

Human Computer Interaction (In English)

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User Perspective: Lecture 4 part 2

Hello, everyone. Welcome back. In the previous lectures, we have discussed about user perspective, persona in user-centered design, its importance, how we can make a good persona, what are the challenges we face while creating persona, and so on. Let's go with the next stage called data synthesis. So data synthesis in user centered design is a process of organizing and analyzing qualitative and quantitative data collected from the user research to identify patterns, insight and opportunity for design. So it is essentially defining the problem.

It is a key step in transforming raw data into some actionable insights. Why is data synthesis important? It helps us in identifying key insights, extract meaningful themes from the user data. It helps us in revealing the patterns, so it helps spot trends and common challenges user faces. It also helps in prioritizing the user needs, so it highlights the most critical pain point to address.

Finally, it drives the design decisions. It informs the creation of personas, point of views, and guides ideation. We'll be studying about point of view in the next upcoming slides. There are several popular techniques for data synthesis, affinity mapping and data clustering. In affinity mapping, so it groups similar data points to identify common user needs and the patterns.

For example, an SCI team conduct user interviews and the group feedback using sticky notes, themes like easy of use, navigational issues, feature request. So these emerge and guide the next design iterations. In data clustering, It uses different clustering techniques to categorize user into different groups. For example, an e-commerce website uses clustering to segment customers into group based on the purchasing behavior, identifying the distinct groups like bargain hunters or probably the loyal buyers and so on. So affinity mapping, also known as affinity diagramming, is a method used to organize and synthesize qualitative data by grouping related items based on their natural relationships.

It is a visual way, that is the key, to identify themes and the patterns. And the purpose is to identify connections between data points that we have, to find emerging themes and

insight, to visually categorize user feedback, observation, and ideas. So as said by Jake Knapp, affinity mapping helps you to make sense of chaos by finding the patterns hidden with it. Because the amount of data that you are having after the user research is humongous. So it's better to make sense of this chaos by finding the patterns hidden with it.

So the process involved Collecting data from the user research. So it could be interview, quotes, observations. Write each data point on a sticky notes. Group similar notes together to form the cluster. So grouping is quite important.

And label each cluster to define emerging themes. What themes you want to have, you want to address. So let's consider this with the help of a case study, our favorite project, the Braille Learning App. So here the objective is to identify and categorize key insight and ideas related to the Braille Learning App for visually impaired students, considering the needs and the perspective of beginner learners, teachers, and organizations related to disabilities. So it includes the following steps.

Step one, gather data, sticky notes, categorize data, identify key themes, that is the affinity cluster we call it. Step four is organizing insights and some actionable ideas. And finally, the key insight for the design. So this is the.

.. affinity map that we have built for our project. So here the affinity diagram help us to discover the structure within the data and foster a shared understanding among the design team as said by Jacob Nielsen. Also, it is interesting to note that affinity mapping transform the scattered data into insights. So the different insight that you can get it revealing the patterns and the priorities that user-centered design that guide the user-centered design. So in this case, you can see that this is the user needs, this is one of the affinity group, tech needs, this is another affinity group, scalability needs, design needs, and so on.

So let's elaborate the different steps we have for our app. So in gather data phase, that is the sticky notes. So this is a phase where we collect ideas, pinpoint and observation from the brainstorming session that we discussed earlier. And for the beginner learner, struggle with memorizing braille character, need clear, simple feedback on mistakes, often feel frustrated and demotivated when progress is slow, need guidance on how to use braille materials independently. desire more engaging and interactive learning methods, probably gamifying the education, and finally prefer some tactile feedback over the visual aids.

So that is, we got from beginner learners similarly from the teachers we got need real

time progress tracking of the students struggle to customize lessons to meet individuals and their needs need tools to monitor and support the students remotely it's more in adaptive way personalized way desire to provide a variety of the braille learning resources finally difficulty to assess student progress without proper tool and finally needs simple ways to share materials with the students and from disability institution and organization point of view they want scalable solution for braille learning they want affordable technology for all the students they require an app that meet the accessibility standards and for different disabilities so they also need multilingual support to cater the diverse learner across the demographics. So we require easy to manage tools for licensing and distribution to other schools and concerned about the apps ease of integration into the current learning system because it is a great solution to somehow integrated with the legacy system, the existing system that any organization is using. so that minimal changes are required to adopt this technology and the solution. So step two is categorizing the data. So let's organize the sticky notes into categories.

