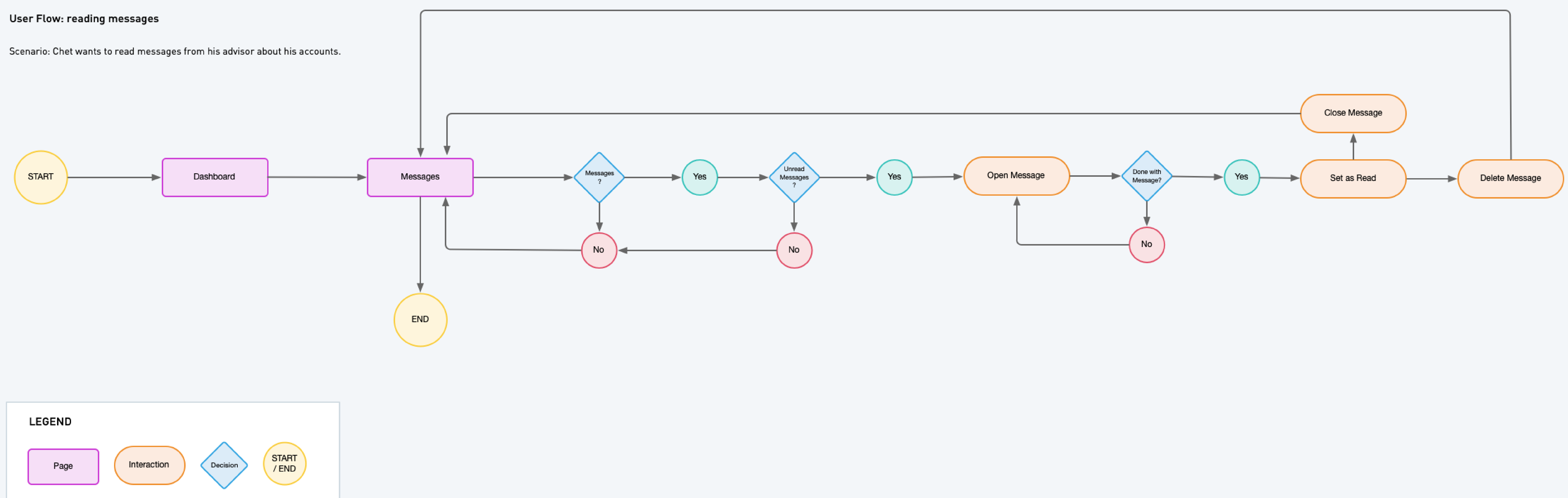
Income - Current and Future



Folio - Future

User Flow: reading messages

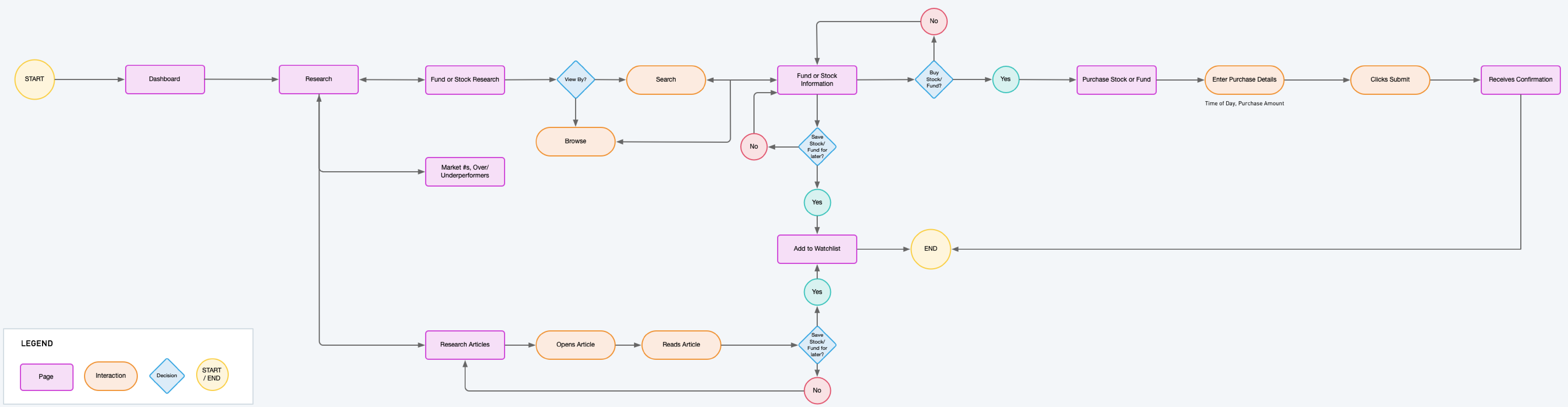
Scenario: Chet wants to read messages from his advisor about his accounts.



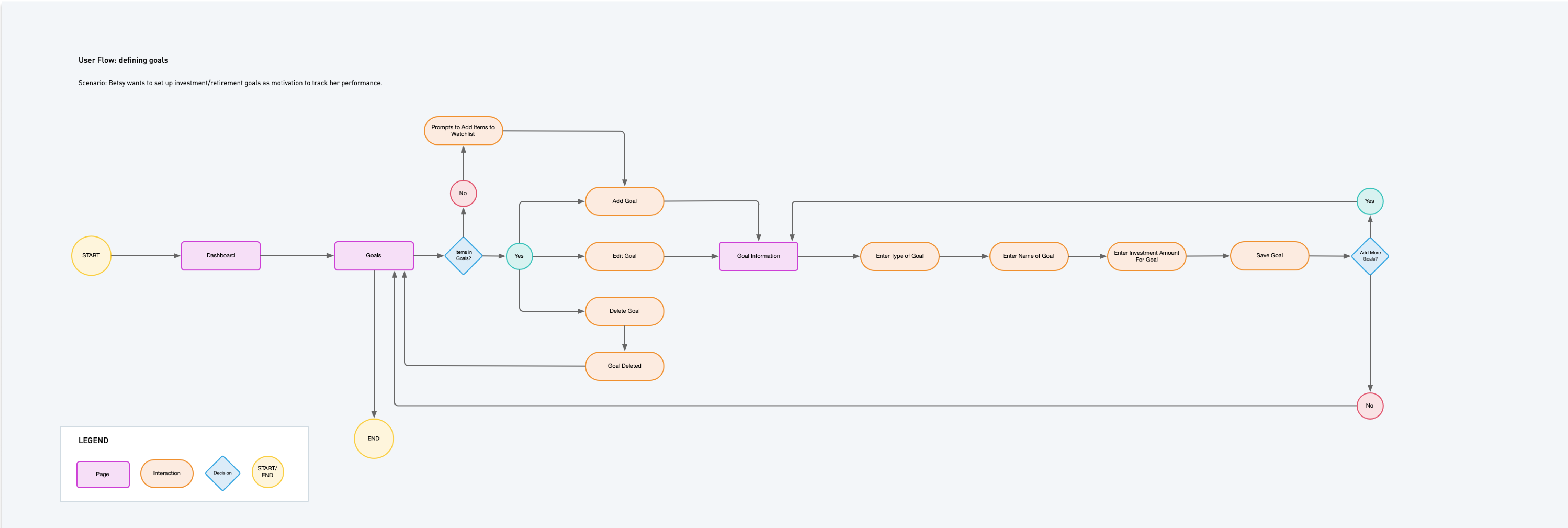
Messages - Future

User Flow: performing research

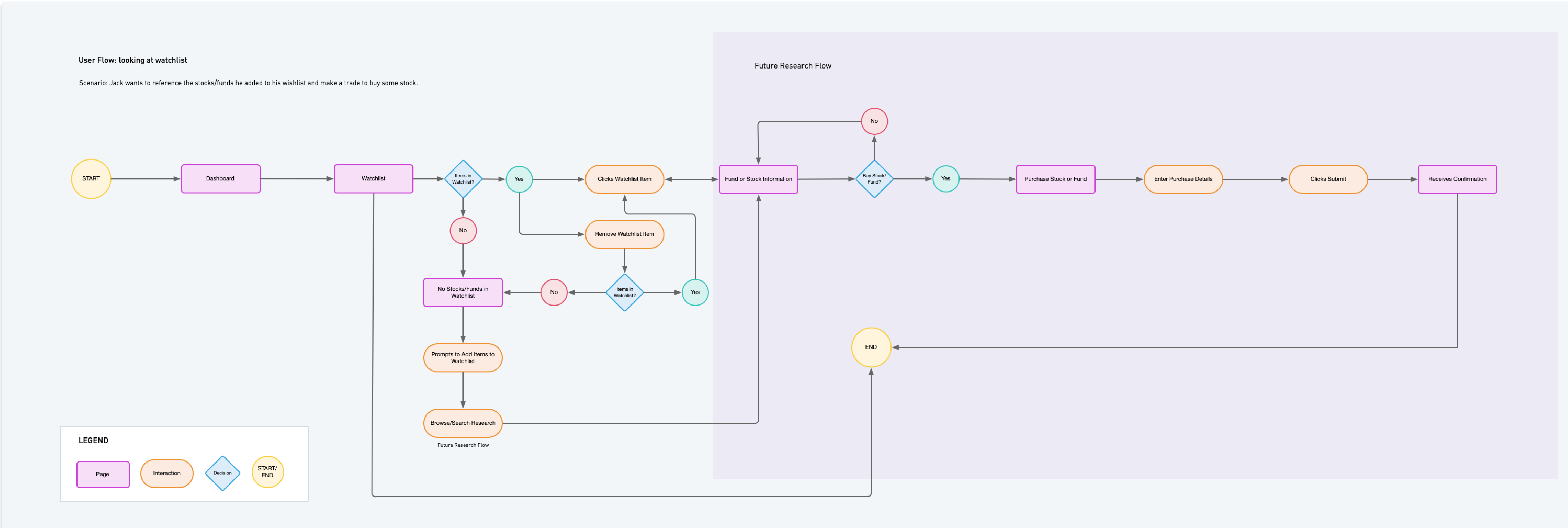
Scenario: Jack wants to look over some research on stocks and funds, save stocks for later for consideration, and perhaps buy a stock.



