

$$H = T + V = \frac{\|\mathbf{p}\|^2}{2m} + V(x, y, z)$$

$$\psi_{nlm}(r, \theta, \phi) = \sqrt{\left(\frac{r}{na_0}\right)^{2n} \frac{2n[(n+l)!]}{(n-l)!}} e^{-r/na_0} \left(\frac{r}{na_0}\right)^l P_{n-l}^{(l)}\left(\frac{r}{na_0}\right)$$

$$\Psi(x_b, y, z, t)$$

$$\left[ \left( \omega^2 - \frac{3}{4} \beta z^2 \right) H = \frac{2}{2m} \frac{\|\mathbf{p}\|^2 (\delta\omega)^2}{V} \right] \frac{x = x_b}{x, y, z} \gamma^2.$$

$$i\hbar \frac{d}{dt} |\Psi(t)\rangle = \hat{H} |\Psi(t)\rangle$$

# THE ART AND SCIENCE *of* UX DESIGN

A step-by-step guide to designing  
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## USER JOURNEY MAPPING

Once you understand who the target users are—the persona—you need to understand their experiences as well. A clearer understanding of the users will help you design better. You need to know more than their wants and needs. How do they move through an experience? What is the current state that they go through? How do they prepare for an experience, and reflect on it? Knowing the before, during, and after of a user experience provides a holistic view that allows you to think of better solutions.

Is someone struggling with something in the middle of an experience? Maybe that's something you can solve beforehand. Do people want to be able to reflect on an experience more easily? Perhaps a way to record information during that experience will allow them to look back on it more easily.

It's not enough to know about the users. You need to imagine them in an experience so that you can empathize with their goals and frustrations, and you need to understand how they experience something so that you can create an even better experience for them.

To understand more about how a user experiences something, create a story that explains how they experience that thing—a user journey map.

### What Is a User Journey Map?

During the define step of the design thinking process, the goal is to better understand the state of things. Who are our users? What do they like or dislike? And what do their experiences look like? Journey maps play a crucial part in this process.

A *journey map* is a visualization of the process a person goes through to accomplish a goal. Quite literally, it is a map of the user's journey through an experience, and it includes all the aspects of that journey—their motivations for starting the journey, their actions as they move through their journey, and their feelings as they experience elements of that journey.

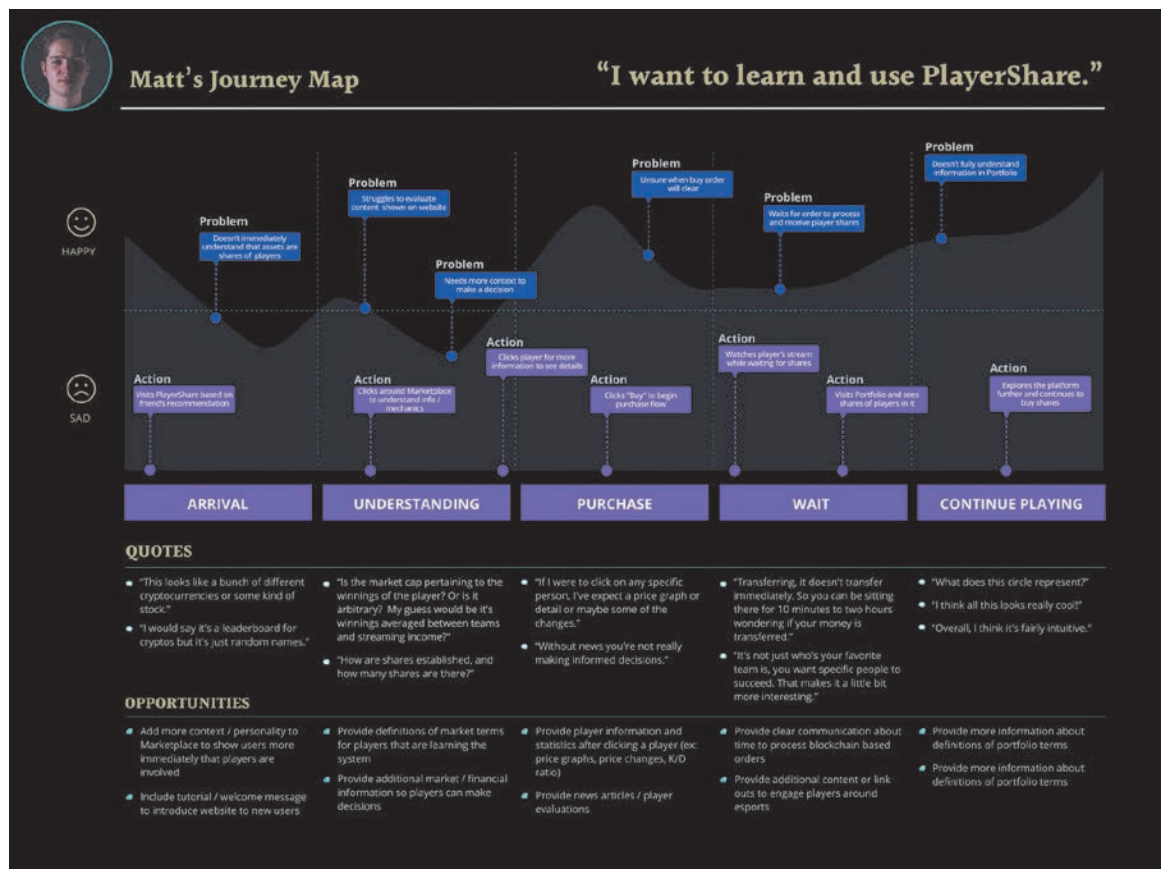
**FIGURE 3.8** is the real-life journey map I created for the persona named Matt in the cryptocurrency marketplace project example. I used an excellent template created by Geunbae Lee.<sup>2</sup> The project involved early-stage NFTs, and the onboarding process was confusing—users didn't understand what the