So first category is the learner needs. So here the engaging learner methods, game interactive features, simple understanding feedback, personalized learning paths, clear guidance, and tactile feedback is critical for the tactile learners. So category 2 is the teacher needs where they want real-time progress, customized lessons and teaching materials, tools to share materials with the students easily, need to provide additional resources for student practice based on their performance. Category 3 is the institution need as we discussed, they require scalable and affordable app distribution, accessibility standards should meet, Multilingual support should be there. Tools for managing and monitoring apps distribution.

Integration with the current education system. And category four, general features for all the stakeholders where it will be good to have some voice command or the text to speech options. Offline functionality for learning in low connectivity areas because if the designer assumed that everyone has a very good internet connections That is not the case in India and probably in many part of the world so Offline functionality for the learning in low connectivity area is one of the very important feature clear feedback for students actions and the mistakes scalable for different user needs Third step is identifying key themes and making the affinity clusters. So in this case, the theme one you can think of around user engagement and motivation. So learners need engaging features like games or interactive relations or tactile feedback.

Teachers want easy to use system that keeps students engaged and motivated. And institution need to ensure that app is accessible and engaging to sustain users. For theme two, you can think it more in terms of personalized learning and the progress tracking. So where learners need adaptive learning paths and clear progress feedback. Teachers

require progress monitoring tool to track students' development and progress and institution look for a scalable solution that can cater the range of learners, supporting multilingualities, supporting different schools and so on.

Another theme we can identify is more like accessibility and inclusivity. So where learners require app to tactile, auditory and interactive, meet diverse learning needs. Teachers need an app that can support accessible teaching methods. Institution need the app to meet accessibility standard like multi-language support. Theme four is scalability and affordability.

So institutions are looking for affordable solutions to implement across the network. Teachers want an easy to distribute platform that works across different schools and organizations. So the next step is organizing insight and actionable ideas. So now we have organized the data. We can pull actionable insight from it and the ideas for the design process.

So in user-centered engagement, focus on interactive learning, incorporate game-like features and provide clear and instant feedback to avoid any confusion or the frustration. For personalized and adaptive learning, you can design a dynamic curriculum that adapts to the learner space, implement progress tracking tools for teachers to assess performance and adjust lessons. For accessibility and multilingual support, ensure the app complies with accessibility standards and offer multilingual support. Finally, for scalability and affordability, make the app effective, provide institutional license for bulk use, and ensure the app is cross-platform and can be accessed by different devices. So key insight for design here is interactive features, progress tracking, scalability, multilingual support and affordability.

Okay, so that was about data synthesis. So now let's revisit the design thinking that we discussed in the previous lecture. You recall, design thinking framework involves six key stages. So that is empathizing with the user, defining the problem, ideating a range of creative ideas, building some prototype, testing or validating the system that you have and finally implementing that is put the vision into the effect and one key thing if we discussed in the previous lecture as well it is iterative in nature so many stages are often overlap and the repeated so good design is like Clear thinking made visual, Edward Tufte said. So now let's revisit the same more from the user perspective point of view.

So in empathizing, so understand the user need through research, creation of persona that we have just learned. So persona is about who the user is and help in building the empathy. So in case of define, the data synthesis technique that we have just learned. So it synthesizes insight from research into a clear point of view, POV. So this point of view

is basically what is the user's problem is.

That identifies the user's key problem. So the next stage is ideate. Here we use HMW, how might we? So here is basically primarily about how might we solve the problem. Questions to brainstorm ideas and explore potential solution. So the next stage is prototype, develop tangible representation of the best ideas from the ideate stage and building some kind of MVP, minimal viable product or mock-up.

test it, iterate on the prototype based on the user feedback, keeping personas and the point of view in mind. And lastly, the implementation stage where you launch the final product to the users, ensuring accessibility, observing real-world impact for refinements. So, persona is about where it fits part of the empathize stage and the role is A persona is a fictional but data-driven representation of the target user. It helps designers understand the characteristics, needs, goals, and challenges of their user base. Personas are used to humanize the research data and provide a clear picture of who the designers are creating solutions for.