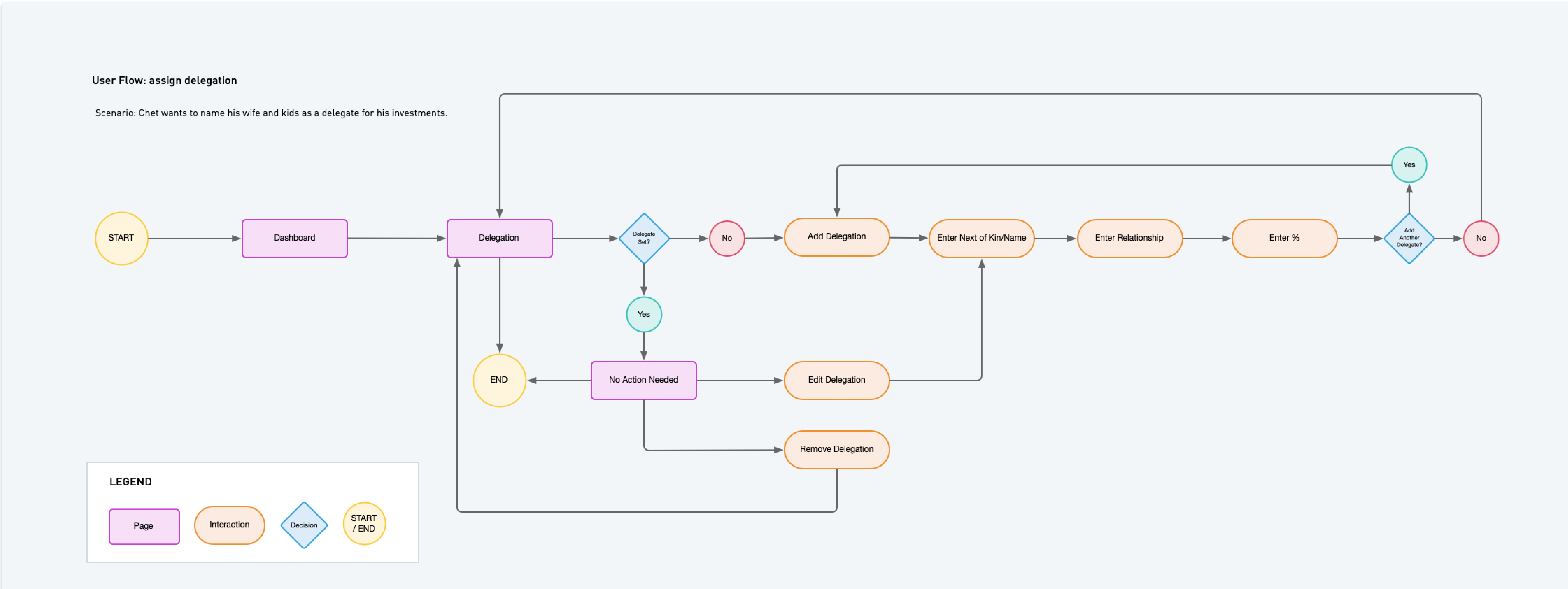
Research - Future



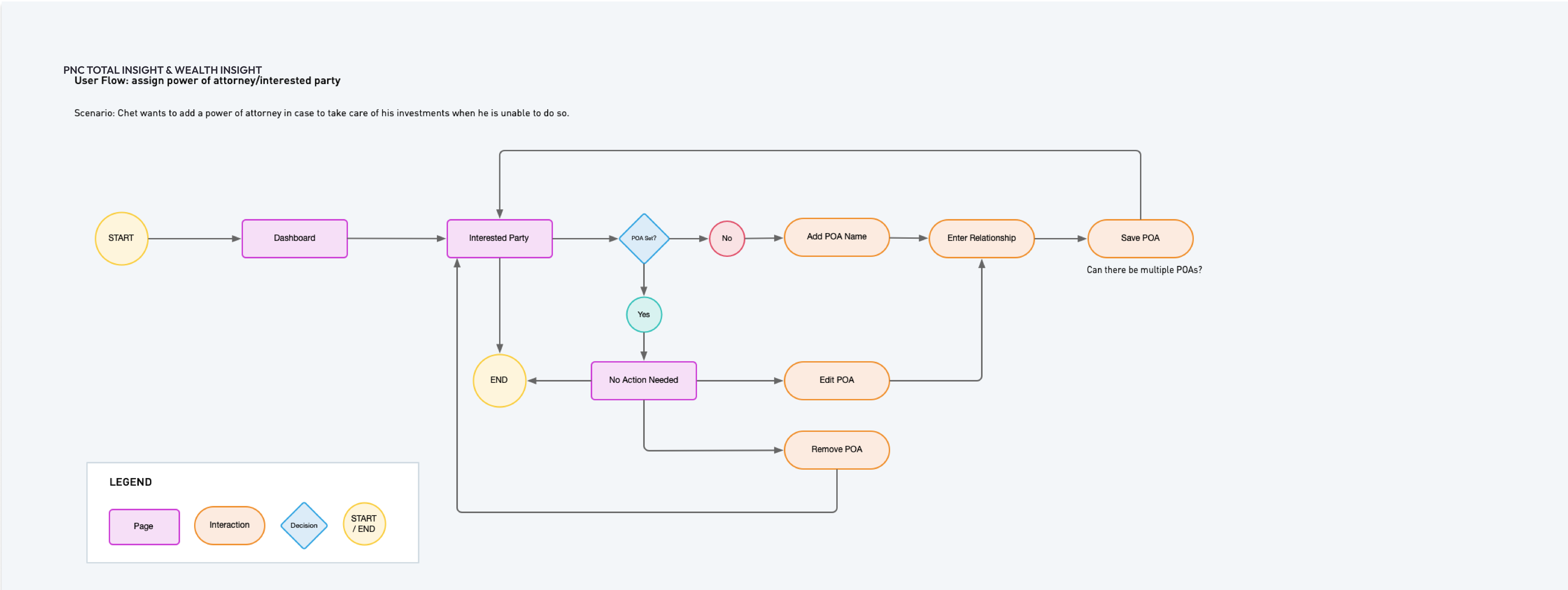
Goals - Future



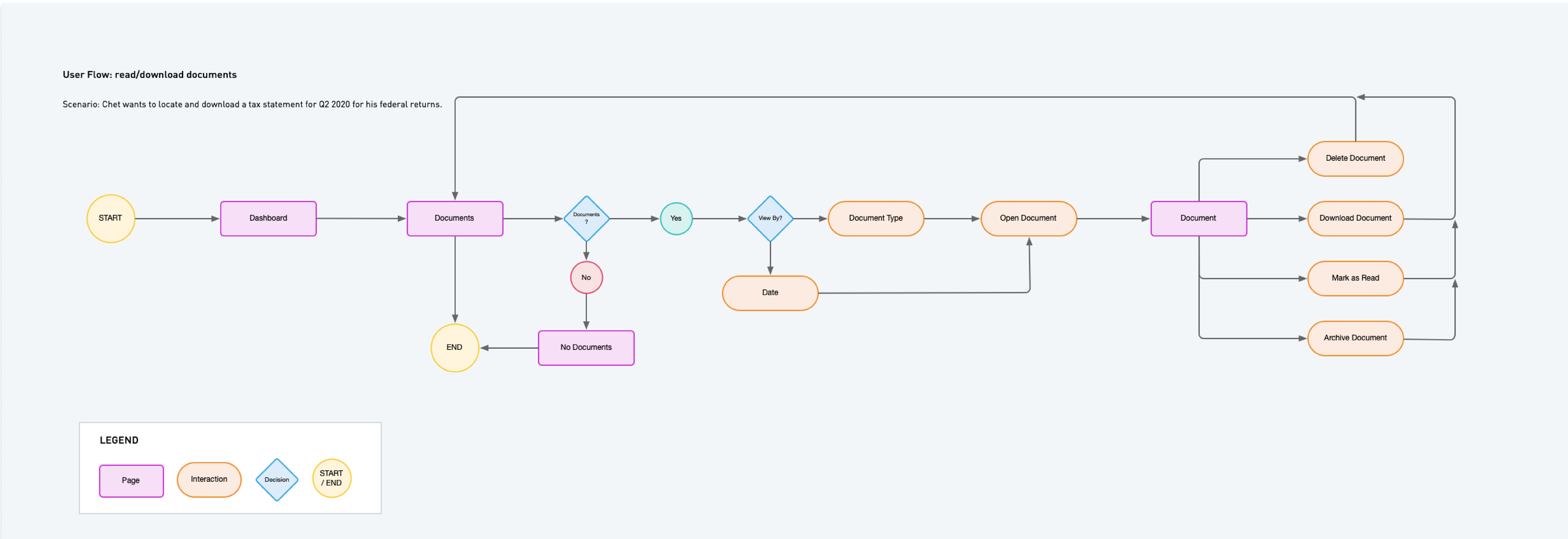
Watchlist - Future



Delegation - Future



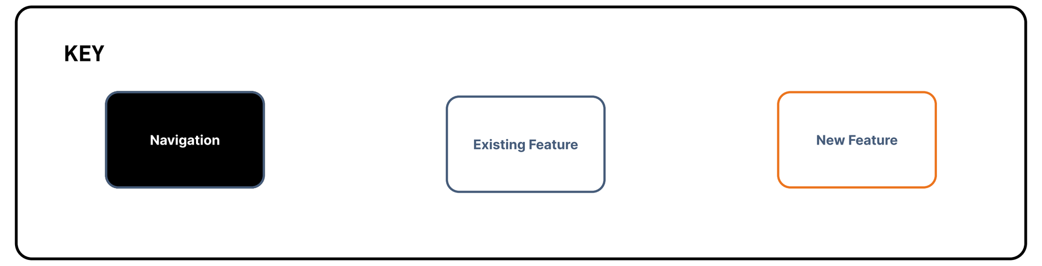
Interested Party - Future



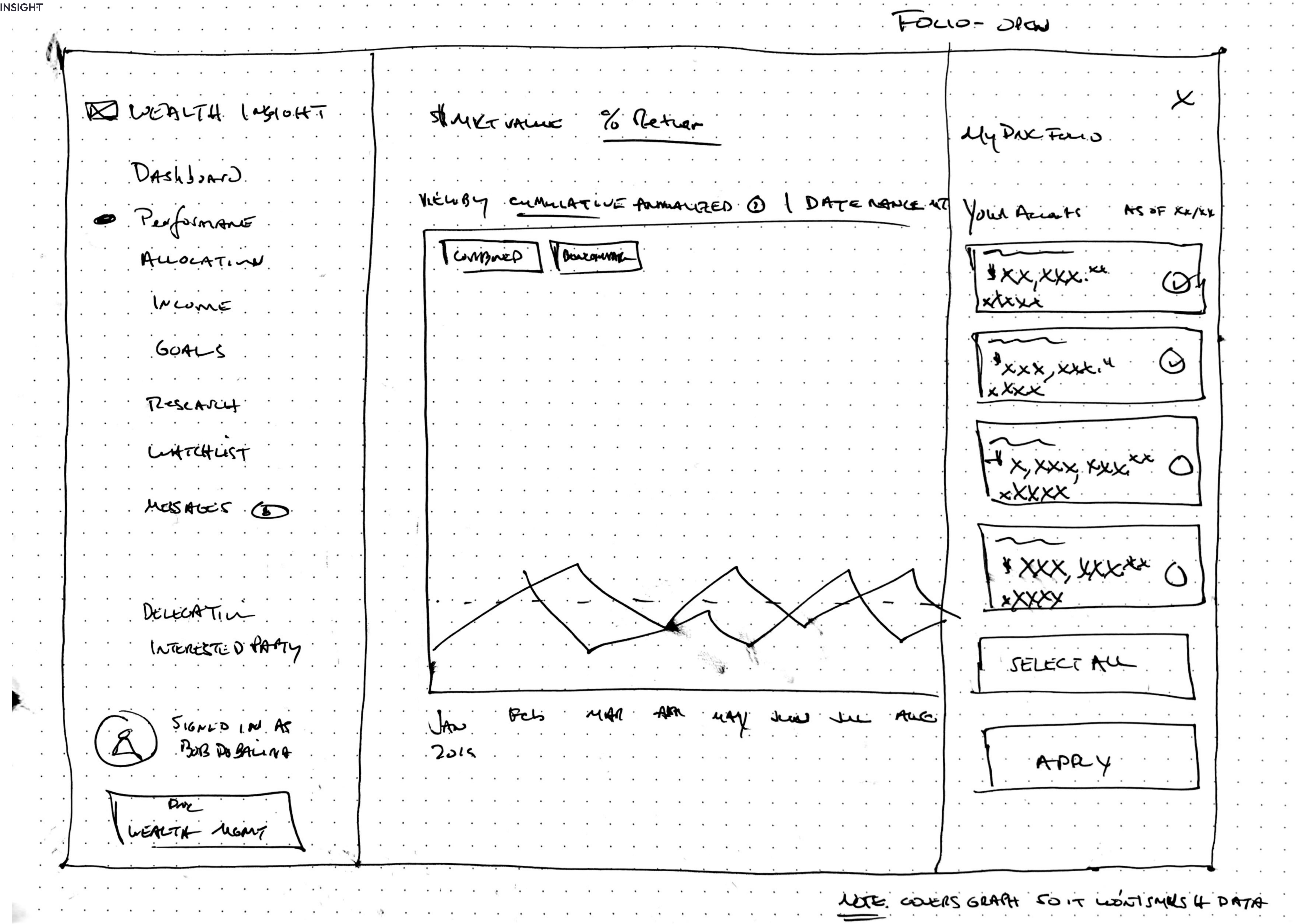
Documents - Future

Site Map (Future State)

