

Human Computer Interaction (In English)

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Mental/conceptual model

Hi everyone, I am Ritwik Mamba and I am your teaching assistant for the course on Human-Computer Interaction. In today's tutorial, we will cover User Perspective. So let's get into it. First, we need to look what we have covered so far. Well, we have covered good design versus bad design and what actually makes a design good or bad. As you can see right here, this is an example of a good design where Protectors are placed to protect the cars from bumping into each other or causing some scratches.

Next, we learned about inclusivity and accessibility and how they combine with usability to form inclusive design. Next, we looked at design principles, which included visibility, feedback, consistency, constraints, and affordance. Then we had a look at the four basic activities in the interaction design process, which include identifying needs and establishing requirements, which is followed by developing alternate designs and then building interactive versions of the designs and then we evaluate the designs. And then finally, we iterate over these.

As you can see right here, we establish the requirements, we design alternatives, we prototype, and then we evaluate those prototypes. The process is iterative and goes on until we reach our final product. The next concept that we covered was the double diamond of interaction design. what the double diamond basically tells us is that as we start we diverge by learning everything about our problem then we converge while narrowing down to one problem then again we diverge where we consider every potential solution to the problem and finally we converge finding the perfect solution these four stages are namely discover, define, develop and deliver. Well, that was the recap.

Now, for this tutorial, we have introduction to user-centered design. Well, user-centered design is an iterative design process in which designers focus on the needs of the users in each phase of the design process. As we refer to as user-centered design as UCD, design teams involves users throughout the design process via a variety of research and design techniques, which helps them create highly usable and accessible products for them. First, we try to understand the context in which users may use a system. Then we identify the user requirements which is followed by the design phase in which design team develops the solutions and finally, we evaluate as per the requirements.

This process is again iterative and helps create the final solution. The next concept we have to cover is personas. Well, user personas are actually fictional characters or idealized individuals with aims and the characteristics of a wider set of users. It is often given using one or two pages. Behavior patterns, objectives, talents, attitudes, and background information, as well as the context in which the persona functions are all included in these descriptions.

Designers usually create user persona templates, which include a few personal fictional details to make the persona a realistic character. As you can see right here, the persona contains a user of the image, their name, age, occupation, a short bio of how he is doing in his life, followed by his needs as well as his frustrations. Next, we try to understand the importance of personas. Well, for starters, a thorough grasp of the target audience is essential for developing excellent goods. Who are we actually developing for? Well, understanding the target consumer's expectations, their worries, as well as their motivations allows us to build a product that will meet the requirements and hence be successful.

The research that goes into developing user personas is typically done early in the empathize phase. During the second phase of the design thinking, the define phase, the designers frequently begin creating personas. As you can see another example right here, we have the image, their name, age, occupation, needs, frustration, as well as a short bio. Well, now we look at what are the steps which are involved in creating a user persona. First, obviously, we need to know who the users are.

We study a lot of users to get a sense of who they are. We need to take care of the following information that we need to include in the persona. a name a picture is preferred their demographics gender age location marital status family etc their goals and needs their pain points or as we refer to them as frustrations their behaviors and just a little bit of their personality for example a quote that captures the essence of their personality here we have included demographics behavior traits geographic location challenges interests and email preferences because why not. This is an example persona, here we have the name, image, these would be the demographic details which include the age, education, status, marital status, their occupation, location and the tech profession as in this context. and a short quote about them where we get an essence of their personality and they have also mentioned how they are an introvert as well as a thinker a short bio where she tells a little bit about her life followed by her core needs her frustrations what brand does she use and maybe her payment preferred payment medium or maybe the preferred platforms Next, we move on to empathy, or shall we say empathy maps.

Well, if the designers want to create something that is beneficial to the people, empathy is a key virtue. Personas may assist designers in developing, understanding, and empathize with their end consumers. We take on the user's point of view, where we create the user personas, which help the designers step out of themselves and recognize that different people have different needs and different expectations. We identify with the user for whom they're developing, The more designers interact with the user personas and they actually view them as actual users or individuals, the more likely they are to think about them using the design process and desire to develop the best product solution for them. Empathize also serves as the first phase in the design process.

How we empathize? Well, we can create an empathy map where we can mention what the user says, thinks, does, and feels. It lets us sum up our learning from engagements with people in design research. An empathy map may consist of four quadrants. As we said, says, thinks, does, and feels. And these four key traits which the user actually demonstrates or possessed during the research phase.

These refer to some very important points of how the user may interact with the product. Then we look at each quadrant in detail. These empathy maps, which are not chronological or sequential, but they actually provide us a glimpse into what the user thinks as a whole. First, we have the quadrant where say what the user actually says out loud in the interview and other usability research that is recorded in the says quadrant. It should actually include the exact lines of the user and the direct quotes from the research.

Secondly, we have feels, which represents the user's emotional state. which is frequently displayed as an adjective or a brief statement for context. We also consider what concerns the user and what piques their interests. Then we move on to the think quadrant where we actually collect the user's thoughts as they progress through the experience. We ask ourselves, based on the qualitative research that we have conducted, what occupies the user's mind? And more importantly, what is actually important to the user? It is possible for the says and things to contain the same content.

However, we pay close attention to what the users are thinking, but they may not be willing to actually express that. Finally, we end up with the does phase where we actually record the user's actions. What does the user physically do according to the research and what steps does the user take? Then we look at what is the importance of empathy maps. Well, as the name suggests, it helps us build empathy with our end users. When based on real data and combined with other mapping methods, it can actually help us remove bias from our design and align the team on a simple and a shared understanding of the user.