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<sup>2</sup> <https://dribbble.com/shots/4232985--Free-Template-Journey-Map-Bundle>

platform was, how long an order took to clear, and the actual value of their portfolio as they made trades.

To better understand where the confusion was, I interviewed users, synthesized those interviews via an affinity map, created a persona named Matt, and then mapped Matt's journey before, during, and after first using the product. I used the user journey map to advocate for revisions to the existing product experience and focus ideation around what we could do for Matt on his product journey.



**FIGURE 3.8** A journey map shows the highs and lows of a user experience so that you can understand and communicate the points that are working well and the areas that need improvement.

#### AUTHOR'S NOTE

Depending on how many personas you have and how many goals those personas have, your project may require multiple user journey maps. Make sure you represent all the key journeys of each of your personas.

A journey map's main function is as a storytelling tool used to align the team. It uses your persona and takes them on a journey through a scenario. The scenario is of your own design—you can choose what journey your user is taking. The content of that journey is ideally based on your research—what you've observed as you talked with users or looked at data that indicates their behaviors and opinions regarding an experience. Most commonly, user journeys are based on user interviews.

So what goes into a journey map? Usually, every journey map consists of several key elements that help communicate the user's experience:

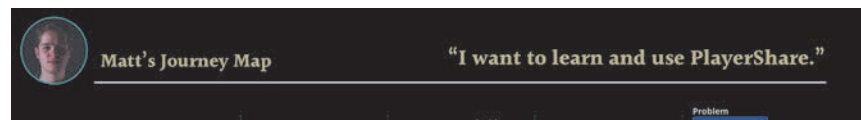
- Persona/background
- Phases
- Actions
- Thoughts/feelings
- Insights

### Persona/Background

To create a user journey map, you need a user! Commonly, this is your persona, since journey maps go hand in hand with persona work. Since the journey is told from the perspective of the user, it's good to have that user *own* the journey. To facilitate this idea of ownership further, nearly everything in this deliverable should come from the perspective of the persona, as if you were inside their mind, experiencing the things they experience on their journey.

To align the NFT project team further, it's helpful to have a background in the map as well (FIGURE 3.9). Who is this person? What is this journey? What is this person trying to accomplish on this journey? Setting the stage helps everyone get on the same page.

**FIGURE 3.9** Instead of a long biography (stakeholders could review the persona itself), we included a quote that summed up why Matt was going on this journey. He's interested in the product and wants to learn how to use it so that he can start making trades and compete with his friends.