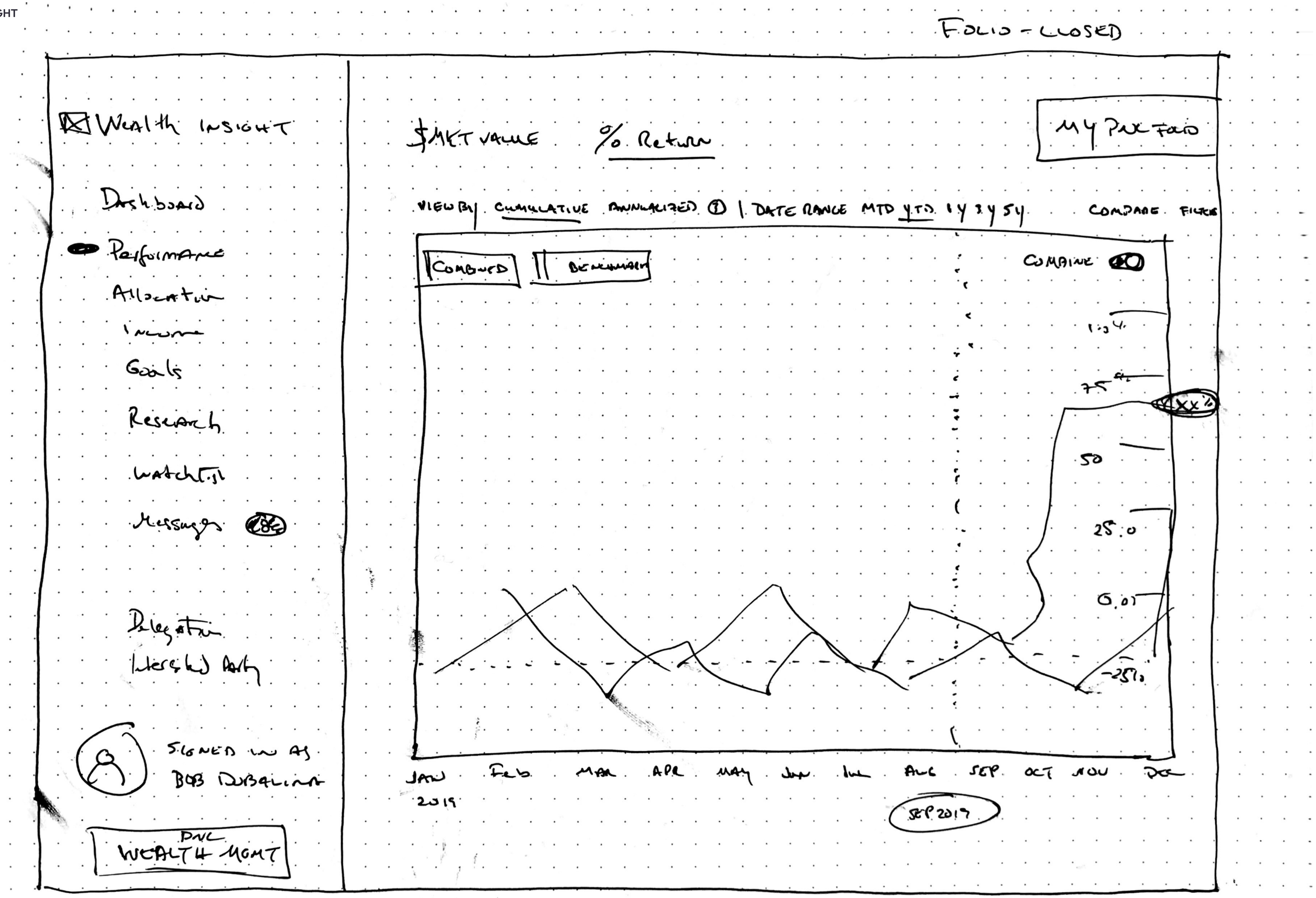
FUTURE SITE MAP



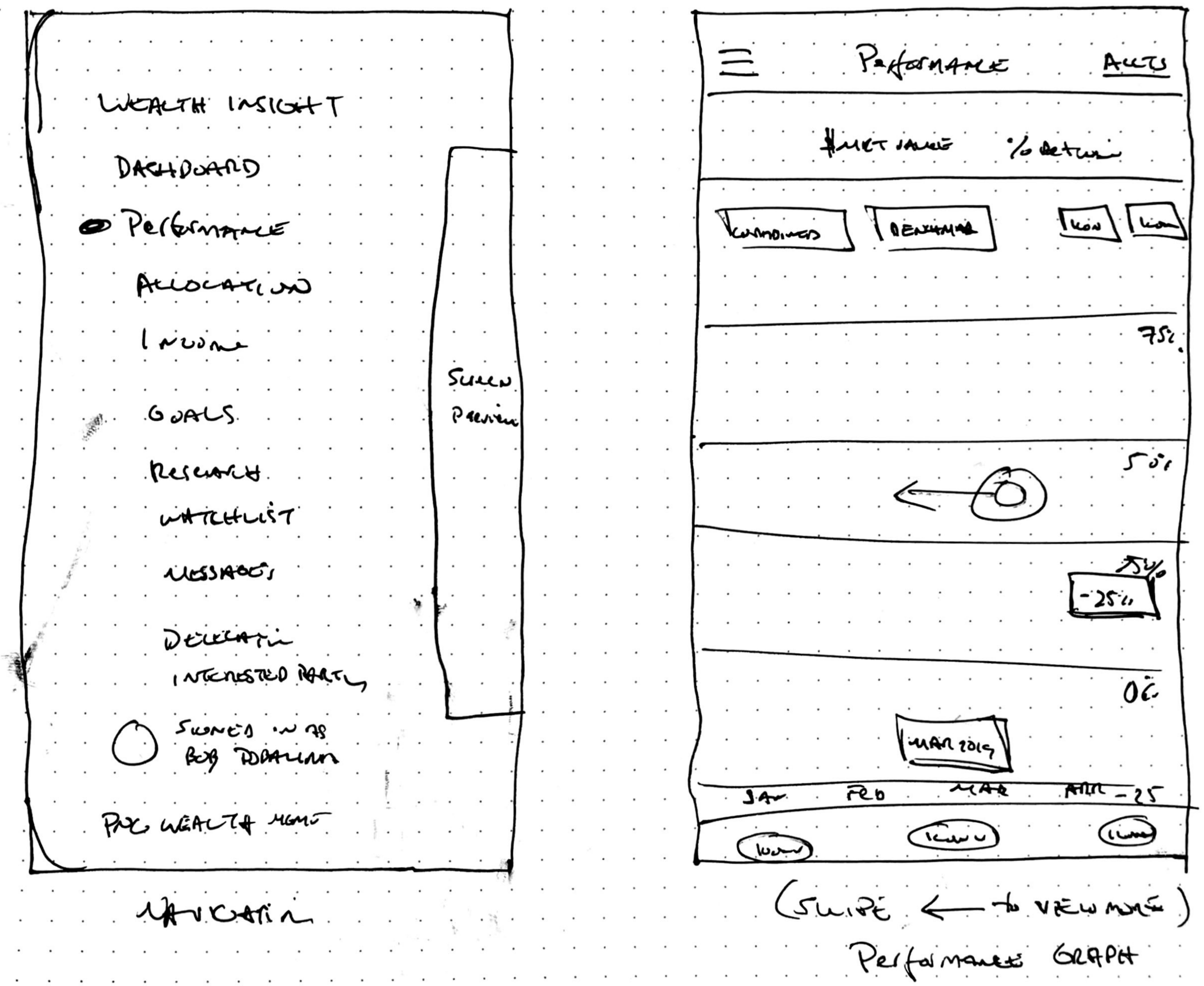
Sketches



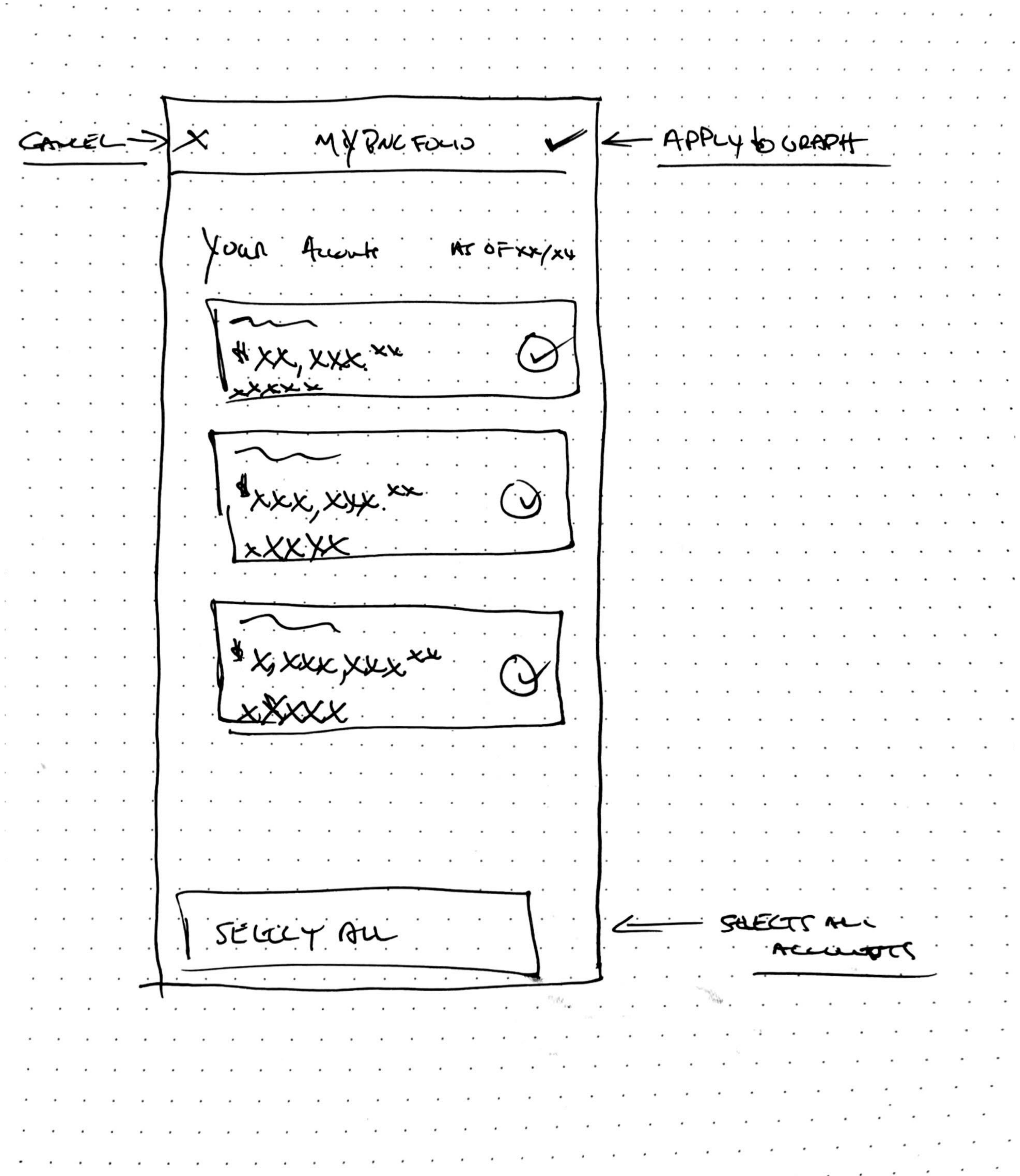
Tablet/Desktop - Performance View - Folio Open



Tablet/Desktop - Performance View - Folio Closed



Phone - Navigation & Performance Views



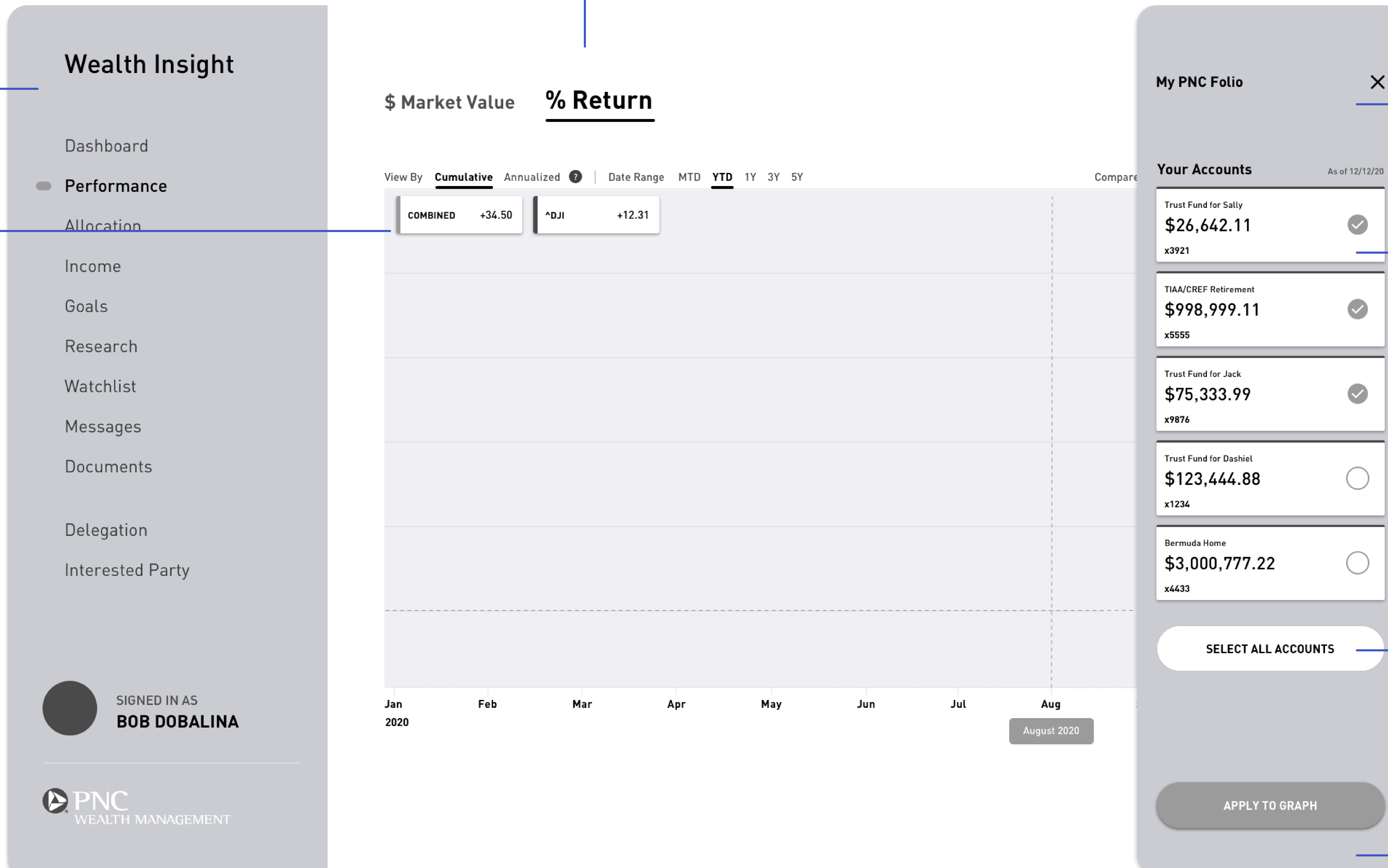
Phone - Folio View

Low-Fidelity Wireframes

User has the choice between the market value graph and the return graph (shown here).

Navigation will show the user their location.

Table view will include views, date range, and any other filters selected.



User will select accounts to display in the performance table.