It can also actually help us discover weaknesses in our research We can also help

uncover user needs that the user themselves may or may not be even aware of. It can also help us understand what drives the user behavior and then guide us towards the meaningful innovation that we are looking for. It is also created during the define phase of the design thinking process. Well, this is an example of an empathy map for Jamie who is going to buy a television. First, we look at the sales quadrant where we actually have the exact quotes from the interviews or the research.

Jamie can say that, I want something reliable. What size is the best? I was expecting something different. And maybe something like, what brands do you like? Jimmy may think, why is this so hard? Why is choosing a television so hard? What else am I missing? Am I wasting too much time? What is the best for me? These are some of the things which the user may actually think but are not willing to express. Next, we move on to the feels quadrant. User may feel overwhelmed, excited to buy a television, unsure who to trust, anxious, fearful, as well as inadequate.

Finally, they move to the does quadrant where we mention the actual actions of the users. They may compare products, do more research, observe in the stores, ask their family and friends, list their pros and cons, check the websites, make decisions. Concluding with the empathy map, empathy map may also be used to summarize other qualitative data like surveys and user research. Instead of the usual business card method, the empathy map may actually be utilized to express a persona. As further data is obtained, one may actually go back to the empathy map and update the new insights or delete existing insights that have been changed or invalidated.

Empathy maps should also be used throughout any UX design process to establish common ground among team members and to understand as well as prioritize the needs of the users. Empathy maps work best when used early in the design process in UCD. The next concept that we have to cover here is the mental model. what a mental model actually is. It is just users' underlying expectations about how something should work.

It is formed based on what they already know, what they already do, prior experiences with similar products, or maybe some assumptions that they have made based on how it appears, which is also known as perceived affordances. Designing for a mental model actually involves covering a deeper understanding of the motivation and the thought process and the emotional state of the users, which is kind of independent of our product. Well, this is about the reality while this is with the reality bias. we actually don't see the reality as it is we see our own version of the reality so the mental model of a reality is this the reality bias that we put along here the next concept we have is conceptual model Well, it is created by the designer as a high-end level for how the product will look and fit together. It also tries to represent an answer to how tasks should be carried out.

It's made up of different elements that shape organization of the system and is ultimately represented in the interfaces the customers interact with. Typically they are identified at the beginning of the design process and are referenced constantly for direction and inspiration throughout our design process. Well, you may be a little confused about what a mental model is and what's the difference between a mental model and a conceptual model. Well simply put mental models are the expectations of the users on how a product is expected to work while a conceptual model is actually a plan for the design a plan for the design that is actually made by the designer themselves the conceptual model is made by the designers in accordance to the mental model of the users so well A user has its own mental model which then on research is moved on to the designer who creates a conceptual model. Then the designer representation followed by hypothesis testing on the user and then the user actually interprets that based on the knowledge of the same.

Why conceptual modeling? I think the most important part of why conceptual modeling is a good idea is it actually allows you to try to match the way our products or services work with the mental model. We need to match the user's mental model along with our conceptual model. Conceptual modeling actually allows us to see how well our conceptual model matches different mental models. It actually helps us examine when a mental model is not aligned with the conceptual model and to decide whether we are going to shift the conceptual model or we try to shift the user's mental model. What is actually contained in the conceptual model? Well, first we have the information architecture, how the different areas in the solution are being grouped and structured.

Where are the customers expecting to find the answers to the mental model within the product? Does it match their expectations? Well, this is all that we need to include in the information architecture. we need to include the content, the context, as well as the user tasks. This is one such example of an information architecture where we have the homepage followed by many different categories, which include clothing, search, accessories, cart, as well as location. This is a template for an information architecture or probably an e-commerce website where we can find clothes, we can browse the entire site, find some accessories and then check out and do the payment across different locations. This is another example of an information architecture from Amazon.

where the category page expands into the product page. While the homepage leads us to the shipping cart, we can also reach here if we add some products from the product page to the shipping cart. Similarly, different connections can be made here. And to reach the payments page, there may be different paths that the user can actually follow. What else can we contribute to the conceptual model? Well, terminologies are one such thing.

Is the user actually familiar with the terms that are actually being used in the solution? Are there broad terms that infer what you can do in each part of the product? How closely do they actually match the terms that the users actually use in their day-to-day life? We can also have content strategy. What are the guiding concepts or rules that actually appear on each page? Similarly, we have channel strategy as well as an interaction strategy. Finally, how to build a strong conceptual model. The first and foremost way for a strong conceptual model is robust research and understanding of the customer expectations. We use terminology that the users are actually familiar with.

We don't make up new wording that doesn't mean anything to them. This helps our product be instantaneously recognizable. We also leverage the interface patterns that they already use. While designing a chat experience, we may actually structure that in a way that they come across already.

We test early, iterate. We create prototypes, we test them, we evaluate them, and then we prove the design. Finally we move on to our in-class activity where we need to create a quick persona for a hypothetical user which involves their basic info, goals and needs which are related to the app or website and finally the challenges and their pain points. We also create an empathy map about what the user sees and does, what the user thinks and feels, and also the pain points of the users as well as their goals. Here are some more references if you would like to read further.

This was it for this tutorial. Thank you so much.