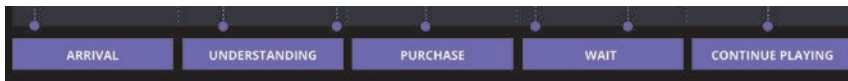


For the user journey with Matt, we kept the background simple—stakeholders were familiar with the problem, and we used this “background” space to communicate Matt’s core user need: learn, then use the platform to play with his friends and try to beat them.

## Phases

Since a user journey map is a *journey*, it can be broken down into parts or phases. These phases are the high-level steps taken in the user's journey and help organize the rest of the journey map. Think of them as the high-level flow for a persona's experience—what are each of the milestones in the user's journey? If you had to communicate the steps a user takes through a product, without going into too much detail, what would those steps be?

For Matt, I created five phases (**FIGURE 3.10**). First is Arrival. Matt comes to the platform, either by advertisements, word of mouth, or an invitation from his friends. Then comes Understanding. He begins to comprehend what the platform is and what it offers him. After that comes Purchase. To participate in the platform, he needs to make a trade and buy some assets for his portfolio by making his first purchase. Afterward, he needs to Wait. His trade needs to clear (which can take a long time via the blockchain), so he waits not only for confirmation, but also to see if the assets he bought change in value (think of it as an investment). Finally, he reaches the last step in his initial product journey, Continue Playing. After some time, he keeps “playing” the game via the platform, competing with his friends, and investing in more and more assets to grow his portfolio.



**FIGURE 3.10** The phases of Matt's journey through the product. These phases help explain, at a high level, each step in the user's journey.

## Actions

Now that you have phases that broadly discuss the user's journey, you can go deeper and talk about the specific actions the persona takes along the way. Phases are like chapter headings; actions are more like the subchapters within each of those chapters.

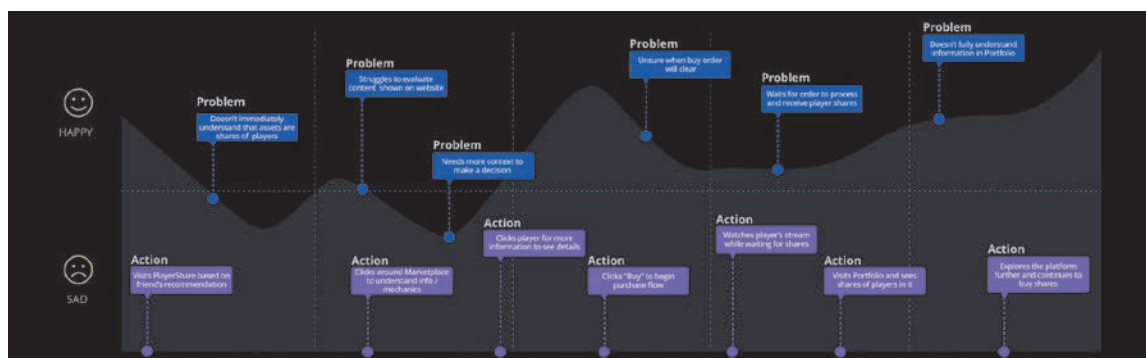
Actions are still somewhat high level—you don't need to get as granular as every step in a user flow from screen to screen, for example. This is more like what the persona is doing in the story. These actions aren't exclusive to the product, either—they can include the product itself but can also extend to devices (like turning on a phone or computer) or even physical places.

### AUTHOR'S NOTE

A person's journey in a user experience exists outside the product itself. As a result, user journeys should include out-of-product experiences. For Matt, that can include conversations with friends to learn about the platform, or the time it takes for a trade confirmation.



For Matt, I mapped out all his steps through the five phases of getting used to the platform (**FIGURE 3.11**). I also split each step into two categories. *Actions* which represent choices Matt makes, and *problems* which represent issues Matt has along the journey. In this case, these problems usually come from the platform itself and are opportunities for improvement later in the design process.



**FIGURE 3.11** Actions lead to an emotional response, represented on the graph as things that make Matt happy or sad. As Matt progresses on the journey, he encounters problems, which lead to a change in his emotional response and additional actions he chooses to take.