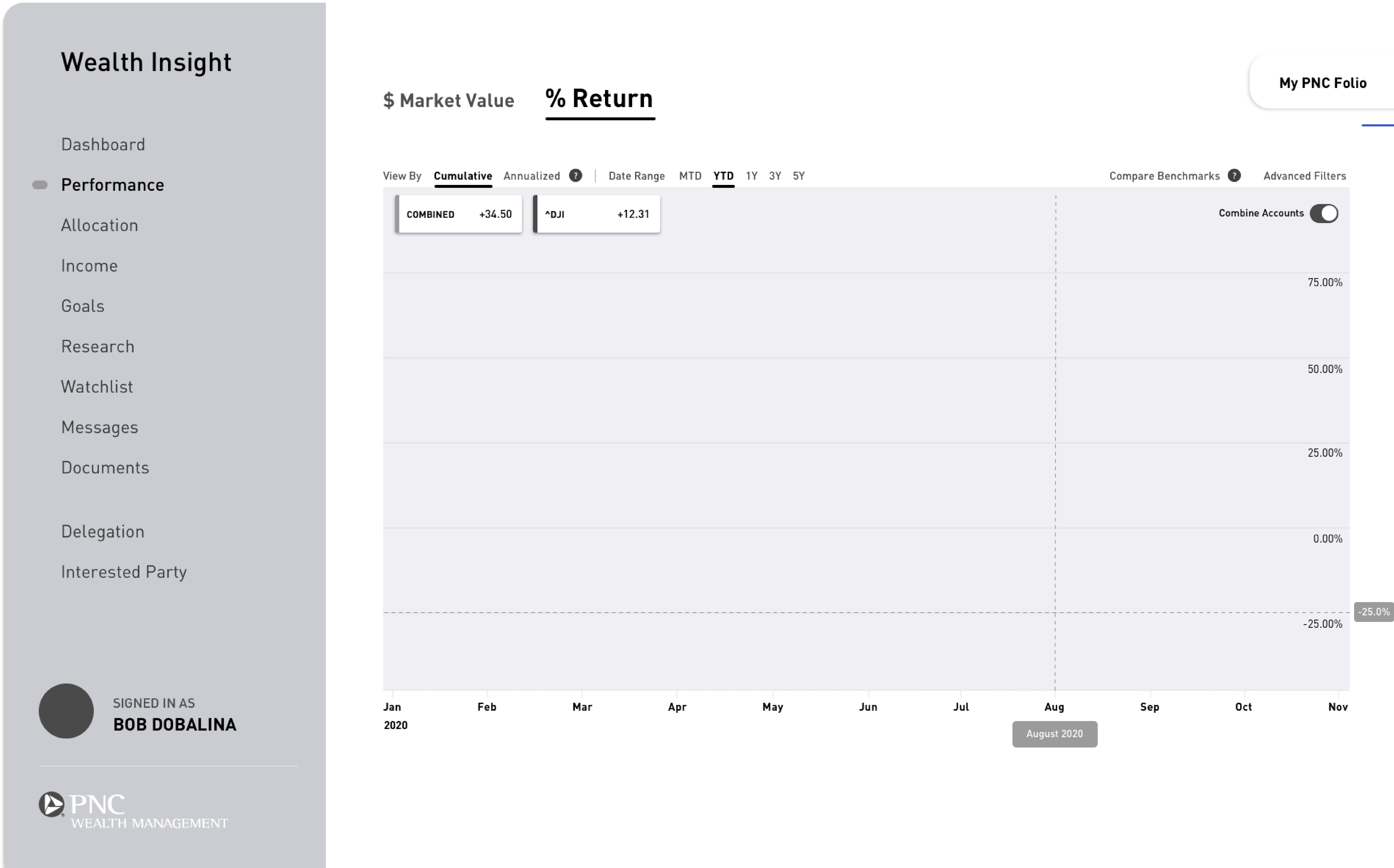
User has selected an account for inclusion on the performance graph.

User will be able to select all accounts with this button.

When this button has been activated, it will display "Remove Alll Accounts"

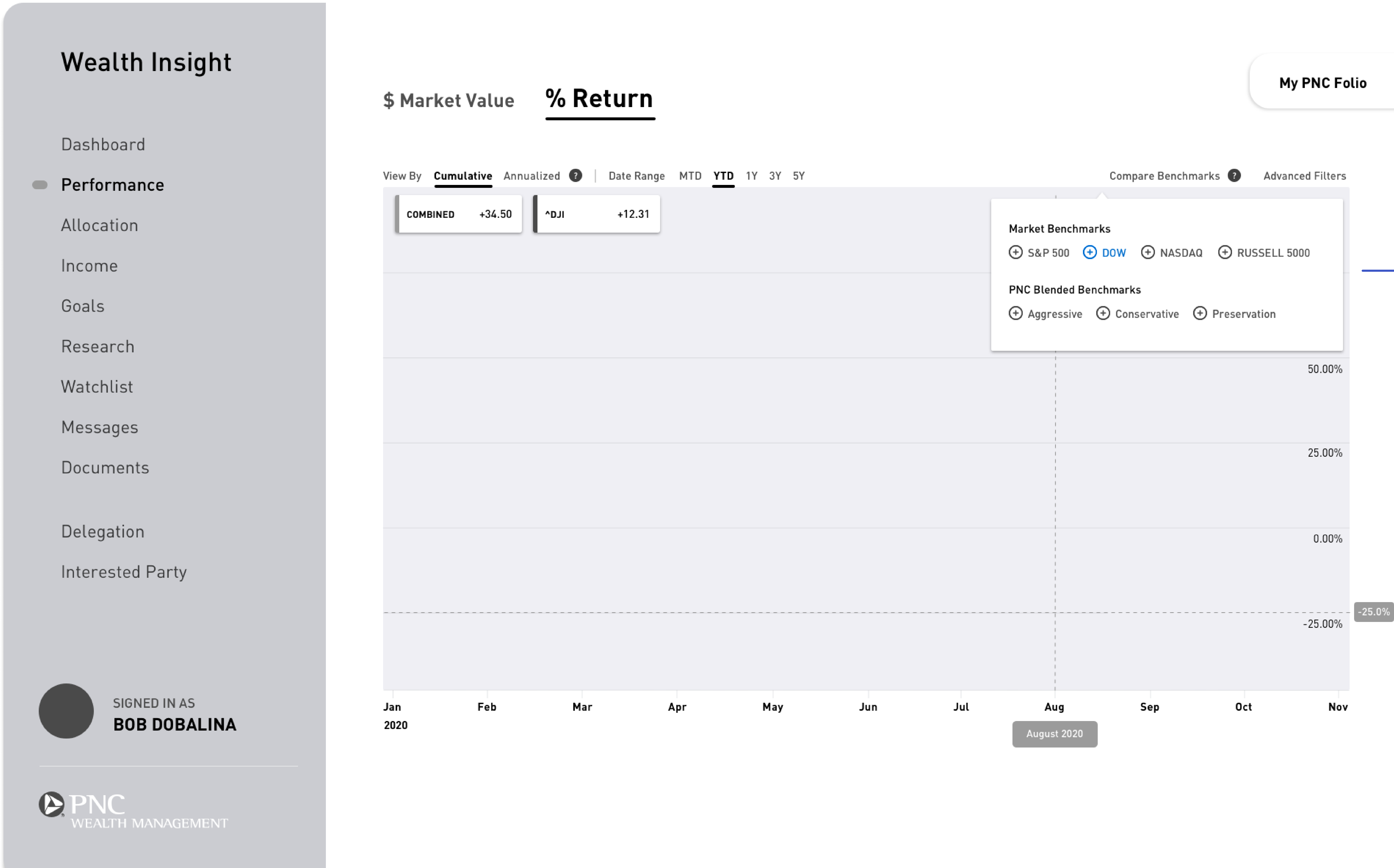
User must click "Apply to Graph" to apply changes.

Tablet - Performance View - Folio Open



After the user has applied changes, the Folio CTA will appear here.

Tablet - Performance View - Folio Closed

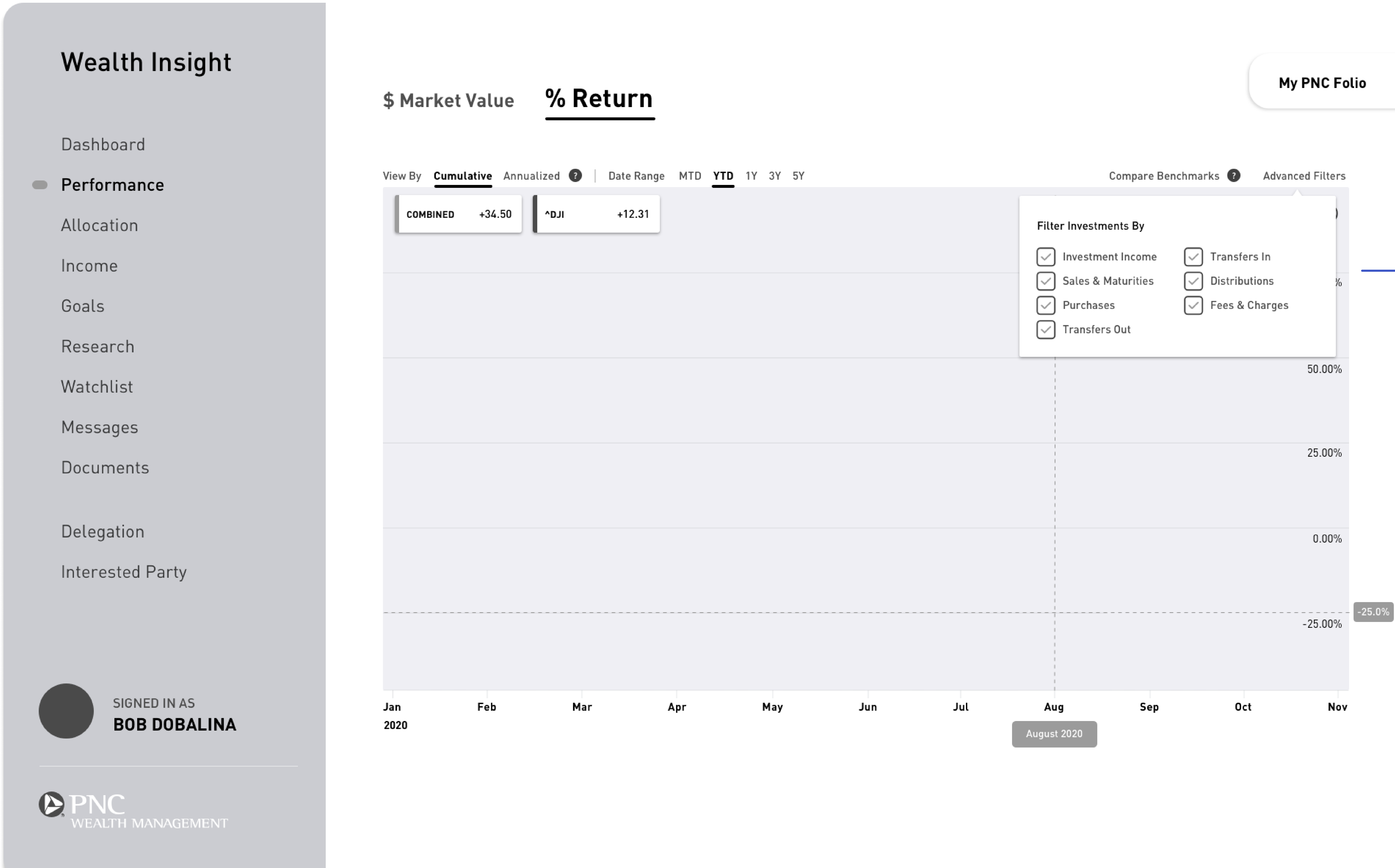


Market Benchmarks and PNC Blended Benchmarks will appear within this flyout.

Rationale: Users didn't know what these when they were exposed.

Providing context in the graph and instruction will drive users to this section.