And it matters because it provides context and empathy for the users, ensuring that the design process remains user-centered. Similarly, for the point of view, it is part of the defined stage as discussed earlier. So PoE is a clear, concise problem statement that reflect the user's needs based on the insight gathered from the persona and research. It frames the design challenges in a way that guides the ideation process.

That is the next stage we have. So why it matters? It narrows the focus to a specific problem or needs, making it easier to come up with targeted solutions. So there are several ways you can define POV. So one formula for formulating POV is user needs a way to what is the user needs because there is some insight so the key thing is here user, user needs and insight so one example you can see here for this so component of good POV who is experiencing the problem so a busy urban professional for example and what is the need what do they need to accomplish needs a quick and healthy way to eat on the go He's quite busy. And the third thing is insight. Why do they have this need? What is the deeper understanding? Because they often skip meals due to the demanding work schedule.

So there are several ways you can formulate the POV. Another way of formulating that has been discussed is one of the human computer interaction course by Stanford University. how we met here that you can define the person we are surprised to see we wonder if imagine it would be game changing whatever the proposed solution so using this you can also build the pov So we were surprised to see that how challenging it is for them to navigate their device, perform simple tasks and maintain their previous level of

independence. As many mobile interfaces are not fully accessible, intuitive for blind users. And we wonder if there could be an intuitive a voice guided or touch responsive interface that would allow them to access and use all phone functionality just as smoothly as before the accident he was using.

It would be game changing to develop a highly responsive voice activated mobile assistant with enhanced haptic feedback customized to their needs and that empower them to use mobile phones seamlessly enabling them to communicate, navigate, and stay connected and independent as before. So once you have this, you can now ideate after this, around this. So as an activity, I would like you to basically, given a scenario of a wheelchair user faces challenges when navigating public transportation in a crowded urban environment, can you make a POV for that? that identify the user specific challenges and the proposes opportunity for improving accessibility. Similarly for online learning, grocery shopping and financial literacy, you can go ahead and complete this POV for the given scenarios.

So the next is how might we? We discussed it. It reaches the define and ideate stage. How might we questions are formulated based on the point of view that we have just defined in the previous stage. They are open-ended, solution-oriented questions that drive brainstorming and ideation. How might we questions inspire creativity and encourage the exploration of multiple possibilities? They matters because it turned the problem statement into opportunity for innovative solutions, helping design team think broadly while staying focused.

Some examples you can see here. How might we make it easier for user to find trusted and reliable sources in search results? How might we create a more intuitive and seamless experience for mobile search users? How might we highlight key information in a long article so that the user can find answers quickly? So next stage is prototype stage, that is minimal viable product stage. It bridges the ideate and the test stages. And the role of minimum viable product is simplified version of the final product with enough feature to test the core functionalities. It is used to validate assumption and gather feedback before further development. It is important to get your idea, assumption validated before going for full-fledged development.

It matters because MVP allows team to quickly test the core functionalities with real users, identify critical issues and prioritize feature for the final product. ensuring your resources are efficiently allocated. And in the last stage, that is the implementation stage where you launch the product, it is the final stage of the design thinking process. The launch phase involves releasing the product to the target audience. It focuses on ensuring the solution is fully developed accessible and operational in real-world contexts.

Continuous monitoring and feedbacks are still required and essential to assess the performance. And it matters because the launch phase makes the solution available to the users, providing the opportunity to observe its real-world effectiveness and gather valuable insight for any necessary adjustment or future improvements or feature functionalities that you may add. So let's consider a use case, our favorite use case again, Airbnb, a journey from multi-million dollar to multi-billion dollars. User research. So the goal is to understand the needs, preference and challenges of the travelers and hosts.

So these two are the two key stakeholders that you have. You can create persona for them. So approach is conduct interview with the travelers to learn about their booking experiences, preferences, and challenges with the traditional accommodations such as hotels. Interview host who rent out their homes to understand their motivation, pinpoints, and concerns. Gather data through surveys and observational research to identify common themes such as trust, cost, convenience, and safety.