But how did I know that Matt takes all these actions and encounters these problems? Well, the data comes from research. This story we've created is based on talking with users and hearing their experiences. The actions and problems users encountered in research directly translate to this map.

**AUTHOR'S NOTE** Going through this exercise leads to potential design opportunities. For example, can we make it easier for Matt to understand faster? It's a fair assumption that he is happier once he's playing—if we make it easier to play sooner, he'll be happier sooner as a result.

I also added an extra element—a general satisfaction score for Matt. As he takes more actions and encounters more problems, his happiness with the product changes. A visual representation of that satisfaction using this curve helps us empathize with Matt even more. For example, the understand phase of this journey map is Matt's saddest point in his journey—he just wants to start using the platform and understand it. Once he gets past that step and starts investing (which was his original reason for coming to the platform), he is a lot happier.

## Thoughts/Feelings

Along your user's journey, the persona has thoughts that influence how they feel during the journey. Knowing how users feel as they go through a user experience is an excellent insight into their goals and frustrations, and this influences how you design a solution for their needs.

These thoughts could be abstractions of what you observed in user interviews, like user insights or I statements, or they could quote what users said during interviews.

For Matt, I chose to include specific quotes (FIGURE 3.12) over high-level observations. I find that in general, quotes are more powerful at communicating how a user experiences something—it's their words, after all—and these quotes help drive additional empathy for the team. Interpreting what a user says and extrapolating an insight is an extra step that dilutes how the user feels—why not just have them say it, in their words? If I say “Matt found the leaderboard confusing,” it doesn't have the same weight as his words. One user told us how confused they were by the product: “I would say it's a leaderboard for cryptos, but it's just a bunch of random names.” Hearing it in this way adds empathy and weight to the journey map, which is a main reason why we make them in the first place.

**AUTHOR'S NOTE** Quotes serve as “evidence.” Your evidence could be photos, videos, anecdotes, or some other form of “proof” of people saying and doing the things that your journey map depicts.

QUOTES			
<ul style="list-style-type: none"> <li>“This looks like a bunch of different cryptocurrencies or some kind of stock.”</li> <li>“I would say it's a leaderboard for cryptos but it's just random names.”</li> </ul>	<ul style="list-style-type: none"> <li>“Is the market cap pertaining to the winnings of the player? Or is it arbitrary? My guess would be it's winnings averaged between teams and streaming income?”</li> <li>“How are shares established, and how many shares are there?”</li> </ul>	<ul style="list-style-type: none"> <li>“If I were to click on any specific person, I've expect a price graph or detail or maybe some of the changes.”</li> <li>“Without news you're not really making informed decisions.”</li> </ul>	<ul style="list-style-type: none"> <li>“Transferring, it doesn't transfer immediately. So you can be sitting there for 10 minutes to two hours wondering if your money is transferred.”</li> <li>“It's not just who's your favorite team is, you want specific people to succeed. That makes it a little bit</li> </ul>

**FIGURE 3.12** The thoughts and feelings of the persona, sometimes represented as user insights and other times represented as actual quotes from user interviews.

## Insights

As an optional step, you can include an analysis of the action items or areas of improvement in the user's journey during each phase (FIGURE 3.13). These action items are framed as insights from research, opportunities for design solutions, or even tasks for the team to complete later in the process.

OPPORTUNITIES			
<ul style="list-style-type: none"> <li>Add more context / personality to Marketplace to show users more immediately that players are involved</li> <li>Include tutorial / welcome message to introduce website to new users</li> </ul>	<ul style="list-style-type: none"> <li>Provide definitions of market terms for players that are learning the system</li> <li>Provide additional market / financial information so players can make decisions</li> </ul>	<ul style="list-style-type: none"> <li>Provide player information and statistics after clicking a player (ex: price graphs, price changes, K/D ratio)</li> <li>Provide news articles / player evaluations</li> </ul>	<p>succeed. That makes it a little bit more interesting.”</p> <ul style="list-style-type: none"> <li>Provide clear communication about time to process blockchain based orders</li> <li>Provide additional content or link outs to engage players around esports</li> </ul>

**FIGURE 3.13** Since the goal of this project was to improve a product, the opportunities in this user journey are platform enhancements that address the points at which Matt is less happy during his user experience.