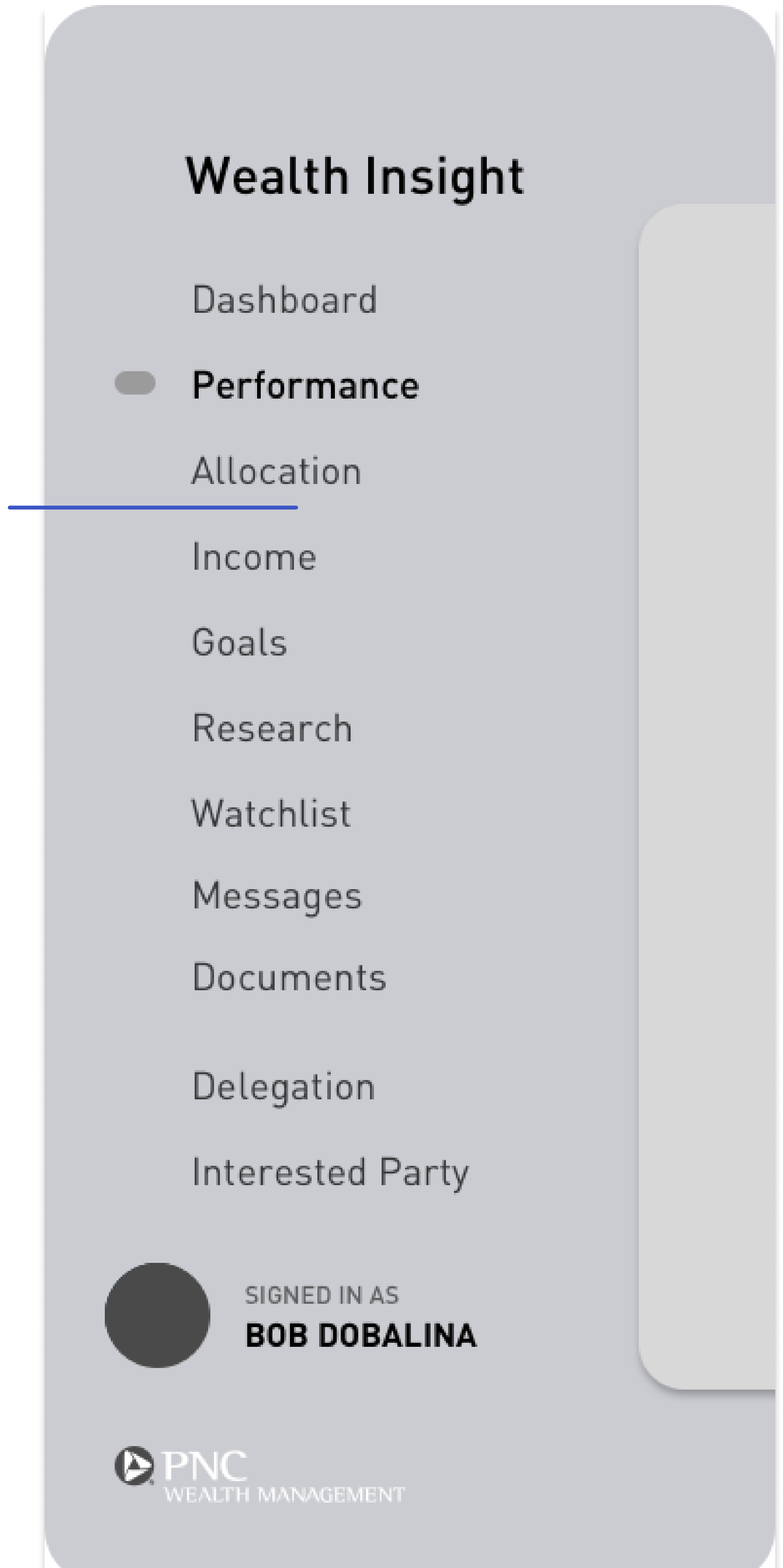
Tablet - Performance View - Compare Benchmarks



User will be able to filter the performance view (All are on as default).

Tablet - Performance View - Advanced Filters

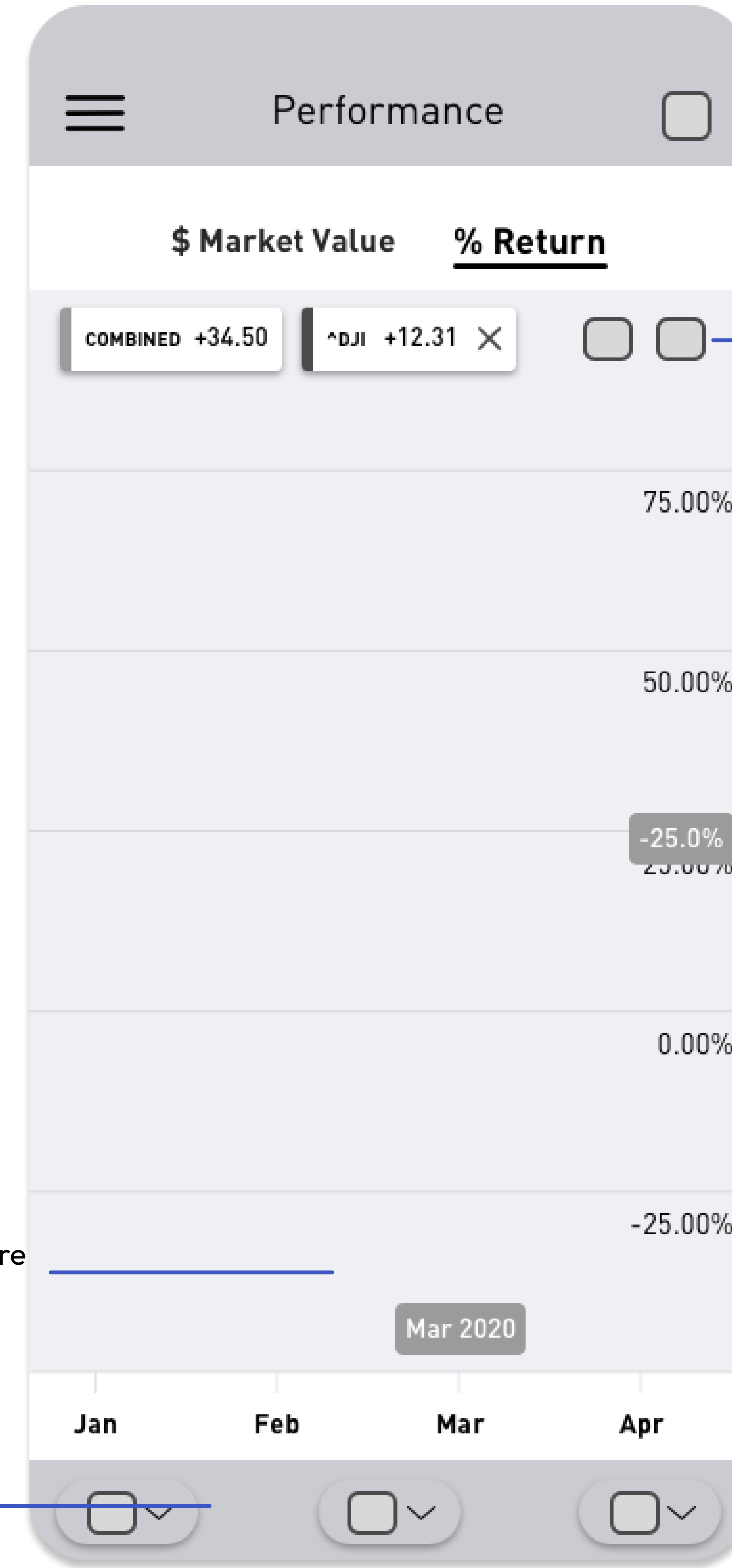
In the phone responsive view, there will be separate screens for navigation, performance, and the folio.



Phone - Navigation View

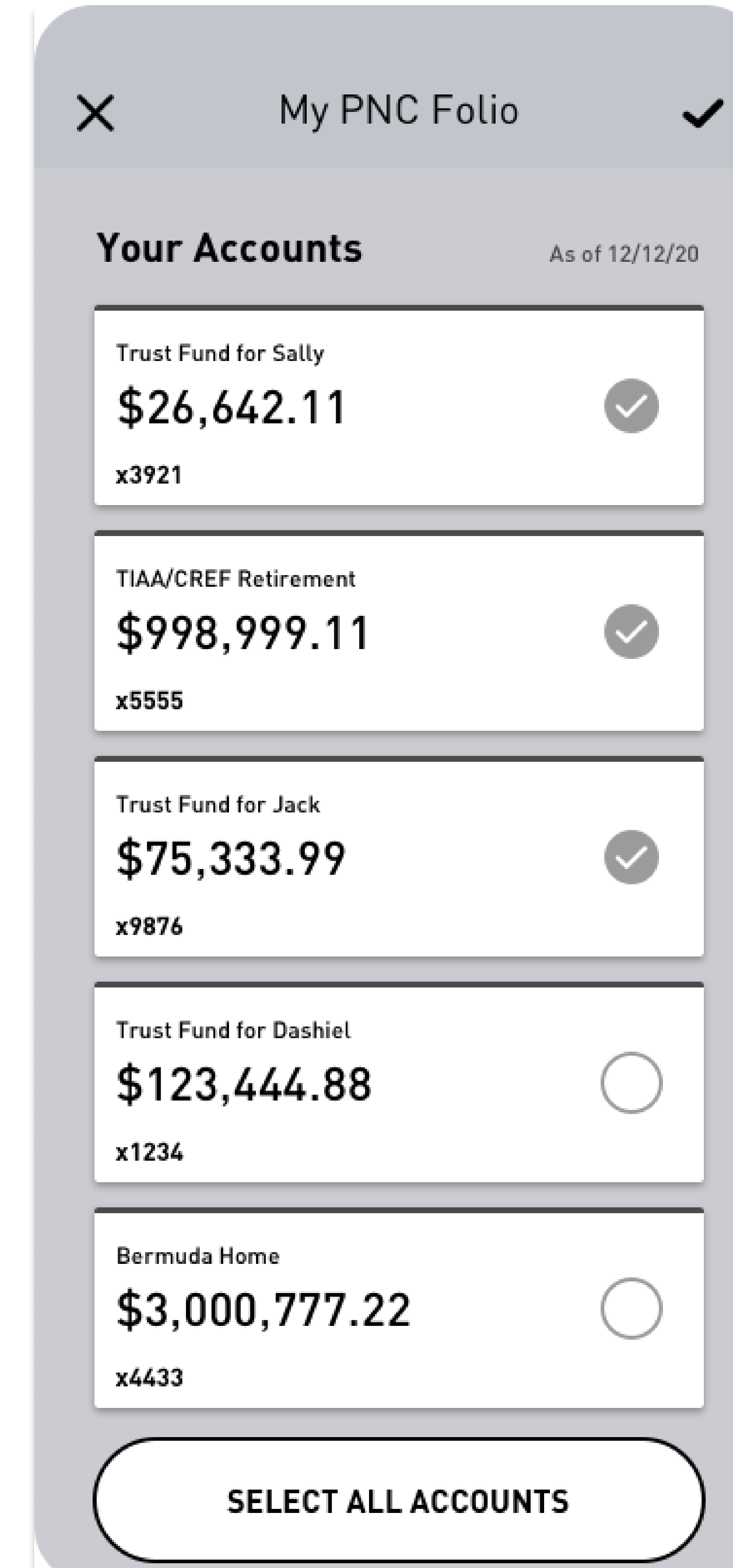
Swipe to see more of the months.

More filters



Benchmarks and Advanced Filters.