So the key insight here is many travelers desire unique affordable accommodation that offer a more authentic local experience while host want to easily connect with the trustworthy guest. Why trustworthy? Otherwise probably your guest may spoil your house, may steal some valuable items in your house and that's why I mean it's very very important. persona for this you can consider some sample persona we have created here so emma a 20 year old solo traveler this could be one persona who loves exploring off the beat path destination sees budget conscious values local experience and prefer staying in cozy homes over standard hotel we have john and lisa a couple of in their 40s who own a vacation home. They want to rent it occasionally to cover maintenance costs, but are concerned about waiting potential guests. Carlos, a digital nomad who works remotely, needs a comfortable, quiet space with reliable Wi-Fi for long-term stays and enjoys meeting locals.

So the goal is here to understand the needs, preference, challenges of the persona that we have discussed. So it's more like travelers and host. So they can conduct interviews. They conduct interview of the both travelers and the host. They gather data through surveys, observational research to identify common themes such as trust, cost, convenience and safety.

So the key insight here is many travelers desire unique affordable accommodation that offer a more authentic local experience while host want to easily connected with trustworthy guest. So we can ask the how might we questions. So some how might we questions are, how might we make findings unique and affordable accommodation easier for solo travelers like Emma? How might we ensure that host feels confident about safety

and trustworthiness of potential guests? How might we create an experience that connect travelers to local culture while maintaining comfort and convenience? And the prototype, so you can develop a minimal viable product or mock-up of a platform that connects travelers with a local host. Key features may include a user-friendly search function to find unique homes based on the budget, interest, and other constraints, a profile system for both travelers and hosts to build trust, including verified reviews, ratings, and detailed profiles, a booking interface that allows for seamless communication and booking between travelers and the host and finally the integration of secure payment system and safety measure for both parties. So in the test stage you can see the approach would be conduct a usability test with persona like Emma, John and Lisa Using the MVP to get the feedback on easy of use navigation and key features.

Gather feedback from host to understand if the booking process, communication tools and the safety measures meet their needs or not. Iterate based on the feedback, improve the design, interface and addressing concern about trust, safety and convenience is very important. And you can do more example iteration here. So adding more detailed profile verification options and improving the search filter to accommodate a broader range of preferences after initial testing. And finally, in the last stage, that is the implementation stage, you launch the final product to the target audience, roll out the platform to select the cities to gather initial user behavior data, So it's not like you launch everywhere at the same time.

Probably you can limit that to someplace first and based on the result, you can go ahead accordingly. Focus on accessibility for all user types, ensuring the platform is intuitive and inclusive. Monitor the real world impact, gather metrics, and refine the product based on the feedback and the user data that you have. And address any other user pain points. Continue to improve trust building features because that is the key here.

The host is giving you their lovely home with the trust. You'll get back to them with the same as you received. So, like verified identities, host support, guest rating, host ratings, both are very important so for you solve the following problem very similar to the airbnb use case that we have done and try to build persona try to build point of view try to ask how might be questions again test implement and so on build prototype so finding eco-friendly product is challenging and often outside of budget so that what you can do here Busy professionals lack time and skills to prepare healthy meals. So what you can do here and so on. So the summary is user perspective are central to the successful human computer interaction product. A good design caters to a diverse user base, ensuring usability, accessibility and satisfaction into the account.

Emphasize the need for ongoing research and adaptability to stay relevant in a changing

technological landscape. Designing with user needs in mind improves satisfaction, reduces errors, increases usability, leading to more efficient and effective interactions. A positive user experience, foster loyalty, encouraging repeat use and positive word of mouth, persona, point of view, how might we, minimal viable product, iterate, launch are the key stages in success of any human centered design solutions. And finally, In this week, we are going to have tutorial on user perspective.

We'll also be having a panel discussion on user perspective. We'll also have a hands-on experience with Miro tool and the weekly assignment as usual. And tutorial will be taken by our brilliant TA, Ritwik Bamba. Miro tool will be covered by Vibhuti. And we'll also have a panel discussion on user perspective by Vibhuti Syedan Ritwik.

You can refer to these resources for further readings. Thank you so much.