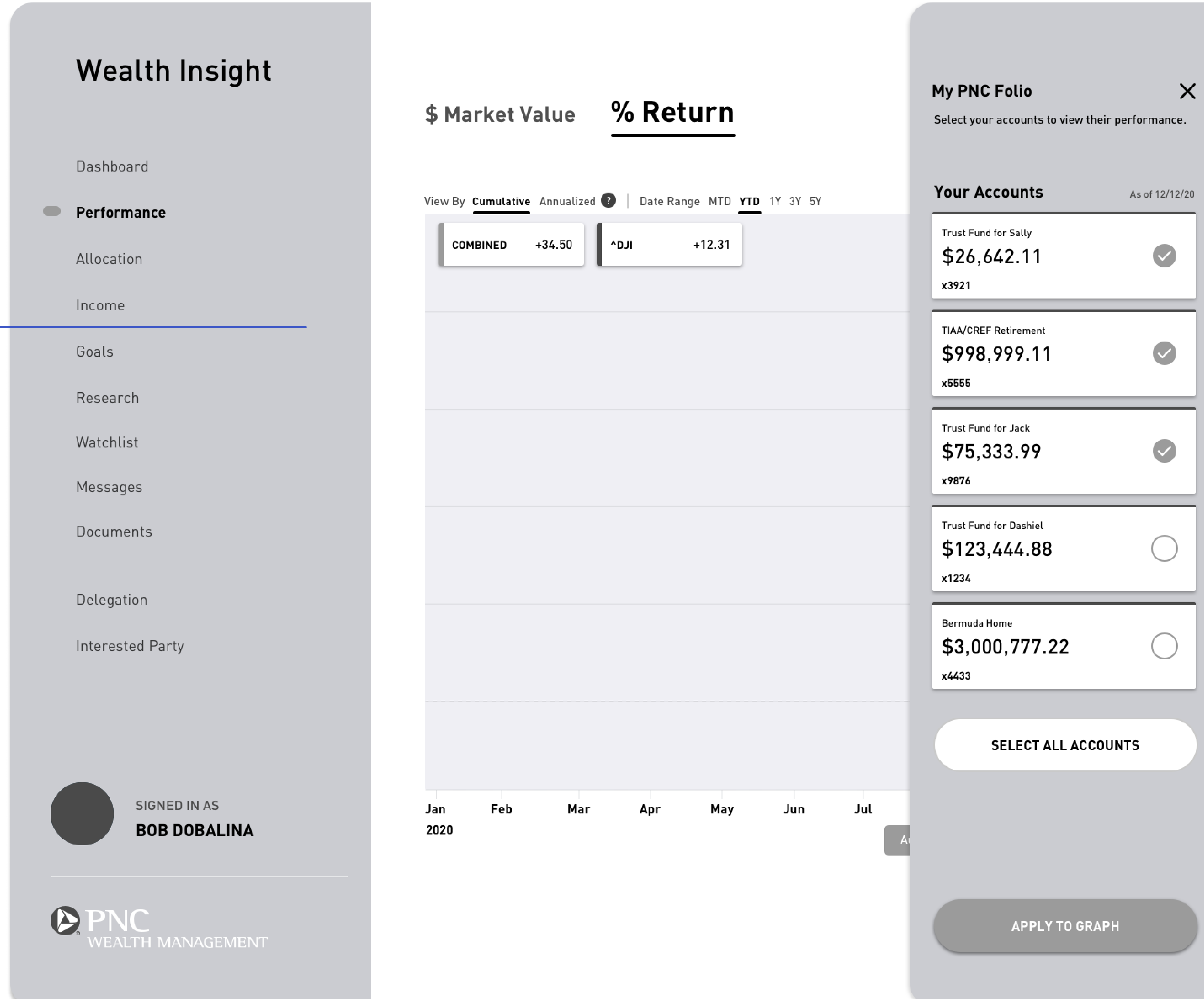
Phone - Performance View



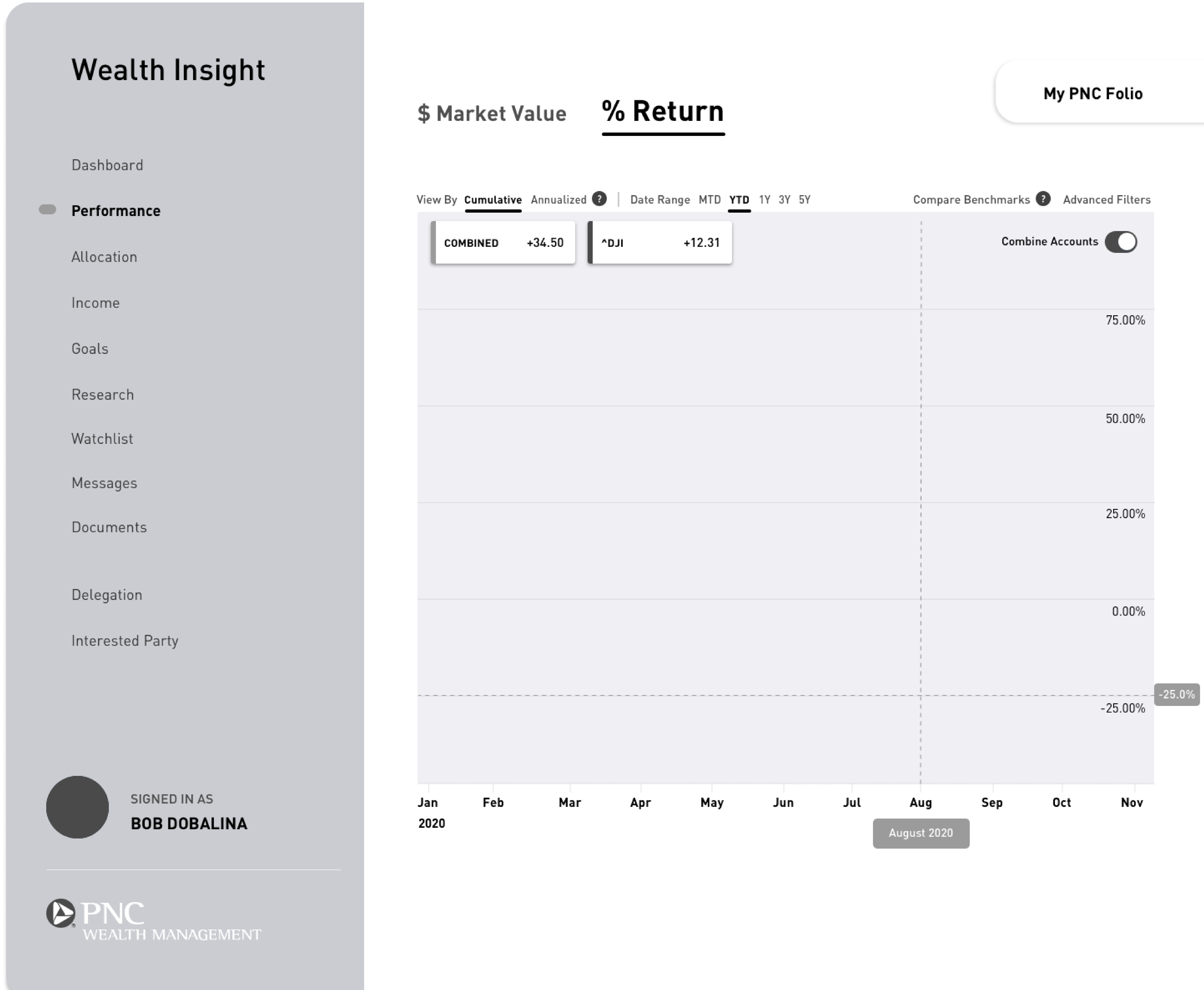
Full-screen or card view

Phone - Folio View

As this is the desktop view, the graph will have to shrink to accomodate the folio view.

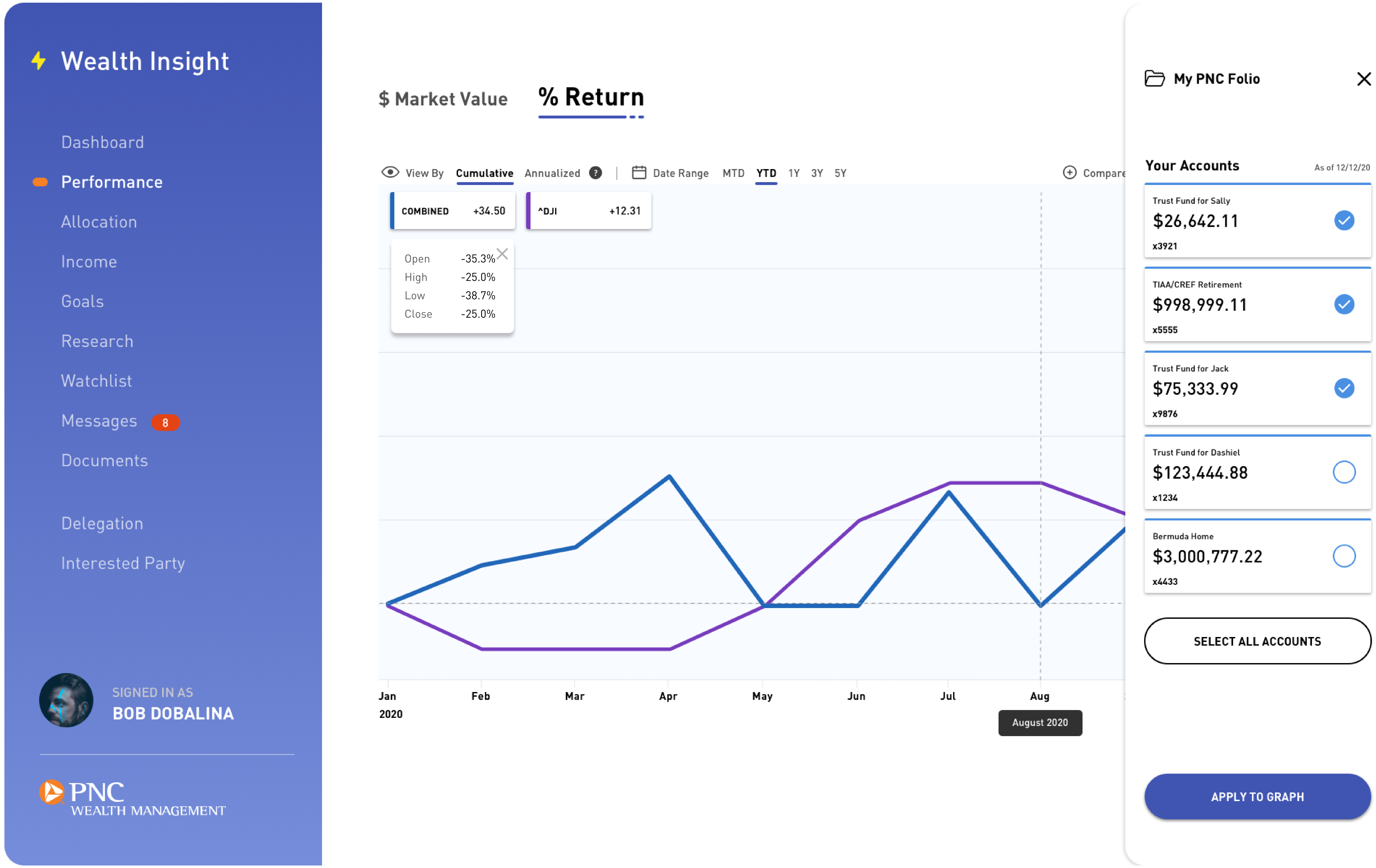


Desktop - Performance View - Folio Open

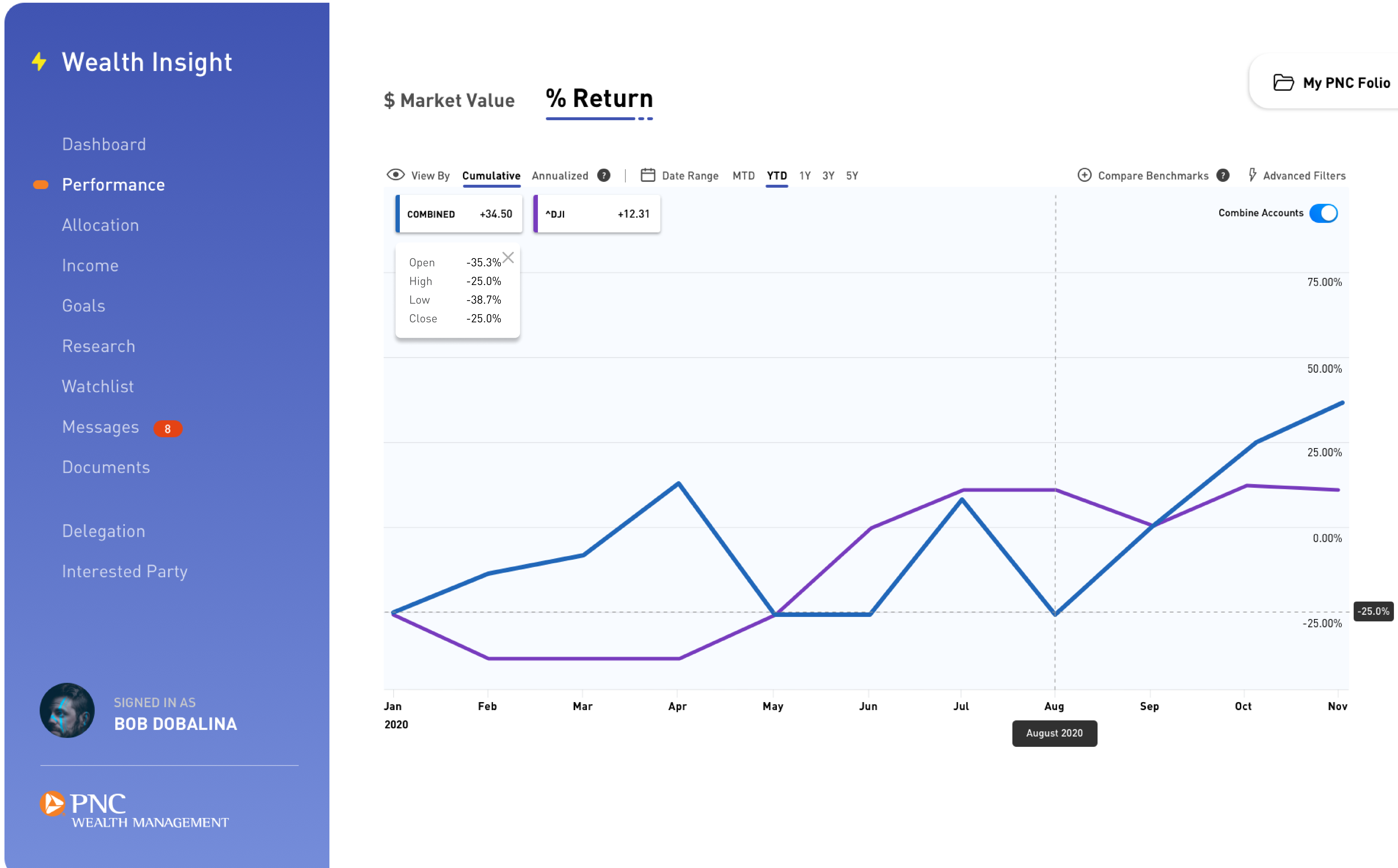


Desktop - Performance View - Folio Closed

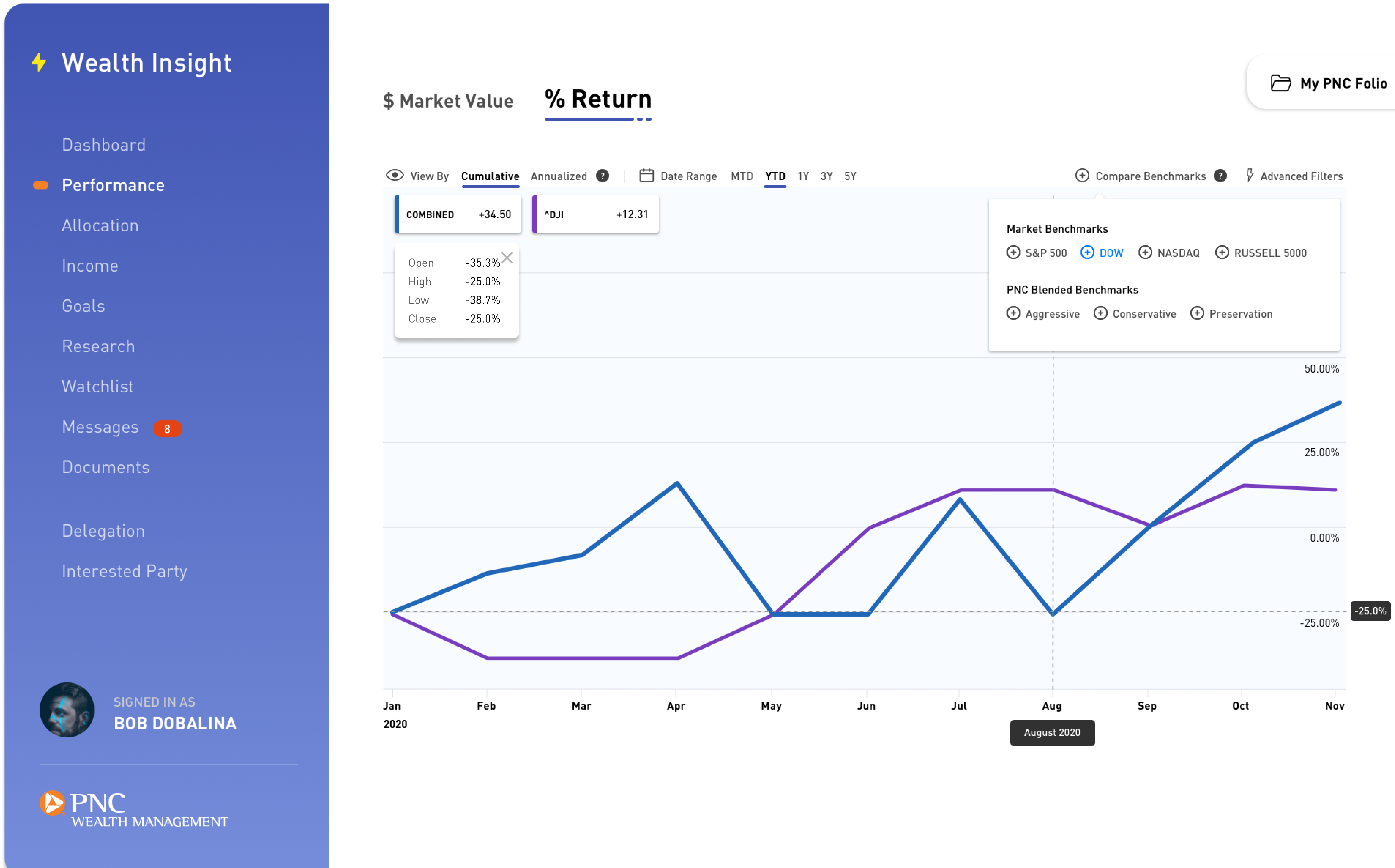
High-Fidelity Wireframes



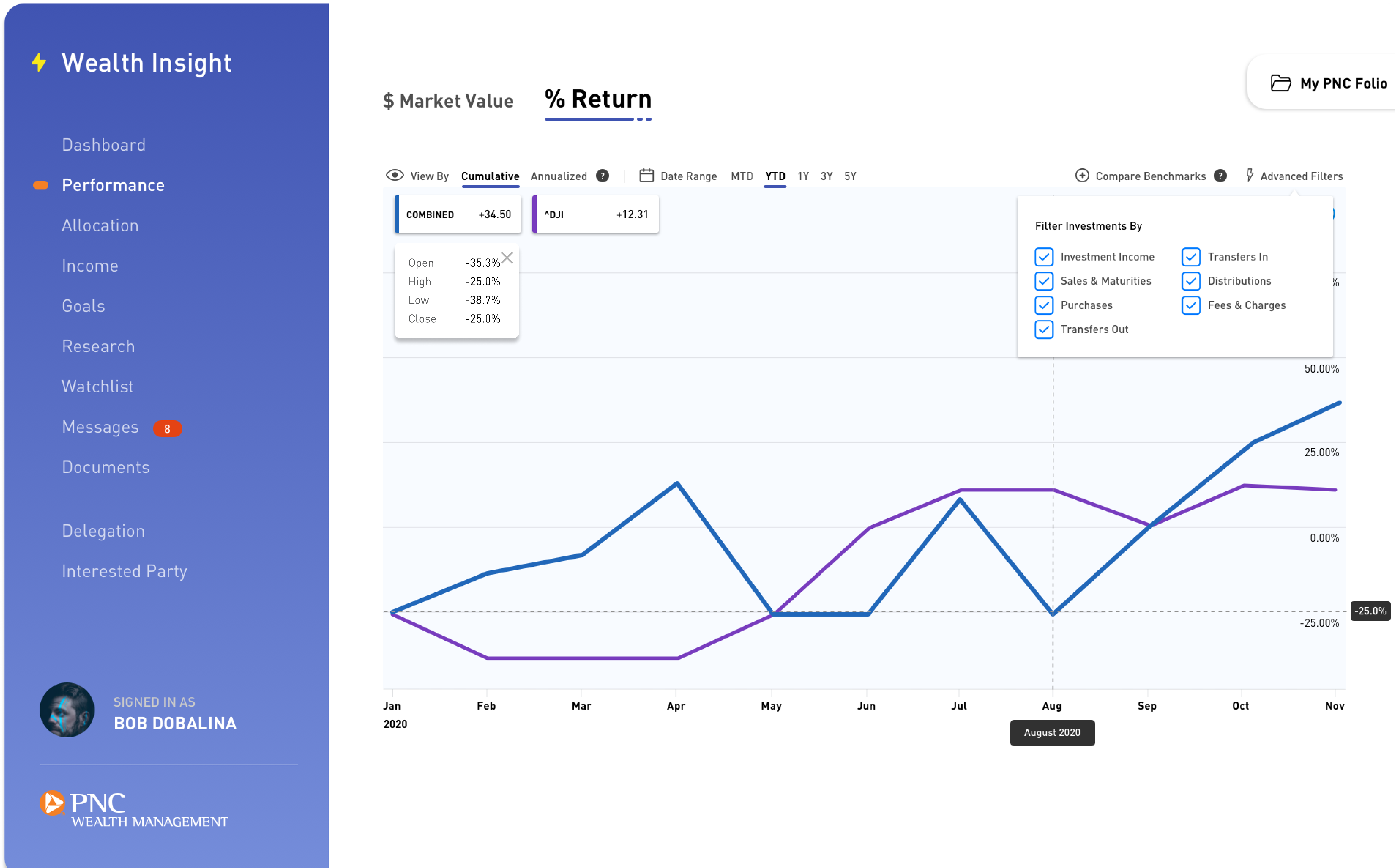
Tablet - Performance View - Folio Open



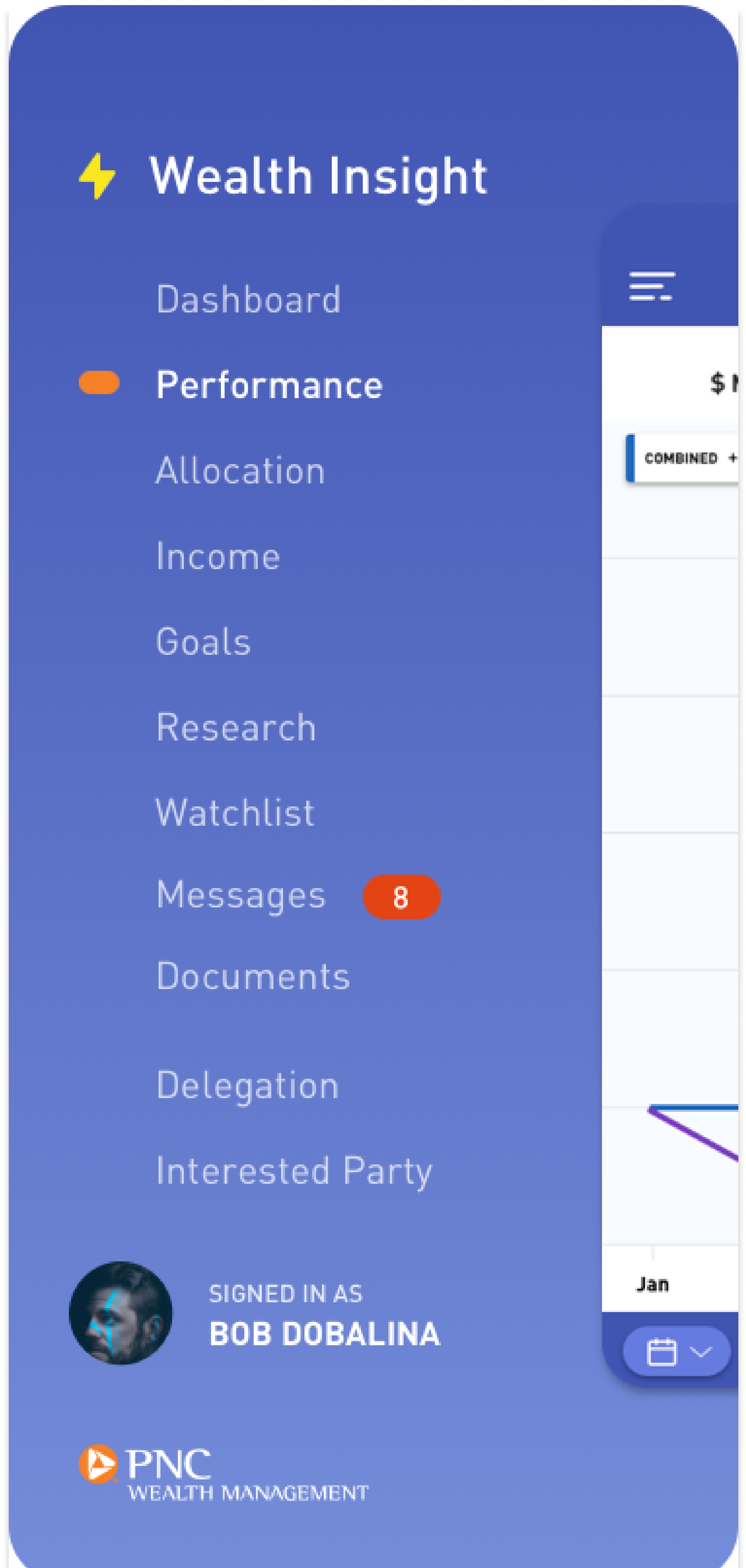
Tablet - Performance View - Folio Closed



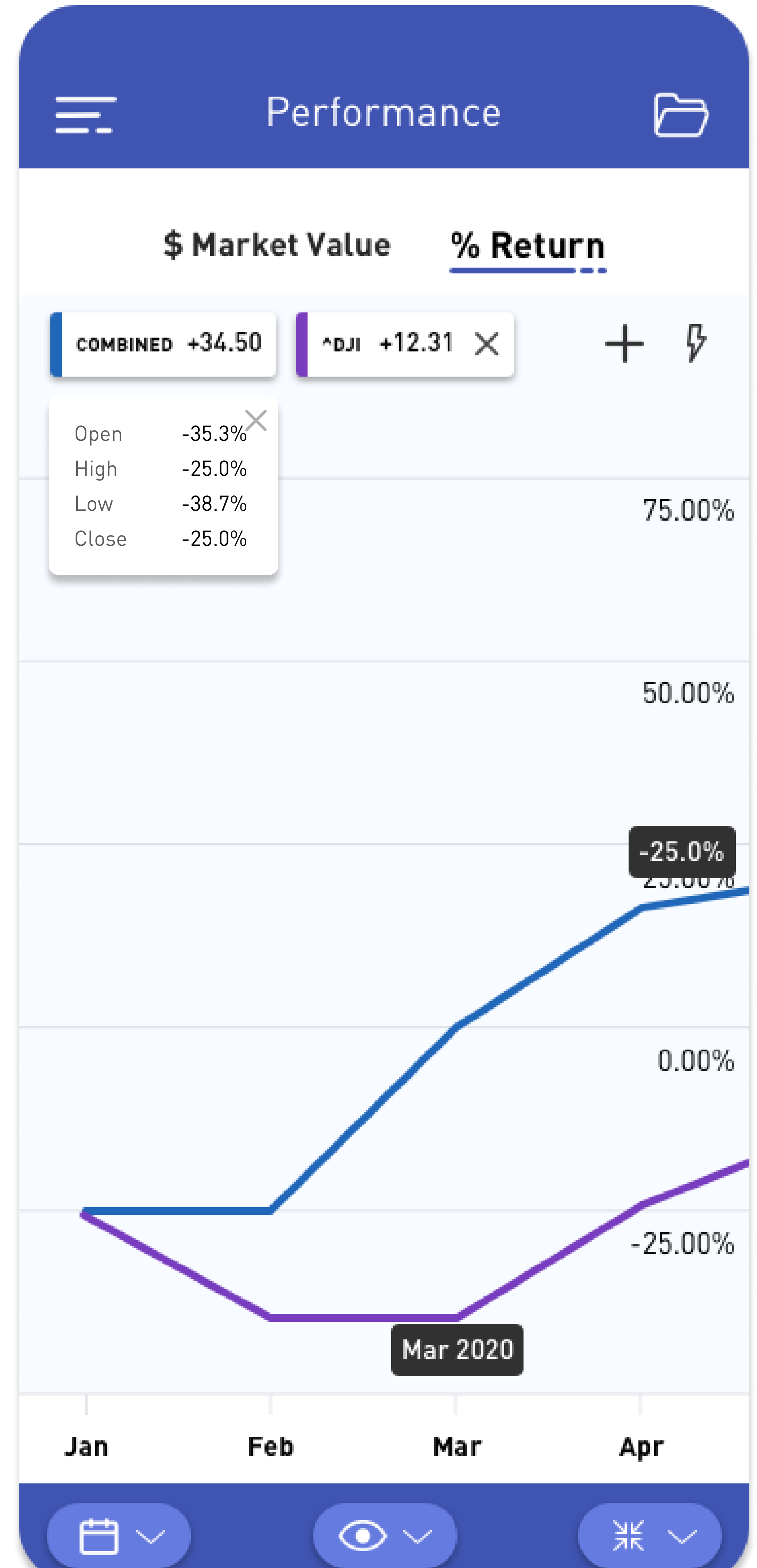
Tablet - Performance View - Compare Benchmarks



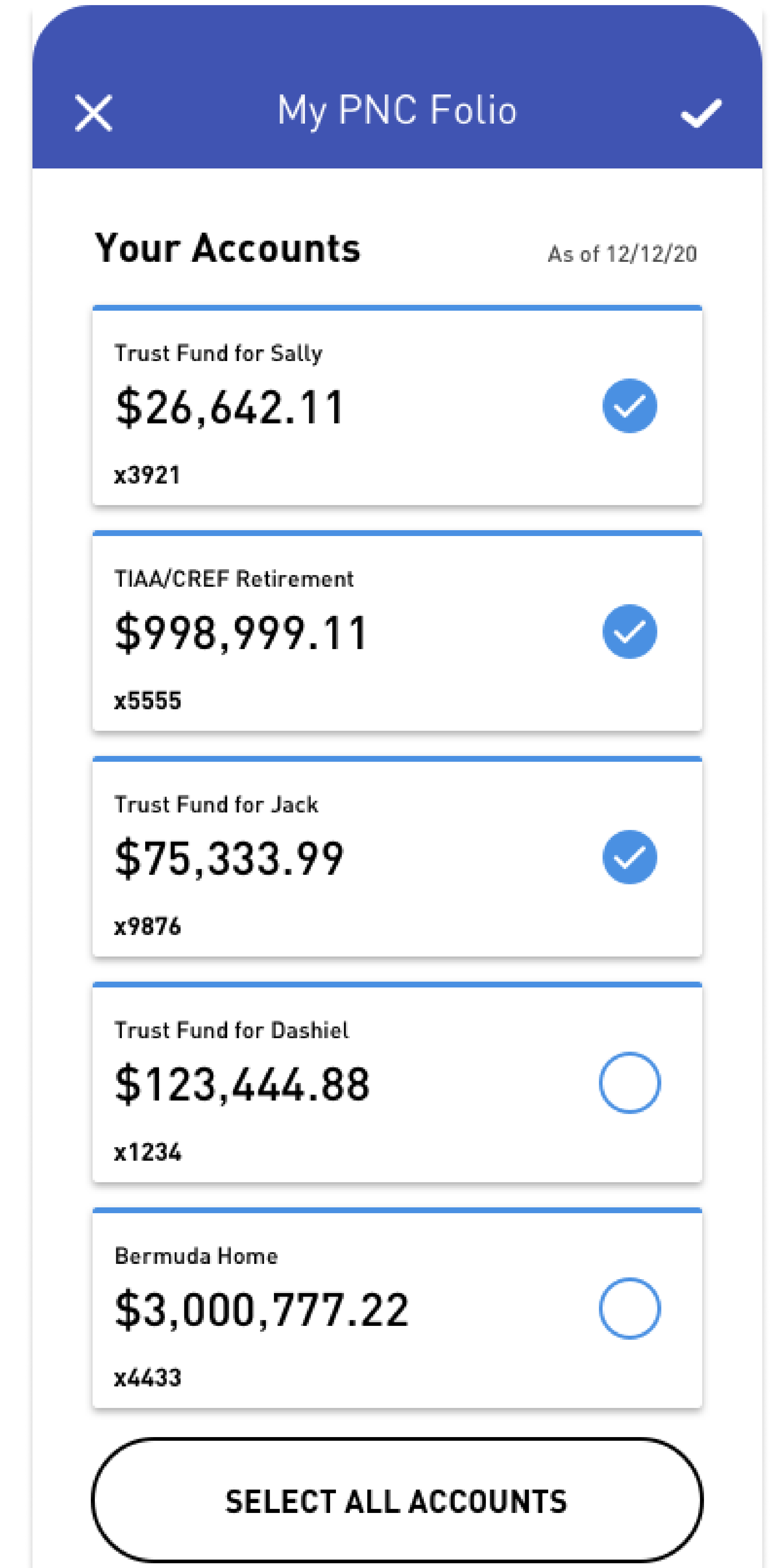
Tablet - Performance View - Advanced Filters



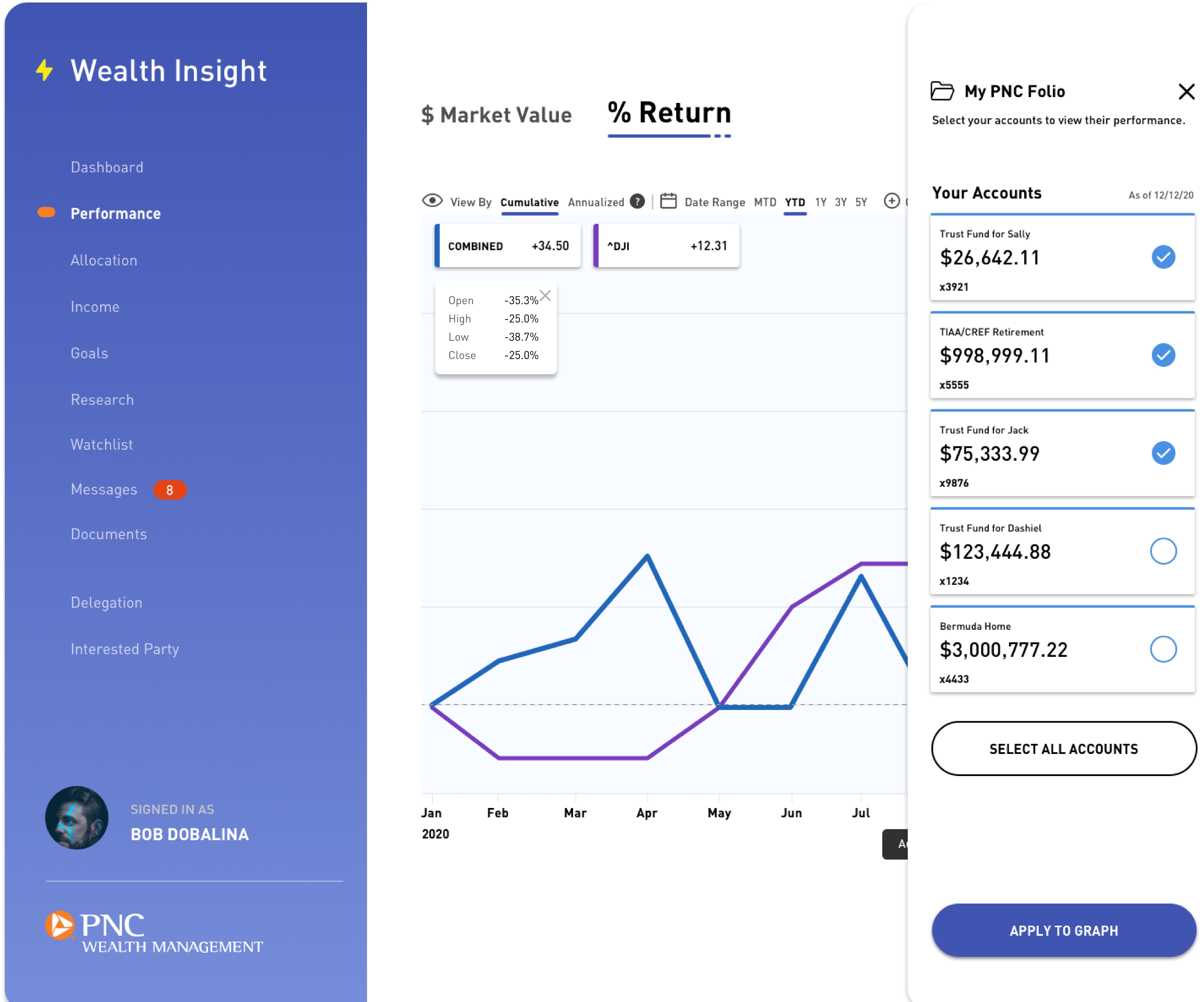
Phone - Navigation View



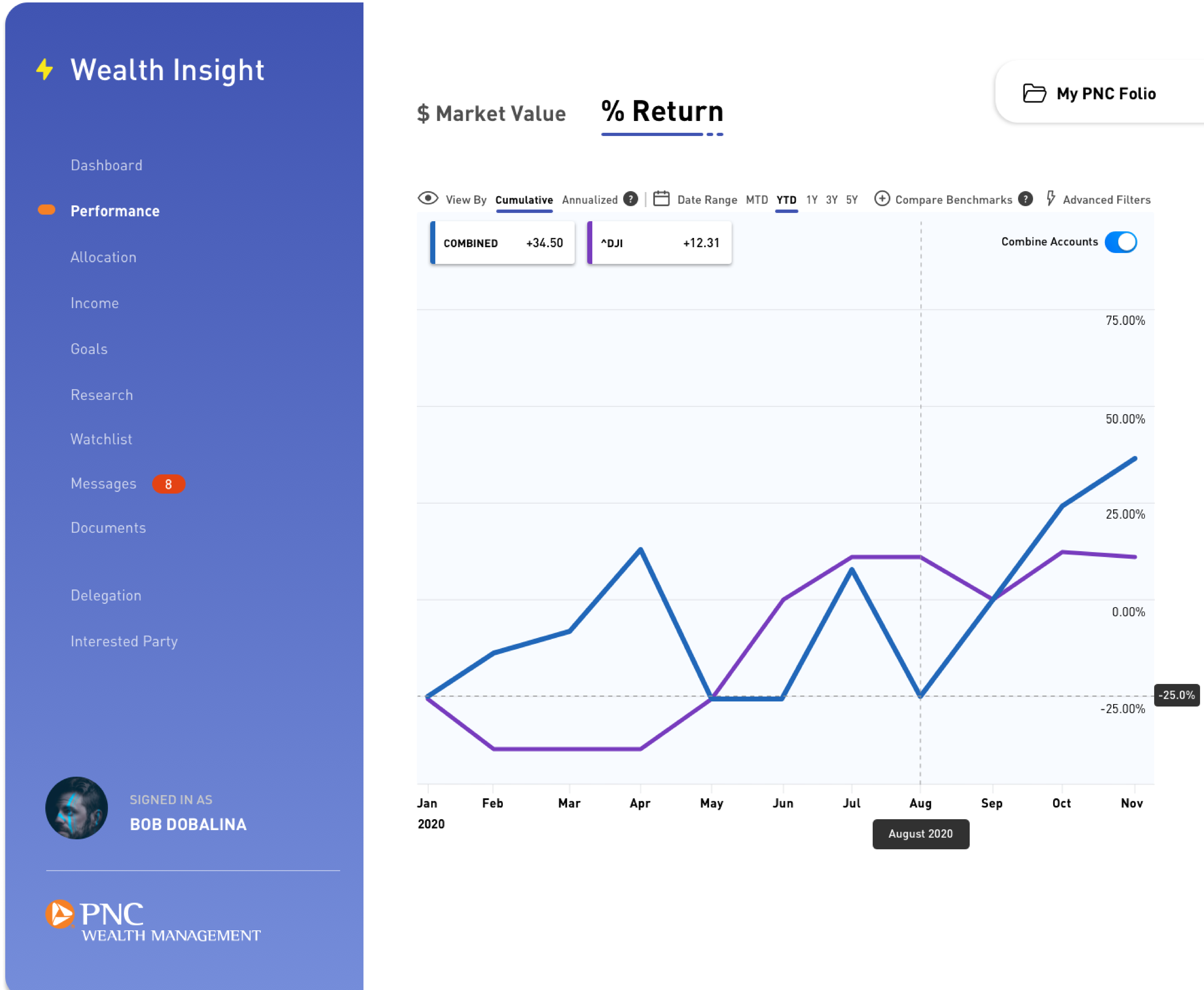
Phone - Performance View



Phone - Folio View



Desktop - Performance View - Folio Open



Desktop - Performance View - Folio Closed

Thanks for reading!